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Preface

Social Media have become an everyday part of our live. We use them to communicate with friends and family; businesses and professionals use them to present themselves and their products. Social Media however is only the platform upon which social networks emerge and communicate. The question how this affects public administration and policy is only natural. For the public administration, social networks are a prime opportunity to strengthen citizen relationships and to communicate with their "customers". It may collect feedback on public services and platforms and hence improve (electronic) public service delivery. Particularly in times of a pandemic this may prove an invaluable means of communications.

In the political domain, however, Social Media can shape politics and may influence the run of history. Not only has it become a prime media to communicate with the electorate – just as an example, former President Obama currently has 116m, President Trump 79m and Prime Minister Modi 56m followers on Twitter – it may also shape elections and political decision making. This can be seen in several ways.

On the one hand, it is a positive development that citizens have many diverse ways to inform themselves and have access to original documents in a way inconceivable to former generations; it also enables them to express themselves and voice their opinions bypassing media and political hierarchies, simply as citizens. On the other hand, however, Social Media are targets of disinformation by both non-state and state actors. There is also the tendency to create Social Media "bubbles", self-reinforcing echo chambers, which exist on all parts of the political spectrum. If social networks turn into such bubbles, the very promise of Social Media is in danger – an open and hierarchy-free discourse among people and citizens.

The conference is of course dedicated to all sectors of ICT use in the public sector, but the large number of papers on Social Media topics shows that this year's focal topic was a good choice.

We also decided to dedicate this volume to the late Tim Kraski, a dear colleague from Andrássy Uni, who was part of the organising committee for many years and a promising young scientist who passed away after long illness in 2019. Please also see the obituary in the volume.

Due to the well-known COVID-19 situation, the physical conference on May 7 and 8, 2020 could not take place as intended. It will however be held in autumn 2020, when the situation will have improved. We would like to express our gratitude to all local organisers, whose flexibility and dedication makes this move possible. In this regard, we take the liberty of publishing the conference volume at the time of the original conference – half a year before the actual conference will take place.

We wish all contributors and readers a cordial "stay healthy" – ad multos annos,

The Editors, Budapest/Chisinau/Cluj-Napoca/Ludwigsburg/Münster/Vienna, April 2020

Welcome address by the Baden-Württemberg Stiftung

The corona crisis shows clearly how connected we are worldwide. On the one hand, referring to the spread of the virus, on the other hand, referring to the economic ties and new dependencies. In those circumstances, e-government is focused even more for an efficient crisis management. One example is the current discussion on the necessity to collect personal health data in order to reduce the infection rate and simultaneously the questions relating to data protection. The crisis also highlights the importance of acting together on multi-levels: worldwide, nation-wide or at local level.

Consequently, this leads to meaningful questions for governments and adminstration worldwide. Without the involvment of the civil society and the citiziens, e-government will lack legitimacy. It rather requires horizontal and vertical coordination among different policy actors.

That is the reason why we are very glad that the Central and Eastern European eGovernment and eDemocracy Days 2020 continue to contribute to these discussions. Furthermore, we appreciate that this conference enables the transfer between science and practice.

Moreover, the general subject of the Central and Eastern European eGovernment and eDemocracy Days 'Social Networks and Social Media' are gaining importance in the corona crisis. It represents one of the most essential tools to participate in daily life: you can offer neighbours assistance, you can join a virtual visit in a museum or attend a gym lesson. Obviously, these tools are developed differently in different countries.

This new model of engagement and participation can help overcome the wide-spread distance between citizens and politics.

The Baden-Württemberg Stiftung understood the challenges of an uprising e-world also along the Danube. Therefore, to enable sustainable cooperation in the Danube Region and in order to strengthen international understanding and the creation of a robust civil society, the Baden-Württemberg Stiftung launched its programme "Perspective Danube: Education, Culture and Civil Society".

The Central and Eastern European eGovernment and eDemocracy Days have been part of this programme since 2015 and contribute as an open active platform to all participants for addressing the

future challenges of the digital administration and e-government and provide the possibility to identify emerging trends, and inform strategy for a future-oriented good governance.

On behalf of the Baden-Württemberg Stiftung, I would like to congratulate the organisers for keep on realising this conference and the corresponding volume and I hereby wish all participants and presenters a successful and interesting time at CEEeGov 2020.

Dr. Andreas Weber

Head of Education Department
Baden-Württemberg Stiftung

In Memoriam Tim Kraski

Tim Kraski, who was an esteemed member of the organizing committee of the Central and Eastern European e|Dem and e|Gov Days from 2014 until 2017, died on May 21st, 2019 at the age of 36 after nearly two years of serious illness. He was a doctoral student in the binational doctoral program of the Andrássy University of Budapest and the University of Passau; he was also a research assistant at my Chair for European and International Politics at the Andrássy University from November 2012 to June 2017.

© Csaba Németh (Fotó Berzay)/AUB

As research assistant at my Chair, Tim Kraski was co-organizer of our conferences from 2014 to 2017. He organized the events at the Andrássy University (the panel debates in the evening and the conference dinners), he supported the organizational team from the National University of Public Service, and he helped to cooperate with our sponsors and in editing the conference volumes.

With Tim Kraski, the European e|Dem and e|Gov Days loses a young colleague who made a significant contribution in organizing our conferences in the first four years. He had a great talent for perfectly structuring and organizing processes and at the same time he had the ability to work with other people in a wonderful atmosphere thanks to his friendly, humorous and energetic nature.

Beyond our conference community, the scientific community loses a young political scientist who was distinguished by exceptional intellectual and academic talent, and who was a highly esteemed and respected colleague. In the binational doctoral programme of the Andrássy University Budapest and the University of Passau, Tim Kraski worked on his dissertation on "The Political Thought of Adam Smith and Karl Marx: A Comparative Analysis". The dissertation dealt with the foundations of economic and political liberalism using the example of the political philosophy of Adam Smith and of Karl Marx's radical criticism of liberalism. Tim Kraski's aim was to grasp the foundations of our political and economic order by examining paradigmatic positions in the history of ideas. Due to his illness he was unfortunately unable to complete his work.

My personal collaboration with Tim Kraski as a research assistant was extraordinary. Together, we have organized, among other things, numerous conferences (besides the European e|Dem and e|Gov Days) as well as study trips with student groups to Brussels. Also, we conceived and implemented together the binational doctoral program and the double master's program "Governance in Multilevel Systems - International Relations/Science of State" of the Andrássy University of Budapest and the University of Passau. Tim has always performed these tasks with great commitment, extraordinary skills and impressive engagement. Also, he was a popular and committed lecturer among our students at the Andrássy University. His courses were perfectly prepared and loved for their great atmosphere. Besides working at my Chair and on his dissertation, Tim Kraski showed a keen interest in current political issues. A particular focus of interest was in the field of political education. He was well aware that a free and democratic political order depends on the political education of its citizens. His numerous papers and conference lectures are evidence of his great academic interest and engagement. With Tim Kraski our conference community, the Andrássy University and the scientific community lose an extremely committed and talented young man who, with his dedication and skills, could have done so much more for his academic field and for political education. All people who worked with him are losing a colleague and a friend who demonstrated a great ability for a wonderful cooperation, and who was highly valued for his friendly manner, his humour and his great attention for his colleagues. Personally, I am losing a doctoral student, a colleague and a friend who was a particularly important dialog partner for me.

Tim Kraski died much too young, but he will stay with us in our memories. Our thoughts are with his closest relatives - his wife, his parents and his sister - to whom we owe our sincere condolences.

Prof. Dr. Hendrik Hansen
Federal University of Administrative Sciences, Berlin

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Smart Cities

FROM SMART CITIES TO SMART REGIONS: REGIONAL ECONOMIC SPECIALIZATION AS A TOOL FOR DEVELOPMENT AND INCLUSION

Karina Radchenko[1]

Abstract

Keeping in mind that the fundamental task of local and regional governments is improving lives of their citizens, this paper considers the phenomenon of smart specialization as a tool that can be used to reach economic development and inclusion. Particular attention is paid to the impacts of smart cities on regional life through establishing smart city networks and mutual cooperation of various stakeholders. The issues associated with smart specialization are determined. At the same time, it is attempted to suggest the possible steps that could be taken by local and regional authorities to foster smartification. The multidimensional methodology approach is used for this study to increase its comprehensiveness and wider applicability of the concluding recommendations. The research is directly linked to the UN Sustainable Development Goals that are actively promoted by the Congress of Local and Regional Authorities of the Council of Europe, so it is related to high practical and theoretical value.

1. Introduction

The digital era of massive use of information and communication technologies has set the new environment for local and regional authorities to deal with. The smart cities are viewed as the fast-growing trend of the last decade. The researches have already proved the distributional effects of smartification on people, planet and places. [14] Moreover, targeted application of smart city concept may significantly increase the efficiency of public policies. [29; 21] At the same time, specific impact scenarios of smartification may be noticed in different communities proving the high value of the targeted case-by-case approach. [25]

It should be noted that cooperating *inter alia*, smart cities are likely to lead to larger territorial cohesion positively affecting regional development. [30] Such cooperation may take place in various forms including regional clustering, smart city networks, and smart specialization. [31] [21] [13] According to the report presented by the European Committee of the Regions, smart specialization also provides better regional economic competitiveness, larger citizens welfare and higher sustainability. [25] [12] [7] Therefore, there are reasons to consider smart specialization as a tool that could be intentionally used by local and regional governance to advance economic development and inclusivity as well as unleash unique territorial potential. It is important to define strategies that may be used by local and regional governments to derive maximum benefits from smart specialization and integrate smartification within their systemic operational frameworks.

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2. Research Findings

2.1. Defining Smart Cities

As of now, multiple definitions of smart city co-exist, so it is worth considering some widely accepted definitions referring to particular examples of European countries. The OECD views *smart cities as iniatives or approaches leveraging digitalization to boost citizen's well-being and provide more efficient, sustainable and inclusive urban services and environments as a part of the collaborative, multi-stakeholder process.* [14]

Based on this definition, the role of public authorities, in context of smartification, can be defined as follows:

- empowering extensive collaboration within/between cities as well as among private, public and individual stakeholders on local, regional and national levels;
- promoting citizen's engagement (intensifying civic participation and partnership using co-creation and co-production models, delivering citizen-focused services, creating smart collaborative platforms);
- ensuring equal public access to open data and advancing inclusivity principles;
- developing unified, integrated strategy of addressing the urbanization-caused challenges through implementing innovative digital solutions in a city governance, planning and infrastructure investment;
- documenting and researching the impacts of smart cities on community life, tracking the city performance and ensuring maximum contribution to improving a citizen's life through setting the smart indicators.

The understanding of smart city concept in particular countries has been largely determined by the peculiarities of its practical embodiment. The volatility of such reflection of smart models in a practical realm causes evolving of the core definition. For instance, the Latvian authorities view smart cities as cities that develop and implement a set of measures aimed at tackling challenges, increasing competitiveness of an area and ensuring flexible solutions. In Spain, the government stresses the holistic nature of smart cities such as enabling real-time efficient interaction between cities and citizens as well as ensuring sustainable economic, social and environmental solutions. According to the United Kingdom Department of Business, Energy and Industrial Strategy, the concept of smart cities is viewed as a constantly changing, gradually evolving process or set of flexible steps that could be used to better adjust to challenges. [14] The most successful smart cities are based on four pillars of comprehensive development-institutional, physical, social and economic modernizations. [13]

2.2. Economic and Social Impacts of Smart Cities
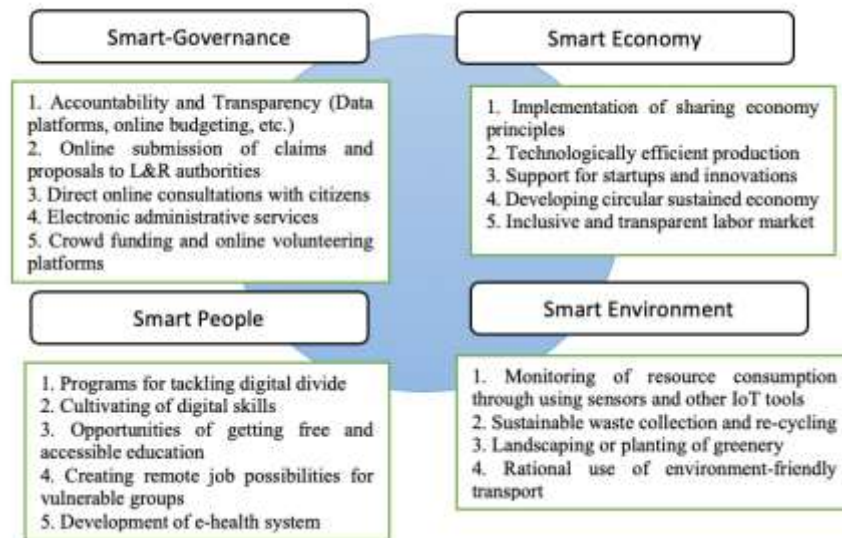
Figure 1: Smart-City Inclusive System as an interplay of essential components[2]

As presented in Figure 1., Smart City means comprehensive cooperation, in terms of four aspects such as smart government, smart people, smart environment, and smart economy. The smart economy and social well-being are targeted scopes of smartification. So, smart city concept invokes positive effects on particular areas providing social and economic well-being.

Cities function as engines of economic growth dominating local and regional economies. In fact, this idea has been invoking a lot of interest and discussions in international circles of respective institutions including World Bank (from Urban Policy and Economic Development: An Agenda for the 1990s (1991)) to more recent works), UN, European Commission, Commission on Growth and Development, the Global Commission for the Economy and Climate, etc. [31] The intensification of economic effects imposed by smart cities is expected in the nearest future. The ABI Research has predicted the smartification-caused impact on economic development and GDP growth by 2026. Smart cities are associated with more than 20$ trillion of additional economic benefits. [24] Another white paper initiated by Inter Digital points out that the following dimensions are supposed to be most impacted by smart technologies:

- Open Data Policies
- Public Investments Multiplier Effect
- Structural Urban Economy Growth.

It should be noted that open data policies are associated with a potential incremental GDP growth of about $1 trillion with no investments related to physical infrastructure. Smartification is likely to cause the public investment multiplication effect up to 10 times resulting in $10 trillion of incremental GDP increase. The 2.8% structural urban economy growth increase is viewed as triggered by innovative technologies such as artificial intelligence and blockchain. [27] These findings proved the correlation between implementation of smart city technologies and economic growth. At the same time, it is important to consider whether these predicted benefits can be operationalized and captured

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[2] Created by Author

through targeted investment in smart-cities. Both economic growth and technological drivers for economic development are identified as dependent on the city smartification.

Smart-cities create more opportunities for direct citizen's participation in social, political and economic life, so the system of local and regional governance becomes more flexible and human-oriented. Such environment leads to improved work performance and higher social stability. The implementation of digital economy is likely to minimize corruption increasing transparency. In terms of right application of smart concept, no place is likely to be left for shadow economy as it will be eradicated by digital open data and e-democracy system.

In fact, economy is gradually transformed into cognitive self-powered entities integrated in one innovative network. Smart economy provides practical tools for engaging all groups of citizens into the smart system of participation, decision-making, employment, etc. [28] Tackling digital divide of unequal access to resources, technology, education and decision-making is an essential part of achieving inclusivity. For instance, a city of Lucca in Italy, has implemented several initiatives in order to be more accessible to all. It cooperates with disabled people to test new solutions for historical towns and take practical suggestions based on real needs.

It should be noted that we suggest to understand inclusivity in two contexts. The first one is active engagement of certain groups of people into economic and social life of the community. Without special policies such people could be excluded or marginalized. The second is creating advanced social-oriented interplay environment improving the well-being of each citizen through providing extended opportunities for self-development and realization. In terms of smart cities, inclusivity does not come automatically requiring sustained efforts from interplaying stakeholders such as governments, universities, business and individual citizens. Though in theory the concept Smart 3.0 is viewed as incorporating inclusivity component in contrast to Smart 1.0 rather associated with technical innovations to make inclusivity be revealed in practice commitment of the mentioned stakeholders and Inclusivity KPIs shall be implemented.

2.3. Smart Cities and Regional Smart Specialization

The common definition of Smart Specialization is a comprehensive policy concept aimed at enhancing regional innovation through helping regions to focus on their strengths. [11] Investments in smart specialization (RIS3) are likely to have an accelerative impact on the regional economy. Smart specialization diversifies the structure of regional economy creating new profile areas that booster economic growth and provide more jobs. The bottom-up cooperation model involving local authorities, scientific circles, business, and civil society ensures comprehensiveness and inclusivity of the proposed model. Smart specialization is a relatively new concept synthesizing the theories of the division of labor and trade specialization suggested by Adam Smith [14], as well as an agglomeration and evolutionary economy [11].

In recent time, more attention is paid to the local context of smart specialization. Smart cities and smart specialization are viewed as interdependent phenomena. Regional smart specialization accelerates local smartification, while smart cities are essential components of the specialized smart networks. [23] The local and metropolitan authorities tend to comply with the regional specialization processes as well as vice versa achieve synergy-caused positive effects. [23] [15]

Figure 1a: SMART-Specialization Aspects[3]

Based on the literature analysis, as well as the practical experience of smart specialized networks, we are of the opinion that smart-specialization shall be considered as a two-level process. (Figure 3) The local smart specialization is most often embodied in the form of smart cities, and from the theoretical viewpoint, S3 is the basis for smart city model that even may coincide with it. The regional specialization (RIS3) is fostered and determined by local smart points as drivers of change. Being a region-centered economic model, RIS3 reflects the contribution of public policy to stimulating investment in R&D and innovation, developing scientific, technological and economic specialization enhancing competitiveness and productivity [18]. There are examples of how regional smartification has been intensified through local smart specialization, which have led to numerous social, political and economic benefits. For instance, the InFocus network consisting of smart cities such as Bilbao (Spain), Bielsko-Biala (Poland), Bordeaux Métropole (France), Bucharest-3rd district (Romania), Frankfurt (German), Grenoble-Alpes Métropole (France), Ostrava (Czech Republic), Plasencia (Spain), Porto (Portugal) and the Metropolitan City of Torino (Italy). [23]

In rare cases, RIS3 may occur spontaneously [3], but most often it is a result of the government's deliberate efforts to support R&D, transform production processes and create new lines of business as well as local city development [16]. The RIS3 main goals are: [9].

• stimulating the development of new activities with innovative potential;
• expanding the capacity to produce and diversify regional economies;
• the formation of key networks and clusters within a diversified system.

The key features of RIS3:

• business provides an information framework to identify opportunities and prioritize them, while a state creates favorable conditions for development of partnerships [14; 16];
• investment decisions are made irrespective of the source of their origin; preference is given to areas where existing productive assets are effectively complemented by innovative solutions [10].
• any sector or region can become a platform for promising transformation projects, as a result of modernization blurs the boundaries between traditional and new activities [11];

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[3] Created by Author based on analysis of [23], [16], [14], [13]

- RIS3 is progressive by definition, as it foresees a constant search for new directions and opportunities [8; 10];
- smart specialization implies many options for diversification [2; 8; 9];
- continuous monitoring of implementation and evaluation of RIS3 results against pre-defined criteria as a basis for policy improvement are of a great importance [14]. The process of its development should be extremely flexible, ensuring timely redistribution of state resources in favor of the most viable projects [15].

The practical cases have proved the maximization of economic, social and administrative benefits from smart specialization of both levels. For example, a Spanish Network of Smart Cities (RECI) consisting of 65 cities by the beginning of 2016 has significantly improved public performance of the councilors involved. [13] It allowed more coordinated actions in line with the national innovative policies, better allocation of resources, higher transparency, etc. The regional innovation system is driven by local development and joint policies. In Amsterdam Smart City, smart specialization is treated as a source of modernizing the governmental policies and influencing regional economic development. [1]
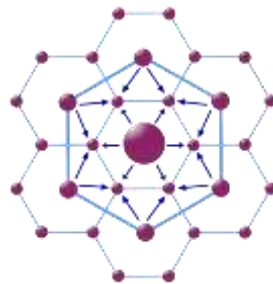
Figure 2: Chrystaller's Center-Place Theory [5]

In terms of the regional specialization, similarly to the Chrystaller's Center-Place Theory, smart cities function as attracting points of human, financial and other resources advancing the development of the whole region. The less advantaged parts of the region are becoming more developed through adjusting to level of the leading cities. Because of smart cities, the region acquires additional resources that can be allocated on the modernization of rural areas. Smart Cities are also likely to attract more tourists. Turning a region into a touristic spot also positively affects economic and social situation.

Specialization accelerates networking among cities that may even relate to different regions. Such innovative smart interregional chains may lead to rethinking the governance models prioritizing shared governance and service ecosystems. The administrative boarders are gradually blurred because of the occurrence of the interregional point-to-point smart networks. The European Commission encourages the Interregional Innovative Investment emphasizing on the role of smart specialisation. [14]. In the long-term perspective, there is an attempt to build the pan-European clusters in priority sectors including big data, circular economy, advanced manufacturing, cybersecurity, etc. So, smart areas are likely to facilitate new needs-oriented innovative stage of European integration, where the major role will be played by smart cities and smart regions.

3. Conclusions and Recommendations for Local and Regional Authorities

Promoting smart cities and smart specialization as interdependent processes is a very promising tool that could be used by the local and regional authorities to foster economic development and inclusion. The smartification of particular cities is likely to lead to further smartification of a region and vice-

versa. So, even several territorial points of local smart specialization and consisting innovation contribute to higher development of the adjacent areas and regions. The compatibility of cities and regions comes from systemic specialization on their advantages. The global urbanization processes have resulted in reshaped urban economic systems, in which cities are treated as magnets attracting resources, such as people, investments, and innovations. We do recommend to consider smart cities as triggers of forming larger regional and even interregional specialized networks providing the increased efficiency. Though investing in transforming a city or a region into smart specialized system may be costly, such measure is a promising investment providing increase in GDP, economic development and higher social inclusion.

Stages
Step 1. Analysis of regional context and innovation potential
Stage 2. Management: stimulating inclusion in the innovation process
Stage 3. Development regional joint development
Step 4. Setting priorities
Step 5. Defining a coherent integration policy, roadmaps and action plan
Step 6. Monitoring and evaluation

Figure 3: Regional Specialization Stages[4]

Though the stages of regional specialization shall be adjusted to particular needs and circumstances of an area, Figure 3 provides the overall algorithm that could be used by local and regional authorities to foster positive results. The monitoring shall take place throughout the whole period of smart city or smart region implementation.

The following scopes to be taken into account by authorities are likely to facilitate their efficiency while implementing smart solutions.

Local Level

- Ensuring open data and their accessibility
- Conducting researches on the citizen's needs, ensuring Inclusivity
- Studying factors of local environment to determine competitive advantages and directions of specialization
- Ensuring quality education to allow citizens to adjust to new market needs
- Promoting Internet of Things
- Promoting e-governance
- Systemic realization of smart city concept based on consultations and cooperation with the adjacent cities, rural areas, region, adjacent regions and national authorities, business circles and academic institutions
- Involving citizens, local businesses, educational institutions into decision-making processes
- Advancing innovations while tackling digital divide
- Preventing corruption related to smart specialization
- Initiating tests of innovative programs
- Monitoring the smart city performance to make it flexible to new arriving needs

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[4] Created by author

- Establishing special smartification teams consisting from city council members, business professionals, researchers to guide the smart transformation.
- Integrating risk management strategy into the operational strategy, preparing and preliminary testing risk plans on different scenarios in case of unexpected crisis, environmental collapses, etc. (black swans as described by Nassim Taleb)

Regional Level

- Coordinating local smart iniatives
- Determining the regional smart priorities, ensuring Inclusivity
- Studying the needs of residents of the whole region and comparing them to the needs of residents of particular consisting urban and rural areas
- Advancing IoT, digitalization, smartification to ensure steady development of all city and rural areas
- Promoting smart education
- Supporting business iniatives complying with the specialization strategies
- Encouraging interregional, national and international consultations on smart specialization to coordinate the efforts
- Establishing special smartification teams consisting from city council members, business professionals, researchers to guide the smart transformation
- Integrating risk management strategy into the operational strategy, preparing and preliminary testing risk plans on different scenarios in case of unexpected crisis, environmental collapses, etc. (black swans as described by Nassim Taleb).

Summarizing the strategies and priorities discussed, we shall also note the following important principles:

- Cooperation and coordination of efforts of the municipality with the private sector, research institutes, civil society
- Focus on the interests of residents (inclusivity, involvement, protection)
- Ensuring open data and their accessibility
- Resource management efficiency
- Adhering to common standards when designing and implementing intelligent solutions
- Ensuring the exchange of experience and knowledge at national and international levels
- Developing digital leadership and skills
- Building infrastructure and increasing the access to ICT for a wide range of people
- Creating a regional smart city platform for communication among local smart iniatives, project publication, event organizing, etc.

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THE ENVIRONMENTAL IMPACT
OF SHOPPING VIA THE INTERNET

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Abstract

Shopping via the internet is booming. High growth figures can still be expected in the future. More and more customers buy their goods online; the goods are then delivered to their home. Online customers especially love convenience. On the Internet, the large assortment is at a glance, the selection is independent of time and place, furthermore many products are cheaper. In this way, the customer can save money, save time and avoid ways to the city center. But is online shopping also climate-friendly? Climate-conscious behavior is an aspect that is currently being discussed a lot. The rapidly growing e-commerce is publicly criticized in many places for not being sustainable. Reference is made in particular to increase packaging waste, high return rates (and presumably destruction of returned goods) as well as longer distances that have to be covered for items in e-commerce on the way to the customer. Studies come to very different assessments of the environmental impact of e-commerce compared to traditional retail. This paper focuses on traffic-related environmental impacts when evaluating e-commerce.

1. Booming E-Commerce

In 2018, retail sales in Germany amounted to a total of approximately 525 billion euros. Compared to the previous year, retail sales thus grew by a total of 2.3%. Shopping via the internet accounted for 53.3 billion euros (online trade with (new) goods B2C in Germany): Compared to the previous year, online trade thus grew by 9.1%. Online trade thus remains the growth engine in the retail sector. However, traditional retail still accounts for the bulk of total sales (approx. 89%). Across all sectors, the online share of retail sales in Germany is approx. 11%. [1]

There are two reasons for the high growth rates in online trading. Firstly, more and more consumers in Germany are buying via the internet. The number of online shoppers in Germany grew by five percentage points between 2016 and 2018, from 61% to 66%. Although their online affinity is still below average, the number of online shoppers among the 60+ generation has recently risen above average. More and more older people are discovering online shopping. This group of people is very interesting for online retailers, because they have a high purchasing power (on average). Secondly, the per capita expenditure of online shoppers is rising. The customers in Germany spent around 1,360 euros per person on their online purchases in 2018. [2]

The product groups clothing, electronic goods/telecommunications as well as computers/ accessories/games/software traditionally generate the highest online sales (see table 1). Online sales of fashion & accessories reached a sales volume of 13.2 billion euros in 2018. This corresponds to a 24.9% share of total online trade (amounting to 53.3 billion euros in 2018). Online sales of consumer electronics and electrical appliances (CE/Electro) reached a trade volume of 13.0 billion euros in

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2018. This corresponds to a share of 24.3% of the total online volume. Fashion and consumer electronics thus account for roughly half of online sales. However, growth rates for fashion and consumer electronics were below average in 2018.

	turnover	proportion
Fashion & Accessoires	13.2 billion euro	24.9 %
CE/Elektro	13.0 billion euro	24.3 %
Leisure & Hobby	8.0 billion euro	14.9 %
Home & Furnishing	4.9 billion euro	9.3 %
FMCG*	4.5 billion euro	8.4 %
Do-it-yourself & Garden	2.3 billion euro	4.3 %

Table 1: Industries and share in online trade [3]
(*FMCG: Fast Moving Consumer Goods)

On the other hand, lower sales are achieved in the food, office supplies and pharmaceuticals sectors. However, these branches show quite high growth rates, especially the food sector. Online sales of food rose by almost 16 % compared to the previous year, albeit starting from a very low level.

High growth rates in e-commerce are also expected in the next years. Online shoppers especially love the convenience and the large assortment at a glance. The large selection is quickly available regardless of time and place and many products are significantly cheaper online. The customer can save money and time. But is online shopping also climate-friendly? In many places, the rapidly growing e-commerce is publicly criticized for not being sustainable. What factors play a role here? Are there any differences between the various product types? What role does the behavior of the customer play? Particular reference is made to increased packaging waste, high rates of returns of goods (and presumably the destruction of returned goods) and the long distances that have to be covered on the way to the customer.

In the literature, a central focus of the analysis of sustainability of online trade is laid on the traffic-related environmental impacts. DHL (a German parcel and letter express service) points out that every parcel sent via the delivery system of Deutsche Post causes "only" 500 grams of CO_2 emissions. Even with a shopping radius of more than 2 km, a customer would cause higher CO_2 emissions with his car [4], because the average CO_2 emission of a passenger car in Germany is 147 g/km. [5]

At first glance, Internet trade thus appears to be quite advantageous from an environmental point of view. However, scientific studies come to very different conclusions of the environmental impacts of e-commerce compared with stationary trade. For a genuine comparison, purchasing behavior, the logistical efforts of the trade and the suppliers must also be taken into account. In addition, the purchasing behavior of consumers, especially the return of ordered goods, negates a large part of the supposed advantages.

2. Returns of goods

One central selling point in online trading is the possibility of returning goods free of charge. According to § 355 BGB (Bürgerliches Gesetzbuch), consumers in Germany have the legal right of withdrawal within 14 days. Consumers can withdraw without giving reasons within two weeks and return the goods free of charge because they simply do not like them or because they do not fit. Online retailers even grant an average revocation period of 28.4 days, which is well above the legal minimum requirement. [6]

For years, there has been a discussion whether this - usually - free right of return does not tempt customers to order goods thoughtlessly and send them back carelessly. However, the retailers themselves do not want to change this, because this right of return is considered as an important sales argument. Especially in the fashion sector it is important to offer the customers the possibility to order several variants/sizes. Goods, if they do not fit or if the customers do not like them, can then be returned free of charge without any problems. Customers have got used to it. They do not want to change this practice. In order to prevent arbitrariness in the ordering and return process, return costs can be imposed on consumers since 2014. However, online merchants can continue to cover the return costs voluntarily, which is the common market standard.

Exact figures on the number of returns are not available, as many retailers are reluctant to provide information on this. The research group "Returns Management at the University of Bamberg" estimates that in Germany about 280 million parcels with about 487 million items were returned to online retailers in 2018. This is every sixth package delivered. The rate of goods sent back have hardly changed in recent years. They clearly correlate with the product groups. [6]

Shoes and clothing are returned particularly frequently, almost every second parcel is sent back (46%). Significantly less is returned in the segments of electronic equipment, media and books. For these product groups the return rate is in the low single-digit percentage range (see table 2) [7]. According to a Greenpeace survey for e-commerce, the return rate for electronic goods is 3% and 2% for furniture. [8]

The following return rates were determined for the three top-selling product categories Consumer Electronics, Fashion, Media/Books, which differ depending on the payment method. (see table 2) It is interesting to note that there is a clear correlation between the method of payment and the return rates. Orders on invoices show the highest return rates, whereas the return rate of goods is significantly lower for prepayment. In the fashion sector in particular, the majority of orders are placed on invoices, so that it can be assumed that approximately every second parcel is returned.

	Consumer Electronics	Fashion	Media/Books
Invoice	18,60%	55,65%	11,45%
E-Payment	13,68%	44,10%	8,08%
Prepayment	8,59%	30,15%	4,46%

Table 2: Rate of return depending on payment method [7]

There are significant gender differences. Studies by the University of Bamberg show that women return parcels significantly more often than men, especially in the fashion sector (see table 3). One of the main reasons for the high number of returns of goods in the fashion sector is that customers cannot see, touch, try or try on the goods in real life beforehand. Younger customers also return ordered goods significantly more frequently than older customers. Younger customers and women also tend to order clothes knowing conscious that they will send back (at least) parts of them. [8]

	Consumer Electronics	Fashion	Media/Books
Men	13,85%	40,29%	8,93%
Women	14,40%	54,27%	8,99%

Table 3: Gender-specific return rate of goods [7]

According to a representative survey of 1,054 online buyers commissioned by the digital association Bitkom, every fifth order (across all product groups) is sent back. This survey also concludes that

women and younger customers return goods more often. Women send back an above-average amount of goods with 15 percent, this is every seventh purchase. For men, the return rate is 9 %. Younger online shoppers return significantly more goods (18%) than older customers. This survey also shows that the return rates are enormously high in the fashion sector. In addition, every second online shopper (51%) states that they order goods via the Internet with the firm intention of returning them, for example to try on clothes in different sizes: 28% do so rarely, 17% sometimes and 6% even regularly. [9] The Otto Group for its part states a return rate of 27.5% for its online trading in 2014, mainly due to people not liking the product or because of wrong sizes. For comparison, the DCTI (Deutsches CleanTech Institut: one of the world's leading institutes driving the diffusion process for innovative environmental technologies) study stated an average rate of returned products of only 1.9% for stationary trading. [10]

Returns are quite expensive for the dealers. In a Greenpeace survey, retailers indicated that the average cost per return would be 10 euros. [8] The University of Bamberg states that a returned article would cost an average of 11.24 euros. The amount is made up of: 5.67 Euro transport costs + 5.57 processing costs. A returned parcel causes costs of 19.51 Euro: 9.85 Euro transport costs + 9.66 handling costs. With estimated 286 million parcels being returned each year, this results in costs of 5.5 billion euros in total which are borne by the customers due to higher market prices on the one hand and burden the margins of e-commerce merchants on the other hand. [6]

The returns are also accompanied by an enormous environmental impact. DHL states the average CO_2 emission per parcel at approx. 500 gram. Multiplied by 286 million parcels returned, this results in an emission of 143,000 tons of CO_2. If, in addition to the return transport, the associated processes are also taken into account, the University of Bamberg calculates an environmental impact of 238,000 tons of CO_2 equivalents (CO_2e). [6] With average CO_2 emissions of a car (147 g/km) in Germany, this corresponds to the total greenhouse gas effects of 1.619 billion km travelled by car.

Unfortunately the author has no information about the mileage of an average package. However, the environmental costs can be calculated indirectly. The Umweltbundesamt (Federal Environmental Agency) in Germany has calculated the environmental costs (greenhouse gases and air pollution) per passenger kilometer for various types of vehicles in Germany. Table 4 shows the average environmental costs (greenhouse gases and air pollutants) per passenger kilometer calculated in this way (over all routes). [11]

automobile	petrol	€-Cent/km:	4.30
automobile	diesel	€-Cent/km:	5.05
automobile	electric	€-Cent/km:	4.09

Table 4: Environmental costs per person-kilometer for different vehicle types in Germany in € cent 2016 / per km

For example, one km with a petrol driven car causes environmental costs of 4.3 cents. At 1.619 billion km, the total environmental costs would amount to 69.6 million euros. An electric car causes slightly lower environmental costs (66.2 million euros). Although an electric car causes only relatively low ongoing environmental costs in operation but it causes quite high environmental costs in production. At 81.8 million euros, the environmental costs of a diesel are significantly higher.

The Pro-Rail Alliance has commissioned a study on the external costs of transport in Germany. The term "external costs of transport" refers to those costs that are caused by the mobility participants but not borne by them themselves. This study determines the external environmental, accident and health

effects of transport in Germany for the year 2017. The following costs were considered in the study: Climate, health and non-health damage caused by air pollution, accidents, noise, nature and landscape and upstream and downstream processes. Calculations include the costs of road transport (passenger cars). The following cost rates for passenger cars per person-kilometer of external costs were determined: [12]

Climate	1.73
Air pollutants	0.59
Accidents	5,08
Noise	0.35
Nature and landscape	0,92
Upstream and downstream processes	2.13
Total external costs	10.80

Table 5: External costs of passenger transport: Euro cents per car

The figure of 1.619 billion km times 0.108 euros, this corresponds to almost 174.9 million euros of external costs. It should be noted that a large part of the external costs in this calculation is due to accidents.

Apart from the handling of returns in e-commerce, however, it remains unclear how the handling of returns in stationary trade looks like in comparison. However, it can be seen that returns are much more common in e-commerce than in stationary trade. For example, the return rate at the online shoe shop Zalando is estimated at 50% [13]. In addition, both stationary trade and e-commerce may generate surpluses (e.g. unsold seasonal goods), for which no precise data is available. In stationary retailing the quota of exchanged goods is much lower compared to online retailing, because customers there can see, touch and, in the case of clothing, try on the goods. The main reasons for shopping in the stationary retail trade are characterized by the fact that the customer can see and try on the goods immediately, i.e. on the one hand he can check the quality directly and on the other hand he can take the purchased goods directly home. Another central aspect is personal advice, which is important for a lot of persons.

3. Destruction of returned goods

In addition to the environmental impact of returns in e-commerce through transport and packaging, the destruction of returned goods is subject of criticism in the media. In a ZDF magazine employees of Amazon were quoted as criticizing the systematic destruction of functioning goods as well as new goods such as mobile phones, trays, beamers, lawnmowers, fully automatic coffee machines or refrigerators. In many cases, the destruction is cheaper than storage. Exact figures on the destruction of returns in e-commerce (or in comparison with stationary trade) are unfortunately not available. Contrary to the usual reluctance of retailers, Zalando cites a returns destruction rate of only 0.05%. [13] However, the author considers this figure to be too low.

A recent study by Greenpeace refers to a non-public survey by the market research firm EHI Retail Institute among "105 well-known online retailers in the German-speaking area with total sales of 10.6 billion". In this survey, online retailers reported that on average 70% of returned goods went back to regular sales. The remainder would be resold at a reduced price, mostly to secondary sales outlets, occasionally donated and sometimes even destroyed. The reasons cited for this are that sorting, checking, possibly reprocessing and repackaging are too labor-intensive and therefore often not economically viable. [8] The University of Bamberg has also carried out research on the destruction

of returns. They estimate significantly lower destruction rates of goods compared to the disposal values stated in the media. [14]

According to the University of Bamberg, on average a return is recycled as follows:

o   Direct resale as A-goods (79.0 %)
o   Resale as B goods (13,0 %)
o   Sale to external industrial recyclers (2.1%)
o   Donations to charitable organizations (0.9 %)
o   Disposal/scrapping (3.9 %)
o   Other (1,1 %)

So 3.9 percent of returns in online trade were destroyed in 2018. That is about 20 million items. It is estimated that 7.5 million of these articles had no defects. This corresponds to 40% of the returned goods.

4. Some studies

There are currently a number of studies dealing with the environmental impact of online trade. A German study "Climate-friendly shopping - a comparative view of online and stationary retail" was presented by the German CleanTech Institute in 2015. The conclusion is that the (negative) environmental impacts of e-commerce are lower than the (negative) environmental impacts of stationary retail. This study was supported by the Otto Group as well as by the logistics company Hermes, both providing data. The environmental impacts were examined on the basis of CO_2 emissions. The study examines the transport emissions of a product from the dealer to the customer (and back if necessary). As a result of this study, it was found out that, despite possible high return rates in terms of CO_2 emissions, purchases in e-commerce tend to be more environmentally friendly than purchases in stationary trade with regard to transport routes. The decisive factors for the CO_2 balance of e-commerce compared to stationary trade are the choice of the means of transport, the length of the distance covered by the consumers and the frequency of purchases. For the environmental balance, the trips to the stationary business are more crucial than the delivery of the packages home. [15] According to the study, when shopping "traditional", the car is the most frequently chosen means of transport at 62%, followed by walking or cycling (18%) and public transport (11%). On average, respondents travel 13.4 km by car (total outward and return journey). [15] For a total distance of 13.4 km of private transport (13.4 km * 147 g CO_2), this means that just under 2 kg of CO_2 is generated. The calculation of the DCTI also took into account that not all shipments can be delivered at the first attempt. According to the Otto Group, the average delivery rate at the first attempt is allegedly around 96%, at the second attempt around 3% of parcels are delivered, 0.4% at the third attempt and 0.1% only at the fourth attempt. If the recipient is then not found, the parcels are returned. At the Otto Group this applies to 0.5% of parcels.

According to this study, online purchases could be less harmful to the climate despite the relatively high return rates in some cases. This is particularly true if customers live in rural areas and have to travel long distances to their preferred stationary retailers. Delivery by parcel services to the customer's home could be made more climate-friendly by pooling the consignments in comparison to the situation if each customer drive into town individually by car to a stationary retailer. Private procurement trips would thus become increasingly unnecessary through e-commerce, which would reduce the total number of kilometers travelled and their energy consumption.

The Öko-Institut (an independent research and consulting institutions for a sustainable future in Freiburg, Germany) also comes to the conclusion that e-commerce could have environmental benefits. Using a single shipment as an example, the Institute compared the greenhouse gas balances. The costs of the various journeys, storage costs and energy costs in the stationary shop were taken into account. They were compared with the costs of online ordering (with and without returns). For online purchases, the effects were compared for three travel options (bicycle, public transport, car). [17] [18]

For example, an online purchase of a package in a large city:

Online order without return: 660 g CO2
Online order with return: 1,030 g CO2
Purchase from local dealer by bicycle: 1,270 g CO2
Purchase from local dealer: by public transport: 1,710 g CO2
Purchase from local dealer by car: 3,270 g CO2

The calculation emphasizes that in e-commerce, especially the compact storage per product unit has a considerable influence on energy consumption, even when returns are taken into account. In large logistics warehouses, less electricity and heating would normally be required compared to stocking the goods in a shop. Shipping by mail is also often more climate-friendly than, for example, driving to the retailer by car. It should be noted that this survey was not published in the form of a comprehensive study, but only as a graph with reference to a short article on the Institute's homepage.

A recent Austrian study examined environmental pollution and resource consumption as possible effects of the increasing use of online commerce by the inhabitants of the city of Vienna. The study looked at traffic-related environmental effects of e-commerce, but did not consider other emissions from, for example, ordering processes or exhibition space. In the analyzed year 2013, e-commerce would cause additional emissions of more than 2,000 tons of CO2 per year - compared to pure stationary trade. In essence, the study, which focuses on the transport-related environmental impacts of e-commerce, shows additional emissions and thus negative environmental impacts in all scenario considered. Pfaffenbichler concludes that the balance of environmental impacts of e-commerce in Vienna is very likely to be negative overall. Only in the peripheral districts of Vienna, with a relatively high share of cars in shopping traffic, positive environmental effects are possible. According to Pfaffenbichler, it is hardly possible to make generally valid statements about the environmental effects of e-commerce compared to stationary trade beyond the case of Vienna. These depend very much on individual purchasing behavior and local conditions. In densely populated areas with a low proportion of cars in shopping traffic, the environmental effects are very likely to be negative. In less densely populated regions with a high proportion of cars, however, the environmental impact can be positive. This is mainly due to the fact that doorstep delivery can be carried out in a more climate-friendly way by pooling the consignments than an individual journey to the city by car. Particularly in rural areas, customers often have to travel long distances to their preferred place of purchase. [19] [20]

A similar study, which examines the effects of e-commerce on the transport system with a view to whole Austria, was presented by Lengauer (2015). The results show a similarly environmentally harmful trend in the volume of traffic (CO2, NOx and particulate matter) caused by e-commerce compared to stationary trade. [21]

Whether the environmental impacts are positive or negative depends on the purchasing behavior of the customers. The abundance of suppliers of products that can be found online (and in some cases far away) can also induce customers to visit the respective shops in person, which does not necessarily have to be linked to a purchase. Often, customers inform themselves at the stationary retail trade (which means additional distances), but buy online because it is cheaper there. In these cases, additional and in some cases significantly longer shopping distances arise in total with ecological damages. On the other hand, however, the information offered by the internet in particular can eliminate a large number of routes. Survey results show, for example, that about half of the people who obtain information about products online would otherwise have gone to a stationary shop to obtain this information. The Internet enables the targeted search for available products and their prices and can replace unnecessary search and comparison paths from shop to shop. [22]

5. Conclusion

Online trade is booming. One aspect that has come into focus in recent years is the question of the environmental impact. Decisive factors for the CO_2 balance of e-commerce compared to stationary trade are the choice of the means of transport, the length of the distance covered by consumers to the place of purchase and the frequency of purchases.

Some studies have attempted to classify online trade in terms of its environmental effects. The focus here has been placed primarily on traffic pollution. Some earlier researches came to the conclusion that online trading can reduce the burden on the environment. More recent studies show that the environmental effects of e-commerce are likely to be negative in the majority of scenarios. In some scenarios however, the environmental impacts may also be positive compared with stationary trade, this is particularly true for rural areas. The spatial context plays a decisive role. Under certain conditions in rural areas, transport companies can carry out their loads and routes more efficiently and in a more environmentally friendly manner than private buyers. The traffic streams of nearby households could be bundled more efficiently, thus reducing the volume of transport. A condition for such bundling, however, is that a critical mass of local consumers can be supplied at the same time by the same company or logistics service provider. The volume of traffic generated by transports depends largely on the degree of bundling. Only once a critical mass of customers and shipments has been reached in an area, the logistical processes of online trading can be handled so efficiently that the positive environmental effects outweigh the negative ones. It is doubtful whether this always works so optimally.

Possible positive environmental effects are often cancelled out by the customers themselves, however. Customers love convenience and they very often use the opportunity to return goods if they are not satisfied. In addition, there is a trend towards more individualized deliveries in ever shorter delivery times and at times when customers want them. These cause a higher logistical effort. As a result, suppliers are far from being as economical on the road as they could be. These "prime-services" cause particularly high logistical efforts and have particularly negative effects on the environmental balance. Appeals to customers should be used to try buying without prime services. However, the author is skeptical that a "mere enlightenment" could have great success.

In order to reduce waste and to protect the climate, a legally prescribed return fee should be introduced. Only 15% of online retailers charge return shipping fees. These are mainly smaller dealers. The majority of small retailers would like to cancel postage-free returns, but fear competitive disadvantages compared to big companies. However, with a statutory minimum fee and same rules for small and big retailers could significantly reduce the number of returns of goods. It must be

ensured that the customer pays the return fee really and not the company. The state must control this. The prices could fall, as retailers take the cost of returns into account. This would be an advantage for those customers who buy carefully and do not deliberately think about sending goods back.

Furthermore, a large proportion of returns of goods, especially for clothes could be avoided by providing size information that is binding for all clothing manufacturers and a functioning online size advice service. Changing this would, however, mainly be up to the manufacturers. Mobile phone cameras for body measurement, data analysis and artificial intelligence could also make many returns superfluous in future when advising on size.

Online retailers in Germany disposed of 7.5 million returned items in 2018, although they could have donated or recycled them. Returned products that can no longer be sold should be given away, for example through social department stores. Throwing article away that are still good should be prohibited by law. However, this is difficult to control. Companies could always claim to have only disposed of items that were defective.

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PARTNERSHIP AND GOVERNANCE FOR SMART CITIES

Catalin Vrabie[1]

Abstract

Many smart city publications talk of a need for new models of partnership working: public–private partnerships that create a shared vision for the smart city, bringing together leaders from city government, national government, health services, universities, business, social enterprises and the community sector. But as it is already known, crucial to the acceptance and success of smart cities is the involvement of citizens. Cities in which citizens take a central role are creating public–private–people partnerships.

There's no clear beginning or end to the process of becoming smart: the road to smart cities is a transition process that can take 10, 15 or even 20 years. Today's decisions on city infrastructures and services will have consequences for the future generations who live in the city. There needs to be a huge cultural shift away from working in silos and towards integration across organizations, cities and countries. Smart city partnerships need to bring people together but they also need to be a vehicle that commissions and manages smart infrastructure and technology, dealing with issues such as finance, privacy and security.

This paper will discuss about this issue providing examples of success stories found in Europe and across the world.

1. Introduction and context

At a European level the European Commission has established the European Innovation Partnership on Smart Cities and Communities (EIP-SCC), which brings together cities, industries, SMEs, investors, researchers and other smart city actors to improve urban life through more sustainable, integrated solutions [10], [13]. The platform is able to help partnerships initiatives to:

- Find the latest news, events and documents related to innovation in Smart Cities;
- Find information on many existing EU funding sources;
- Launch debates on a specific issue, initiative or practice;
- Share information, documents and links to enhance the visibility of specific events;
- Find interesting completed or ongoing smart cities projects;
- Get in touch with potential partners or peers who work on the same subject.

By putting resources together, a partnership is looking to cofound projects, to help organise existing initiatives at the metropolitan level in order to overcome the bottlenecks that might slowdown or disrupt a specific process.

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However, cities are embracing different formulas of smart city partnership. Some are choosing for an informal partnership where actors sit together and share experiences, work on ideas development and look for financial backing; this is mostly common for cities that started developing a smart city initiative with a bit of a delay comparing with those in the pole position. Some others consider adopting a more formal model. Cities like Amsterdam, Lyon, Genoa, Copenhagen, Hamburg and Vienna showed their intention by signing a Memorandum of Understanding that is conducted by the city administration and is mutually signed by companies that enrol in the city life. The cities learn from each other, also projects can be scaled up to other cities [24].

As smart city programs are becoming larger and their numbers are increasing, city administrations need to consider more formal model structures for their smart city partnerships, models that reflect the requirements, as well as aims, of all the actors. A good administration structure needs to be built on the objectives of a partnership and to allow it to be managed in a transparent and accountable way [23]. It is also necessarily to tackle issues like who are the decision makers, how they are accountable and to whom [22]. It will also be important to acknowledge where the finance has come from and who controls it, as well as any other form of capital or intellectual property [8]. The legal framework is also important – here it must be taking into consideration the differences that exist in the legal systems around the world and to be understood that it is impossible for one model to fit all needs [12]. Nevertheless, an important aspect to look at is the link with the latest technology; Industry 4.0 involves huge productivity gains in the manufacturing industry and there is no doubt that similar benefits may be reaped by public administration, particularly on the municipal level [21].

2. Partnerships and their place on a smart city strategy

A strategy sets the main direction to be followed by a smart city initiative; a course of action that heads towards the aims and objectives [16]. It might also contain a roadmap in which actions are positioned along a timeline [20].

Some cities start creating a smart city strategy and/or roadmap when they initiate their smart city work, (e.g. Bucharest) [5]. Others are focusing first on building innovative projects and after they get enough experience with it, they start develop a strategy or roadmap (e.g. Dubai) [25].

The Smart City concept is not new. It gained most of its volume in today's researches due to the wider sustainability and technology initiatives and to the approaches that involves inserting smart city actions into existing city development strategies. The term 'digital plan' or 'digitalization plan', as is most commonly used in Romania, is sometimes used in place of 'strategy' or 'roadmap'. Often, smart city tactical actions might be integrated into a wider city development plan.

In the specific case of a city, the main value of a strategy is in bringing together all the actors to create a common vision. They will commonly consider where a city is today and its aims for the future, and by that, they will build up plans to get there finding the proper investments areas and prioritize them [15]. It is also important to take into consideration that as soon as a strategy is written it will go outdated because cities and technology are changing at a very fast rate. But if it is flexible it can provide a useful framework for measuring and reviewing a city's progression towards becoming smart(er) [15]. Having a strategy in place, along with a good leadership, can also maximize its potential and help design different kinds of funding and form of investment.

How does a city determine where to start? The administration must carefully consider what it wants to achieve by looking at the challenges and opportunities of the city and its citizens, and what the city's strengths are. All of these should be used to create the smart city vision and guiding principles.

It's also important for all the actors engaged in to process to see and understand what a city has already: for example, existing partnerships and programs on which a smart city initiative would be build. A smart city partnership might obtain this by engaging a broad range of actors and stakeholders. Political leadership is important, but equally important is the involvement of citizens and business in shaping the future direction of their city [14].

It might be also important to have a timetable for city initiatives in order to ensure these are properly done and a timescale to measure them. What is it known in the literature as key performance indicators (KPIs) allow progress and success of the city strategy by being easily tracked, review and reported [28].

One of the biggest challenges in creating a strategy or roadmap is not to focus on setting up clear actions early on [27] due to the high risk of limiting creativity, innovation and enterprise. Cites demands and the technologies made to fulfill them are constantly evolving. Expert smart city strategist Ger Baron, who was deeply involved in establishing Amsterdam Smart City (being now Amsterdam's chief technology officer), made the observation that 'the concept of smart cities is like art: the context is more important than the product' [11]. He has some concerns about the idea of building up a roadmap and believes that while an instrument to measure progress is needed, this should not be the same type of a roadmap used by private sector who is focused on financial gains and not on public interest. Amsterdam has focused on creating a platform on which all actors involved can work together on innovative projects, bringing together innovators and investors.

2.1. Amsterdam Smart City

The city of Amsterdam – the capital city of The Nederland, built up a dedicated platform for innovation aiming to bring together proactive citizens, innovative companies, knowledge institutions and public authorities to shape the city of the future.

Figure 1: Amsterdam Smart City Web platform [2]

The idea behind consists on establishing public-private partnerships among national and international actors [2]. By the end of 2019, the platform managed to bring at the same table more than 7000 innovators (users as individuals and companies or institutions) connecting everyone with energy and ambitions to improve the livability in urban areas. The platforms help communities to connect and share expertise and strengthens new projects that make the region futureproof.

By the moment of the research conducted for the present article, the platform successfully published a number of 299 projects divided into six categories such as: Digital city, Energy, Mobility, Circular City, Governance & Education and Cities & Living. The most voted projects are getting attention and by that partners might get involved either financially or by other means (i.e. human resources, voluntaries, expertise in different areas etc.).

2.2. Birmingham Smart City

Birmingham City Council published in 2010 its Core Strategy 2026 integrating the Smart City Vision statement. Soon after that the Birmingham Smart City Roadmap has been developed – for doing this a group of city stakeholders were involved. The roadmap describes an initial range of activities and sets up actions that are designed to influence the city's approach in creating a sustainable living environment. It identifies threats like unemployment, skills gap and/or digital divide, different form of inequalities, and sets up targets like effective mobility and carbon reduction. All those are grouped into three main areas: technology and place, people and economy. The actions are being tackled in collaboration with both private and public sector.
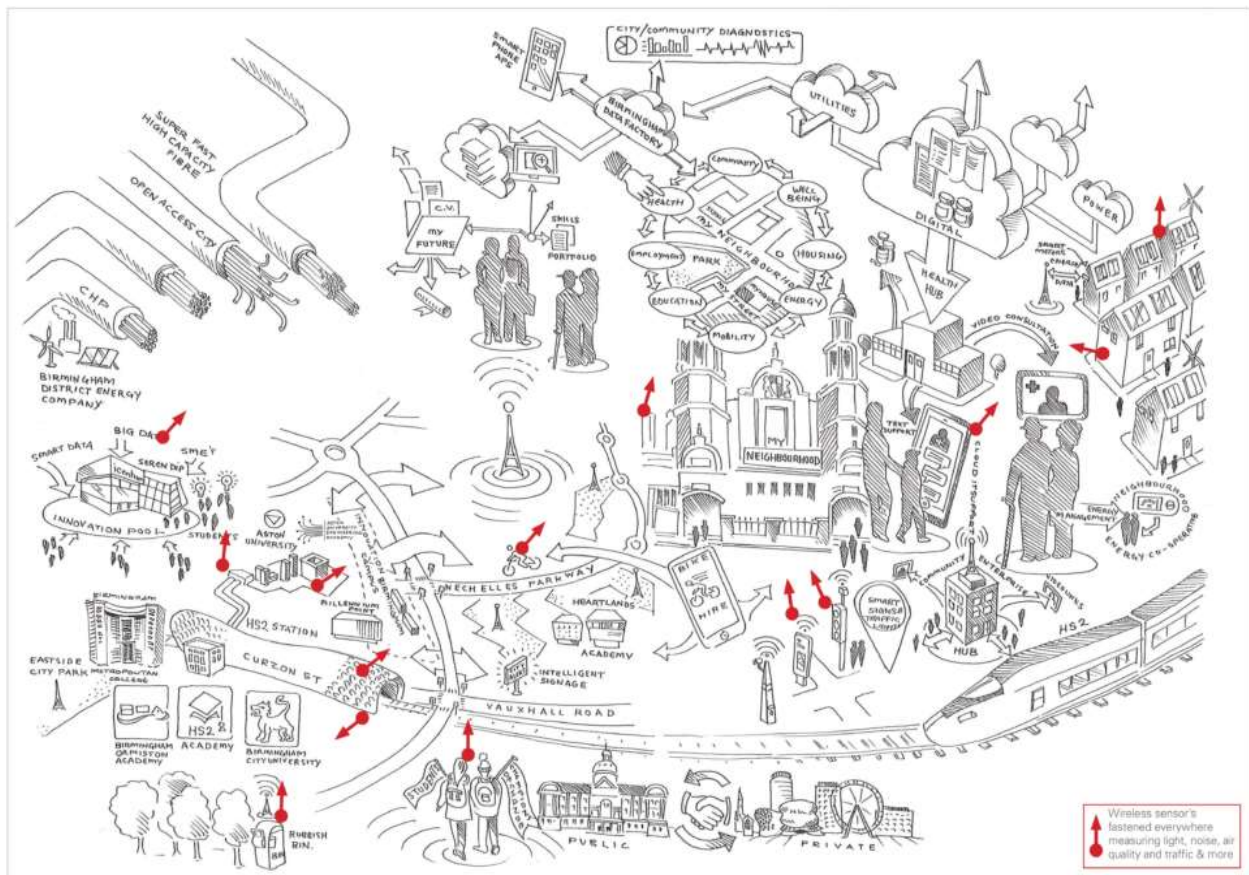

Figure 2: Birmingham Fast Forward 2026 [6]

As an important tool, there is also a Birmingham Smart City blog, which is run by the community as a place to share ideas and developments for making Birmingham a smarter city [6].

2.3. Chicago Smart City

As far as 2013, the city of Chicago in United States of America published `The Chicago Technology Plan`, highlighting 28 initiatives on five broad areas that are set up to fuel opportunity, inclusion, engagement and innovation in order to empower Chicago to realize its vision of becoming the city where `technology is driven by the people who use and benefit from it` [7]. The plan's stated main purpose is to enable Chicago's residents and businesses to be digitally-connected and by that the technology to contribute to enriching the quality of life, employment opportunities and business growth in the city. The officials are actively engaged in the following trendlines:

•	Cutting costs/improving taxpayer and government finances;
•	Improving the type of services/information provided by the City;
•	Bringing Chicago's citizens together to solve issues through innovation;
•	Providing access to the Internet, computers, software, and support;
•	Developing computer skills and a level of comfort in becoming digitally active;
•	Creating new jobs;
•	Attracting/retaining Science, Technology, Engineering, Math professionals.

However, a city doesn't become smart based on just the reach of its broadband network or the detail of its data sets, but by empowering citizens to work together, to pursue opportunities, and to make the city a better place to live and work – that's what makes a city smart. Five years later than `The Chicago Technology Plan` was publicly released, Chicago reached the top three on the `most sociable and friendly cities in the world` ranking according to Business Insider [3].

2.4. Dubai Smart City

The Dubai Plan 2021 describes the future of Dubai through holistic and complementary perspectives, starting with the people and the society. It has six main areas of development, each of them highlighting a group of strategic aims for the city. For example, one theme, 'The experience: the preferred place to live, work & visit', focuses on high-quality experiences that Dubai provides to its residents and visitors as being one of the most critical advantages the city has to offer. This theme focuses on improving Dubai's livability by building on and improving this experience. It addresses the need to provide the best educational, health, and housing services to all residents, while availing a rich cultural experience and entertainment options such as parks, beaches, and sports facilities that cater to local residents and attracts tourists, in the safest and most secure environment possible [25].

Now, at the beginning of 2020 and by that mostly on the edge of the Dubai Plan 2021, researches made on the city are not arguing about its success. According to Mastercard [17], Dubai is one of the world's most visited cities with about 16 million tourists yearly. According to the same article, each visitor is spending about four nights in the city and around 550 USD per day. To compare, Paris – as being a well-known routinely tourist destination for decades, with no further citing needed, however, according to the same source, attracts around 20 million tourists that are spending on average three nights inside the city and a total amount of money equal to 300 USD per day.

Figure 3: 2021 Dubai Plan [25]

2.5. Iasi Smart City

A Romanian example worth mentioning is that of the city of Iași, which was selected by the European Commission at the beginning of 2018, through The Digital Cities Challenge program, to be given high level advice and support by both local and international experts in order to help develop and implement strategic plans for economic growth and social welfare [9]. The dialogue with other city officials in Europe that have been involved in the transition process to become smart, together with the access to a whole network of European partners who can provide assistance and advice, helped developing a strategy and, based on it, an action plan to digital transform the city. Those are just a few of the benefits of such partnership programs.

If ten years ago the city of Iași was not to be found on any rankings on smart cities, at the end of 2019 the city proudly participated at the Digital Cities Challenge, wining the Best Smart City Project of the Year 2019 at Smart City Industry Awards [4]. Also, Iași holds the presidency of the Open & Agile Smart Cities Romania – all those because of the partnerships that he managed to be part of.

3. Smart leadership

According to the literature, the biggest barrier in implementing IT solutions at the municipal level is management failure [29], [19], [26]. A British initiative called CITIE (City Initiatives for Technology, Innovation and Entrepreneurship) raised up as a product of a partnership between Nesta – an innovation charity with a mission to help people and organisations bring great ideas to life, Accenture – a leading global professional services company, providing a broad range of services and solutions in strategy, consulting, digital, technology and operations, and the Future Cities Catapult – a consortium between universities and city leaders in UK, in order to support city managers to 'develop

policy to catalyse innovation and entrepreneurship' [1]. It is, in fact, an idea to smart up the city managers.

On the CITIE's website there are a lot of ideas of partnership's use – some as described above. The aim of CITIE is to bring these together and analyse them in a systematic way. By that, the team observed an increased focus of policy instruments that were emerging from a growing number of cities to support their innovation and entrepreneurship ecosystems.

CITIE focuses exclusively on the policy levers that city government leaders have at their disposal, equipping city leaders with a guide to support innovation and entrepreneurship. Policy levers are measures that change the behaviour of individuals or groups [18].

The principal components of CITIE are as follows:

1.   a framework for assessing how well policy supports innovation and entrepreneurship;
2.   a diagnostic tool to help cities assess how they compare to their peers;
3.   a package of case studies containing global best practice across the nine policy areas.

The framework identifies three key areas in which a city can support innovation and entrepreneurship.

1.   Openness: how open is the city to new ideas and businesses?
2.   Infrastructure: how does the city optimise its infrastructure for high-growth businesses?
3.   Leadership: how does the city build innovation into its own activities?

Within each of these areas it identifies roles a city can play, with city case studies.

For example, focusing on the topic of 'Openness' a city can promote itself and its small business community to the outer world. Smart city start-ups need to invest a great deal of time, energy and resources in building their reputation and networks. This is an area where city leaders have precisely the kind of reach and convening power that small businesses need, so by working in partnerships they can support innovation and entrepreneurship. Berlin provides extensive support for start-up companies to test out the city, allowing them to get established, operate and expand in the city at minimal cost [18].

In 'Leadership' a city can be a strategist. This is where the city sets a clear direction and builds the internal capabilities required to support innovation. The Smart London Plan, for example, was published by the Smart London Board to set out the role of digital technology in helping to address key city challenges such as rapid population growth and to improve Londoners' lives [18].

4. Romanian insights

During the last three years, Romanian cities are building their own strategies for smart development. Bucharest, despite the fact that it is the capital city, is not leading the initiatives; however, is trying to reach up by paying a close attention to working motels across the world in order to adapt them on its benefit. The author of this paper is often a member of the working groups that meant to build up `strategies on digitalization` or `development` as they are to be found in the city halls agenda.

The members of such working group need to interview the city officials – in order to understand the framework and the resources needed for development, as well as the civil society to collect its views (or sometimes ideas) on the proposed mainlines.

A dedicated chapter on the partnership and leadership is to be found on the final document which is usually entitled: `The strategy for sustainable development`.

All of the ideas and examples above were presented to officials of Bucharest districts – the Romanian capital is divided in six districts, asking them to deliver their views on the past, or existing, partnerships. During the interviews we extract the following as being the main operational issues to be considered in a partnership agreement between a town hall and some other entities (such as: private companies, other public institution, academia, civil society):

1. Degree of commitment;
   Most of the municipality's officials consider important how much work each partner is to do in a specific project. Often, public institutions (i.e. town hall) get involved only financially and in situations like this one they do not want to be required to take part in the daily running of the project. Also, they might want to get involved partially or only to supervise the implementation. An agreement should set out the degree of commitment of each partner. For a full-time working partner – usually a private company but sometimes a university or a consortium, this may be expressed as devoting its whole time and attention to the project.

2. Leadership Hierarchy;
   All officials agreed that it is mandatory to maintain a clear-cut leadership hierarchy in order to be effective and efficient. However, this does not mean that the rest of the partners do not have a say in the project, but there is a strong need that one clearly defined leader exists. Same goes for the financial hierarchy and who will be responsible for fiscal requirements the project must meet.

3. Decision-making;
   Unless otherwise agreed, all partnership decisions should be made on a majority basis by one partner one vote. However, if it is a decision on changing the nature of the project or the involvement of a new partner, then every partner must agree. Therefore, it might well be that this is not what partners in a particular project want. For example, it may be a good idea to state that certain decisions can be made by one partner alone – the project coordinator (usually the town hall), while some other decisions might require a majority vote, or the consent of all the partners. In any case all those scenarios should be clearly stated from the very beginning.

4. Liability;
   partners are jointly responsible for all the commitments, debts and obligations of the project, including loss and/or extra charges, damages arising from wrongful acts or omissions of their fellow partners and potential liability to third parties.

5. Flexibility;
   the partnership structure should be flexible, with full freedom to agree on how the project should be managed and financed.

5. Summary and conclusions

The style of a smart city project development and/or implementation depends on the priorities and aspirations of whoever leads the work, as shown in the case studies presented in the present article.

Currently it is still common for city government to manage smart city programmes and tender projects when they need other parties to deliver aspects of the programme. In this case a memorandum of understanding should be used. However, in the future, some other approaches might appear.

Usually, the municipalities officials are convinced that the changes necessary for the city to move forward can only be achieved through collaboration. Pooling brainpower, skills and networks will facilitate creating better streets, neighbourhoods and cities, and address the most important transitions we're facing today.

If we are to take, as a final example, the city of Amsterdam, its partners are governments, knowledge institutions, companies and foundations. ln the smart city program they build up they are focusing on four societal transitions: Energy, Digital City, Circular City and Mobility. The idea was copied by the second large city in Romania – Cluj-Napoca, who managed to acquire a well-deserved place in the smart cities ranks in Romania being, arguably, the smartest city in the country – and this was done by multiple partnership agreements.

6. Acknowledgements

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eGovernment I

THINKING GERMAN IT CONSOLIDATION TO THE END - AN APPROACH TO USER TRAINING IN THE CONTEXT OF IT CONSOLIDATION

Carolin Hilgers[1]

Abstract

The consolidation and centralization of the IT landscape and software is meant to gain synergy effects and cost savings. Uniform processes and IT procedures within a corporate group or administrative department prevent redundant data storage, ensure uniform data maintenance and facilitate the evaluation of this data, assist cooperation and increase transparency.

In literature, various success factors are discussed in this context. These studies all focus on the changeover process, but not on the subsequent productive operations of the IT procedures. Accordingly, the published concepts of IT consolidation in Germany, for example, contain exactly this and end at the rollout of the various projects.

But, a structured user training is essential for the long term conservation of the advantages of uniform IT procedures mentioned above. Therefore, a consolidation of the IT procedures requires also a consolidation and structuring of the associated trainings. This paper discusses the necessity of structured and continuous training programs in the context of IT consolidation. It arranges the basic characteristics of those programs und derives the requirements for systems and trainings environments to operate them.

1. Introduction

With "IT Strategy 2017-2021", the German federal administration has defined and specified binding interdepartmental goals and fields of action for the further development of the entire IT of the federal administration [8]. These goals and fields of action will be mainly implemented in the major project *IT-Konsolidierung Bund* (*Federal IT Consolidation*) and the associated measures from the Federal IT Framework Planning under the control of the Federal IT Council [4]. *Federal IT consolidation* relates to the direct federal administration and follows three lines: consolidating operations, centralizing procurement, and consolidating services.

Operational consolidation means streamlining of the IT service providers' landscape. In the future, the 96 federally owned computer centres (as of 2013) will be bundled into a service network of four IT service providers in order to successively take over the entire operation and development of basic and cross-sectional services. The IT service providers are to provide the IT services centrally as a "full service" [4].

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Within the framework of procurement bundling, the procurement of hardware and software is to be concentrated in a few IT procurement offices in order to achieve a qualitative improvement in procurement [4].

The service consolidation refers to the application level. The existing range of cross-sectional, basic and infrastructure services is to be harmonized and, as far as possible, consolidated, optimized and, if necessary, expanded at one of the four IT service providers. This is to avoid double and multiple developments of IT systems with the same functional scope. The rough concept explicitly specifies some important IT applications that are to be used by all federal authorities "within the next few years". Examples include the creation of a federal cloud, the development and introduction of a basic service E-File and the consolidation of personnel administration systems [4].

The strategic management of the *Federal IT Consolidation* is subject to the CIO Council. The Federal Ministry of the Interior, Building and Community (FMI) is responsible for entire project management. The finalisation of the service consolidation, which also represents the finalisation of the entire project, is scheduled for December 2025 [4].

2. Background

When taking a closer look at the project design of *Federal IT Consolidation*, a few points stand out. From an organisational point of view, it is remarkable that the six sub-projects are each the responsibility of a different department and that none of the four future IT service providers is subordinate to the FMI [4]. The federal ministries are generally obliged to cooperate. In the event of differences of opinion, however, the lead ministry may not make any generally binding decisions that require the agreement of other ministries (Common Rules of Procedure of the Federal Ministries, paragraph 19 (2)). FMI, as the overall project manager, and the respective ministries responsible for the sub-projects therefore do not have the power to make decisions on their own responsibility for the entire federal administration. If the FMI's lack of control over the four future IT service providers is also taken into account, there is a significant project risk. The Bundesrechnunghof (BRH), the German supreme audit institution, criticized the structure of the *Federal IT Consolidation* already at the beginning of the project and called for clear regulations [5]. "For a successful *Federal IT Consolidation*, the federal government must design the dialogue between the departments and the decision-making processes effective and efficient." [7] However, no substantial changes to the rough concept are identifiable. The BRH has repeatedly criticised the control of the economic efficiency and the financing of the large-scale project, for example in [5] and [6].

A closer look at the consolidation of services also reveals some aspects. First, there are organizational problems. Service consolidation is being implemented under the leadership of the FMI in sub-project 6 "Joint IT of the Federal Government". This sub-project is responsible for identifying IT requirements that can be clustered and for framework planning. The Federal Information Technology Centre (ITZBund) will carry out the implementation, i.e. the development and operation of infrastructure, basic and cross-sectional services, if appropriate in cooperation with (one of) the other service providers of the service network [4]. The ITZBund is subordinate to the Federal Ministry of Finance (FMF), so that FMI has no direct authority to issue instructions to the ITZBund. Conflicts seem to be inevitable. The consolidation of the personnel management systems will serve as an example. In the future, the personnel administration system of the FMF is to be used throughout the entire direct federal administration [15]. The project group at the FMI carries out the planning and control of this task. The individual federal authorities of the various departments carry out the implementation of the individual projects. Moreover, the ITZBund will be responsible for operation

including user support. The FMF is responsible for the content of the procedure. It is unlikely to assume that the two major ministries will be lenient towards each other.

It is also striking that the available concepts only refer to the changeover process. From kick-off to rollout, all functional, technical and change management issues are considered. The phases of operation, support and maintenance, which are part of the standard life cycle process of software [12], are not taken into account.

3. Question

The last point will be in focus of this paper. I question if only the construction of the changeover process of IT consolidation projects are important for successful IT consolidation. Do we ignore important success factors for IT consolidation, which are assigned to the phases after the rollout of a consolidation project, e.g. the various user groups, (the organisation of) user training or user support?

From all these possibilities, I will focus on user training. I will show that a structured and consolidated concept for user training is an important factor for the achievement of the objectives of consolidation projects in general and *Federal IT Consolidation* in particular. After an evaluation of literature, I discuss the objectives of consolidation, centralisation and standardisation projects. Subsequently, it is explained to what extent further training programs contribute to the achievement of these objectives. A proposal for the consolidation of the necessary IT further training including a possible infrastructure for training environments is outlined.

4. Evaluation of literature on IT consolidation

There is a lot of literature on IT consolidation with different focusses. [10] analysed the literature in 2010 and identified two different approaches of the available studies. Group 1 focuses on cost goals, group 2 on functional goals. Additionally, I looked for younger studies on IT consolidation with e-government relevance. But there was little success, only a few authors deal with IT consolidation in context of e-government – [1], [11], [17]. These papers mention cost goals as well as functional goals of IT consolidation; there is no special focus for one of them. The different individual objectives are summarized in table 1.

However, both the studies analysed by [10] and the other three papers refer only to the changeover process of IT consolidation. That is why I also took literature on requirements for IT processes in administration – [16], [23] – into account.

5. The objectives of the consolidation projects

The *Federal IT Consolidation* has various objectives [4]:

(1)   Guaranteeing IT security in an increasingly complex environment,
(2)   Maintaining sovereignty and control over its own IT,
(3)   Sustainability by enabling the adaptation of technical innovations,
(4)   Ensuring "efficient, economic, stable and sustainable" operation,
(5)   The attractiveness as an employer for IT specialists and
(6)   Protecting of the data of the Federal Administration and its safeguarding against misuse.

These goals are based on the federal IT strategy that defines strategic goals for demand-oriented support of administrative tasks [8]:

- Effectiveness and quality,
- Digital administration,
- Sustainability and openness for innovation,
- Information security and data security,
- Attractiveness as an employer,
- Economic efficiency and cost effectiveness,
- Inclusion and accessibility
- Environmental sustainability,
- Cooperation, and
- Ability to control and manage.

These objectives coincide with the objectives mentioned in the literature on IT consolidation. Table 1 summarizes the literature evaluation and combines it with the objectives of the *Federal IT Consolidation*. The crosses indicate a target match.

	obj. (1)	obj. (2)	obj. (3)	obj. (4)	obj. (5)	obj. (6)
Efficient use of capacities (infrastructure, hardware) [10] [11] [16]			x	x		
Cost savings, easier budget control and management [1] [10] [16]		x		x		
Economies of scale (staff, procurement) [1] [11] [16]		x		x	x	
Greater security, reduced risks [1] [10]	x	x	x	x	x	x
Standardisation of processes (professionalisation of employees, dissemination of best practices) [10] [11] [17] [23]	x	x	x	x	x	
Improved control over IT, higher compliance [10] [17]		x				x
Provision of information also across departments [1] [11] [16] [17]		x			x	
Extended (digital) provision of services [1]			x	x	x	
Avoidance of redundant data [17] [23]	x	x	x	x	x	x
Minimization of interfaces [16] [23]	x	x	x	x	x	x

Table 1: Objectives of consolidation programs

The table shows that the objectives of *Federal IT Consolidation* are largely in line with the objectives in the literature. In addition, the objectives of the *Federal IT Consolidation* belong to both group 1 (cost objectives) and group 2 (functional objectives).

6. The contribution of further education to the achievement of objectives

According to the Classification of Learning Activities, there are *formal education*, *non-formal education*, and *informal learning* [9]. *Formal education* covers all regular educational activities that end with a formal qualification and last at least six months - e.g. attendance at (high) school or university. *Non-formal education* is all learning activities that do not belong to formal education, but have an organised teaching/learning arrangement. These include continuing vocational training in enterprises, individual vocational training and non-vocational training. *Informal learning* involves all purposeful, non-random learning activities that cannot be assigned to the first two groups [2]. In the context of *Federal IT consolidation*, we focus on continuing vocational training to adapt to new standardised IT procedures, ergo *non-formal education*.

The change management activities of the individual consolidation projects include further training to give the necessary knowledge of the new application to the current specialists. This is required in accordance with Nos. 8 and 14 of the Guidelines for the Use of Information Technology in the Federal Administration (IT Guidelines). In accordance with No. 14 (1) of the IT Guidelines, it is necessary to adapt the IT further training catalogues of the federal training institutions in line with (new) requirements. Since the initial training courses for the introduction of new applications are by definition one-off training activities and, according to No. 14 (2) IT Guidelines, it is also permissible for external providers to cover the demand, it is possible to deny that these conversion training courses are anchored in the training catalogues of the federal training institutions. But, there will be user fluctuation in the future. These new users also need an instruction to this application, so called fluctuation training. These fluctuation trainings are part of the operation phase in the life cycle of software and thus subordinate to the rollout. The IT Guidelines are also relevant here, so training on new consolidated IT services must be included in the training catalogues. The rough concept of the *Federal IT Consolidation* does not contain any plans for this [4], even though it is possible to derive arguments for structured and consolidated further trainings for IT, away from legal rules.

However, the literature on this subject is not very fruitful, since the focus of the available studies on IT consolidation and centralisation is on the changeover process, similar to the concepts of the German Federal Government, and the phases after the rollout are not taken into account. There are only a few studies on critical success factors for IT projects that explicitly list user training and education [21] [23]. However, it is not clear whether this refers to training within the scope of the rollout (so-called changeover training) and/or training for future users (fluctuation training). Therefore, based on the objectives of *Federal IT Consolidation*, it should be argued to what extent structured and consolidated further training can contribute to the goals of consolidation projects.

6.1. Objective (1): IT Security

According to ISO 27000:2018 [13], IT security is the guarantee of the confidentiality of information as well as the integrity and availability of the systems and the information contained therein. The corresponding ISO 27002:2013, *Code of Practice for Information Security Management*, describes best practices for IT security management [14]. Section 7 deals with human resource security and Section 7.2 explicitly deals with necessary training programs in the operational phase of software. Further training of employees is thus an essential measure for achieving the goal of IT security. Employees who have been well trained in using an application are aware of the relevance of the information contained and their own input. They understand the processes and interfaces and can assess the impact of their system activities. They understand the implemented security precautions (password rules, screen locks, etc.), are familiar with them and apply them.

6.2. Objective (2): Control and sovereignty over own IT and objective (3): Sustainability

These two objectives are summarized here in one section because there is no influence by the users for achieving these goals. However, vocational training can help in adapting the qualifications of employees to new technologies and strengthening their innovative ability [20].

6.3. Objective (4): Efficient, economic, stable (and sustainable) operation

This goal is significantly influenced not only by the hardware and the administrative personnel, but also by the users. Employees who are well trained in the handling of an application can use the existing functions of the software professionally and appropriately. If there is a change of employer within the federal administration, no training is necessary, since all direct federal authorities will use the same applications in future. The frequency of errors is reduced and downstream processes can be carried out more reliably. There will be better data quality and evaluations become more accurate, so that decisions will base on better information. If a ministry and its subordinate authorities use the same application, interdepartmental statistics can be produced directly by the ministry. This eliminates the need for data collection at the lower levels as well as consolidation efforts within the ministry. The benefits of this application increase. Especially for central evaluations and statistics, it is essential that all users execute the processes and functions in the same way in order to obtain reliable and comparable data sets. Only standardised training measures can ensure this. IT consolidation therefore also requires training consolidation. Good, standardised user trainings thus contribute to the stability, performance and cost-effectiveness of an application.

6.4. Objective (5): Attractiveness as an employer for IT specialists

Public administration is currently not attractive for future IT professionals [22]. It can be assumed that a modern IT landscape can increase attractiveness. However, there is no evidence of this. Development opportunities such as established professional training can be a decision criterion for an employer [22]. From the perspective of companies providing continuing vocational training, the provision of continuing vocational training can also increase the attractiveness of the company [20]. [19] show, for example, that there is a significant correlation. The German Federal Government also identifies this point, but focuses on the recruitment of skilled workers [8]. However, this view neglects IT specialists already employed in the federal administration. Internal company training offers them development opportunities and shows an appreciation of their work. The labour market for IT specialists is a supplier market, and dissatisfied highly qualified employees have many alternatives [3].

6.5. Objective (6): Data Security

Data protection and protection of data against misuse are often mentioned in the same breath as IT security. While IT security focuses on the protection of data and information against unauthorized access, loss or unintentional modification, data security focuses on the persons concerned. The EU General Data Protection Regulation stipulates that the storage and processing of personal data must be carried out in accordance with the principles of legality, purpose limitation, data minimization, storage limitation, integrity and confidentiality, and accountability. The responsibility for compliance with these principles lies with the responsible body of an application. However, the users of the application implement these principles. This requires a sufficient awareness of the users, which can be achieved by high-quality training and further education. In this way, users can understand the implemented protective mechanisms and apply them.

7. Suggestion for training consolidation

The above arguments lead to the conclusion that a structured and standardised further training of employees even after the start of operations (so-called fluctuation training) contributes essentially to the achievement of the objectives of the *Federal IT Consolidation*. Above all, the argumentation for objective (4) shows that without consolidated user trainings, the goals of *Federal IT Consolidation* could be missed.

Structured and consolidated user trainings should be characterised by the following features:

- Uniform content for all participants of all departments,
- Well-structured case studies with clear instructions and
- Practical, independent exercises in a representative exercise environment.

The user trainings can be carried out equally as face-to-face events or e-learning.

To reach these requirements for each application, a central organisation with guideline competence is required (responsible for training - RFT). It determines the training formats and their contents for all users in any department and provides the teaching materials. In particular, this includes an exercise environment with representative practice data and the case studies. Since all trainings access the same training system, the administration of the user trainings should also be centralized, depending on the system characteristics. The RFT does not have to be identical with the organisation responsible for administration. Any qualified trainers should be able to teach user-training modules prepared in this way. The extent of decentralization is to be determined by means of a profitability analysis.

For the user training of an application, there must be direct and complete access to an associated training environment. In order to be able to train normal users and advanced key users as well as personnel entrusted with customizing and administration tasks, in addition to a rather 'rigid' teaching environment for application-oriented training, the ability to teach customizing or system settings in a kind of virtual 'laboratory environment' in a corresponding functional context is required. This can even be realised in the operating process of this teaching environment if the RFT is responsible for it. The operator of the application would have to provide a virtualisation of the training environment, and RFT will administer this VM (update, upgrades, master data maintenance etc.). The execution of the trainings thus becomes independent of location and service provider. The necessary direct services during the courses, e.g. in the form of a hotline, can be optimally coordinated within RFT. It is possible to scale the number of parallel courses so that course administration is simplified.

A look at the continuing vocational training of employees in the German federal administration reveals a very heterogeneous picture. Each department is responsible for regulating the continuing vocational training of employees. As can be seen from the websites of the several departments, internal training institutions are established in a few departments, but not in most of them. The Federal Academy of Public Administration (BAköV) is a provider of further training for all employees of the German federal administration. However, this institution is not an educational institution with its own trainers, but offers continuing education courses with external trainers. The BAköV does not offer further training on IT applications (usage, administration etc.). The few departmental further education institutions employ full-time trainers and offer training on departmental applications and other IT training, e.g. on Microsoft Office applications or Windows administration. Due to the small number of in-house training institutions, external providers on the open market provide a large part of the in-company training.

A standardised and consolidated user training according to the above criteria for the IT services affected by the *Federal IT Consolidation* will not be possible without organisational restructuring of the federal administration. Two basic scenarios are conceivable.

On the one hand, you can think of a consolidation of user training for each application. Then you need to name and set up a RFT for each. It is obvious to assign this to the authority or institution that is responsible for the application. If this authority or institution does not have any further training tasks under the current legislation, organisational regulations must be adapted. Thus, an application is offered from a single source. Experiences from user support can flow into the training development and vice versa. A synchronization of training case studies and test cases is possible, which reduces test efforts after updates and upgrades. The employees of RFT train the trainers in the usage of the application. A disadvantage is that comparisons and experience transfer from one application to another are made more difficult in this constellation. Possible parallels in terms of content or training environments cannot be used. The execution of the centrally provided training formats can be organised by each department itself. The full-time trainers of the departmental education institutions can conduct the training courses in the same way as non full-time trainers in the other departments. Outsourcing to external providers of further education can also be considered. A central institution is recommended for the administration of the respective user trainings. In order to achieve economies of scale, this institution can also administer the user trainings of all applications.

On the other hand, you can think of establishing a central education institution (CEI) as RFT for all consolidated IT services, which would cooperate closely with the respective responsible departments. This CEI should also take over the administration of the user trainings. The disadvantages mentioned above are obsolete. Close cooperation between the CEI and the responsible department can achieve the synergy effects mentioned between further training and application support or testing. The complete execution of all user trainings with own full-time instructors by the CEI makes sense, but is not necessary. A combined execution by the CEI and departmental education institutions is also conceivable. The locations for implementation are to be determined according to cost-effectiveness criteria. You can also think of integration of other IT training courses that are in great demand, such as those on Microsoft or SAP products.

In both cases, in addition to organizational restructuring, an increase in personnel is also necessary.

8. Conclusion

In Germany, there is currently no special IT service that is used across departments. The question of interdepartmental user trainings simply has not arisen so far. *The Federal IT Consolidation* changes this.

The concepts for service consolidation within the framework of the *Federal IT Consolidation* end with the rollout of the application to be consolidated. The training of future users, so-called fluctuation training, is not addressed. The previous literature on the subject of IT consolidation has not dealt with this topic either.

Using the example of *Federal IT Consolidation*, the paper shows that user trainings contribute to achieving the objectives of IT consolidation. The arguments lead to the conclusion that even standardised and consolidated user training is necessary to fully achieve all objectives and realise the benefits of IT consolidation. A short otline of the design of a training environment is presented. In

addition, two scenarios for a consolidation of user trainings in the German federal administration are outlined.

The scenarios presented do not yet take into account the individual IT services to be consolidated. The type of software, its degree of specialisation (standard software vs. in-house development) and other characteristics must be considered in order to be able to deduce with certainty, for example, whether internal user training or the use of external training providers is more economical.

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THE INTRODUCTION OF HR KNOWLEDGE EXCHANGE SYSTEM AND EXPERT NETWORK IN HUNGARIAN CIVIL SERVICE TO SUPPORT THE REORGANISATION OF PERSONNEL MANAGEMENT[1]

Zoltán Hazafi[2] and Nikolett Pintér[3]

Abstract

The development of the Hungarian Public Administration's personnel management has been deeply impacted by the on-going global reinterpretation of the general role and significance of HR in government departments, and by the simultaneous paradigm shift in civil service.

Meaning, that on the one hand Human Resources Management has become a strategic partner to leadership in human-oriented organisational development. It is able to aid the interpretation of challenges and the aim of policy reforms, planning, execution and evaluation of changes, impact assessment and reporting.

On the other hand, organisational decision-making has been gaining significance, while at the same time, the centralized legal regulation has become less relevant in HRM does questions due to the deregulation of human resources management in civil service.. This tendency puts a higher emphasis on HR Knowledge Exchange Systems and knowledge-sharing methods.

The HR Knowledge Exchange System and Expert Network plans with the aim of providing online and offline support to HR professionals in public administration in order to improve their HR knowledge and competencies of both offline (project-based events) and online (via Online Forum) professional communities.

Combined, the HR Knowledge Exchange System and Expert Network provides support to HR professionals primarily through granting access to an online academic research database with up-to-date content, forum discussions as well as face-to-face counselling in a way that fits the requirements of the current tendencies of the reorganisation process of HR functions. It also contributes to the implementation of the 'Healthy Organisation Model' in practice.

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1. The Effects of Paradigm Shifts In Human Resources Activities In The Hungarian Government Administration

Two trends will determine the human resources activities of the Hungarian government administration over the next few years. One of these trends is the digital transformation, which creates the opportunity for human resources management to become a strategic player, and the other one is the decentralization and deregulation of the government HR management. The former is a global process that affects all sectors in general, while the latter one is a change determined by national characteristics and specific to government administration only. Nonetheless, both focus on innovation development and HR knowledge-sharing, which play a vital role in the successful transformation of HR.

1.1. The Impact of Digital Transformation On HR Function

1.1.1. Business sector

There is a global tendency to redefine the place and role of the human resource function in order to better support the adaptation of companies to changes in the market, technology, and social environment. While it is evident that the continuously changing environment means a challenge to HR, the latest on-going changes are quite irregular as they are more complex and faster than ever, profound and constant; they are continually forcing HR professionals to think in a broader, strategic way and to introduce new methods. Under these circumstances, companies will be able to remain competitive only if they can keep up with the pace of changes and also adapt their employee development to these changes.

In the next few years, the Fourth Industrial Revolution (Industry 4.0) will bring about the most significant changes in the life of companies. It forces them to rethink their human resources situation. It is enough to refer only to that, thanks to technological advances, nearly 40% of routine tasks will be able to be automated (cf. [1], p. 10). At the same time, work processes become more complex, and the importance of interpersonal or personal skills (commitment, responsibility, communication, etc.) grows. Within five years, most of the top 10 most sought-after competencies will consist of the so-called soft competencies - analytical skills, creativity, emotional intelligence ([1]. p. 12) – while critical thinking and problem solving also come to the fore [2].

Besides the cloud-based solutions of well-known major generic HR information systems - SAP, Oracle, or Workday – nowadays, there are solutions specifically designed to support specific HR activities. The Clustree is a French development purely based on artificial intelligence, with modules that offers a complex solution to HR challenges. [3]

The question arises on how the digital revolution affects the future of the HR function. The attention focused on personal characteristics, behaviour, and their analysis in itself values the HR activities. It has become apparent that their development can bring about a competitive market advantage, which further strengthens HR activities that focus on the individual needs of employees.

The major obstacle to digital transformation is the limited availability of human capacity for digital transformation. [4] Predictably it will become even more challenging to acquire and retain the talent in the future. It is no coincidence that competing for talent is considered the greatest challenge of the near future. At the same time, there will be an increasing demand from companies for employees with the competencies needed for digital transformation. This means not only the technical competencies

had to apply digital tools but also the skills had to manage the changes. To fill the gap, HR, besides traditional methods like internal mobility, alternative employment, has to apply new technological tools, increasing the efficiency of recruitment and selection. [5]

The HR function also needs to be prepared for the change in the learning process. Positions are to be terminated; new ones are to be created or transformed. Changes are rapid and require new competencies that will be more and more difficult to obtain from outside, from the labour market. Managing the impact of digital transformation on work environment and competencies is an essential requirement for preparing for the future. (cf. [2], pp. 43-46)

In response to accelerated changes, three trends in learning are emerging: work-based learning is becoming more emphasized, the acquisition of knowledge is getting more personalized, and the lifelong-learning model will be implemented soon. (cf. [5], p.7.)

As mentioned, internal mobility becomes a decisive means for satisfying the need for change and new competencies. Changing positions, being moved within the company is becoming general, a natural part of the career. The new technologies facilitate internal mobility. All of this creates another challenge for HR.

The organisational development for digital transformation cannot be achieved without staff support. Management needs the HR expertise that enables them to foresee the future impact of changes and to respond strategically on the field of human resources. It brings to the fore the strategic planning of human resources, as well as the data- and fact-based HR strategic decisions, and the cloud-based IT solutions that serve them. To achieve this, HR professionals must learn data analysis, statistical methods, and techniques. Furthermore, it needs to build the trust of management regarding the credibility of HR analyses and forecasts. The change is getting outlined. Companies treat the development of HR data analysis capabilities as a development priority over the next few years.

Forecasts count the HR profession among the winners of the digital transformation. (cf. [1], p. 9) This also means the realization of the long-proclaimed vision of the HR profession to become a strategic partner for the management.

However, HR only will be able to meet these above-mentioned challenges if it has the knowledge to transform, owns the new methods and techniques. At the same time, it is clear that as era shifts, old knowledge, methods, and procedures become obsolete, so they cannot be used under the changed circumstances, but new HR knowledge and experience are not yet available. Under these circumstances, innovation, the development of HR knowledge, the establishment of expert collaborations and networks are getting more appreciated.

1.1.2. Public Sector

E-government primarily means having the public services available on a digital platform. Besides enhancing the efficiency of operational processes, digital developments are ultimately aimed at fulfilling the needs of internal and external customers. (Private and public citizens, (cf. [6], p. 99) E-government is not only a vital part of public service development, but it derives the entire sector by inducing more dynamic and thorough changes and improves on an additional area of organisational development in some cases. (ibid.)

At the same time, we cannot deny the fact that digitalization is taking over the public sector at a rather moderate pace. In general, there are significant digital improvements in HR functions such as recruitment, selection, internal mobility, and training management, but there is less capacity to assess the results of digitalization. The initiative of the Canadian government to create a work environment focuses on the organisational activities (milieu de travail axés sur l'activité) is one of the exceptions as it considers the impacts of digitalization as well. [7]

Dutch public service uses digital tools also for marketing purposes. The digital platform of werkvoornederland serves as a development tool for job branding, which not only enlists the current vacancies but sells them at the same time. [8] Each position is linked to a career development path, implying the potential projects and additional assignments it might entail. The applicants can also obtain further information on the flexibility of the job and future career opportunities. According to user statistics, these factors are the most frequently considered ones by the candidates. [9]

The recruitment and selection procedures of the British Government Recruitment Service are entirely automatized. The employer and the candidate can check the current status of the application process. [10]

In Austria, a job catalogue was created to support the internal mobility of the federal public service and help employees seeking career development by switching to higher or different positions. (Mobilitätsmanagement) In addition to that, the system contributes to reaching the optimal staffing level. [11]

In France, an online market place was introduced to the citizens in order to maintain sufficient planning of the available budget for training and professional development support. The application (Monocompteformation) is built upon the concept of the latest service distributing trends (like Airbnb for example), [12] the users have their accounts and they can browse for training courses fulfilling their career development needs. Based on the research criteria, the system ranks the courses by ratings and reviews received from other users. If the ratings match, the system generates a random order. Users can apply for the selected training through the application. There are over a million of courses being managed with the help of the application software on an annual basis.

Information security risk management has become the centre of attention in Germany as a primary development area. The respective ministry and two public-sector trade unions are about to seal a collective agreement, concerning the question of information security among many others. [13]

Generally speaking, it might be said that there are on-going updates of HR processes, methods, and techniques that are to be tested and implemented simultaneously with the recent technological developments.

Considering the increasing popularity of the remote working style, the federal government of the United States has recently created a website for sharing reports, studies on the subject, as well as related online courses, activity, and legal guidelines. It also provides a platform for employers and public servants to discuss their questions related to remote work. [14]

In Latvia, an innovation lab was launched, called GovLabLatvia, to strengthen innovation culture and support organisation development projects related to public service HRM reforms. The concept aims to motivate and nurture multidisciplinary partnerships and workgroups offering complex solutions. The workshops develop HR prototype methods in a 'laboratory' environment that are suitable for

testing. By the end of 2019 already 50 workshops have been active with 150 participants and developed 16 prototypes in total. [15]

1.2. The Impact of Decentralization and Deregulation on Human Resource Management

The Hungarian government administration has been facing with decreasing market appeal, high staff fluctuation, and low performance and internal mobility for years.

In order to tackle the system-level issues mentioned above, the legal status of government employees has been revised radically. The revised law (Kit.) has shifted from a career-based personnel system towards a more flexible and open-minded policy approach, which lays significant emphasis on deregulation and decentralization.

In several aspects, the Kit has abolished policy formulation and implementation on a legislative level and integrated the decision making and policy creation process into the employer's scope of activities. For instance, it has eliminated career advancement and fixed salary based on seniority and the length of employment, which were being regulated by the law, and implemented a performance-based compensation system, offering competitive salaries that are aligned with the market standards.

The paygrade is determined by the employer, based on the educational level, personal attributes, and performance of the employee between a wider pay-range. The employer holds the right to decide on the determining factors of the salary structure, which can vary by the local peculiarities.

The educational requirements of employment are also determined without any legal constraints by employers in a decentralized manner.

Due to the deregulation and decentralization, the scope of the employer has been extended which made it possible to endorse the local peculiarities. On the other hand, decentralization also means each unit has a different set of policies in place.

Deregulation and decentralization itself do not add value, by leaving more room for flexibility; it only offers the opportunity to increase the performance of the organisation. Thus Human Resources Management has to adjust to the paradigm shift in policy formulation in order to truly leverage on that.

The status of government officials, terms and conditions of employment used to be regulated by the law, meaning that each of the HR processes used to be established within a standard legal framework and the main key performance indicator of the HR activities was the level of accuracy how the legal requirements are served in terms of execution and operation.

As opposed to the old paradigm, the new one draws upon the current state of affairs of the private sector. The legal framework only impacts the human resource management of the organisations, and the specific rules are determined by internal guides or different codes of conducts. [16] These guides and code of conduct can be held accountable from a legal point of view, in case of breaching the code, employees can be dismissed, and legal arguments can be initiated against the employer.

In a changing legal environment, organisations autonomously develop their HR processes, e.g., recruitment, selection, promotion, remuneration, assessment, development, etc. This is not only an option but also a constraint, as in the absence of previous legal norms, human resources management

would remain unregulated. Management must adapt to changed circumstances, and adaptation requires a new leadership culture. Only those who are against the tradition tradition, have a different view of HR and require personnel support in at least the following areas, can enjoy the greater freedom of decision provided by law:

- HR expert consultation (legal expertise, knowledge of the legislation, monitoring compliance with legal frameworks)
- Talent and competency development (activities promoting/assisting the versatility of government officials, competence and talent development)
- Change management (promoting acceptance of change, raising awareness of decision-makers' responsibility)
- Innovation and proposals (designing new work platform, model experiment)
- Strategic partnership (participation in strategic decision making, sensitization of leadership teams to HR challenges, management of social dialogue)

At the same time, the essence of personnel knowledge is also changing. Personnel professionals are expected to be aware of legal provisions, understand talent selection, be able to assess and develop competencies, support the adoption of organisational changes, propose new work frames, conduct model experiments, engage in strategic decision making, and social dialogue.

2. The „HR Knowledge Exchange System and Expert Network" project as an online and offline HR social network

In Hungary, the Civil Service's human resources system is extremely diverse, including three different parts of Hungarian Civil Service (Public Administration, Police, Military). The application of specific, various employment rules of different parts of Hungarian Civil Service requires well-prepared, highly qualified HR professionals with up-to-date knowledge from different fields. The various employment regulations within the Hungarian Civil Service necessarily requires the need to ensure access to a summarized human resources knowledge in one place for all HR professionals in all organisations of Hungarian Civil Service.

Currently the theoretical and practical HR knowledge is not equally available to all HR professionals and HR leaders in three parts of Hungarian Civil Service. In addition they have no social network, they have no opportunity to share best practises with each other, they currently need to solve difficulties and problems individually and the solutions remain at separate organisational level and there are no trustworthy and widely known professional solutions to solve the organisational problems. Moreover there is no specific HR system for the HR departments of Hungarian Civil Service that would collect, organize and provide HR related knowledge and access for all HR professionals and HR leaders [17]. At the same time, in the period of digital transformation and in the age of growth of employer HR competencies Hungarian Civil Service is in the need of a system to share the theoretical and practical HR knowledge for their HR departments. That is why the Hungarian Ministry of Interior's aims to establish the „HR Knowledge Exchange System and Expert Network" project for HR professionals and every employee in all part of Hungarian Civil Service.

HR Knowledge Exchange System and Expert Network offers to HR professionals and their leaders of Hungarian Civil Service online and offline organisational-fit support in HR related fields according to adequate part of Civil Service and online and offline HR social network.

The member of Expert Network (called Experts) do compiling, preparing and keeping HR knowledge up to date, they have outstanding professional knowledge and experience in the field of HR. Their task is to produce professional publications, to respond within the Online Forum, to ensure organisation-fit recommendations to the HR professionals and their leaders in offline or online ways. The Experts support the HR professionals and their leaders to make their work more efficient and to make themselves more effective by working in HR departments. Through the Online Forum they can provide continuous professional advice to the HR departments. Beside to the Experts are the members of Censorious Committee. They are responsible for determining which knowledge can reach the target group by approving papers from Experts. They supervise that the HR Knowledge Exchange System and Expert Network offers trustworthy, up-to-date, high standard knowledge to the HR professionals and their leaders.

HR Knowledge repository portal ensures up-to-date knowledge in the following HR related fields: [17]

Legislation on HR activity, HR law enforcement
Creating job descriptions – analysis, evaluation
Recruitment, selection
Achievement Evaluation System
Employee- development, career planning
Compensation, rewards
Personnel issues
Labour relations – advocacy
Organisational culture

HR Knowledge repository portal has two sections: 1, Online Forum and 2, Knowledge thesaurus. HR professionals and their leaders may ask questions from the Experts, Experts can give recommendations online. All users can share best practises and their experience with each other. Knowledge thesaurus is open for Experts to upload papers after the approval of Censorious Committee. Universities may also upload academic publications.

The groups of HR Knowledge Exchange System and Expert Network (HR professionals, member of Expert Network and of Censorious Committee) can take part at online-organized and offline events to enlarge or share their theoretical and practical HR knowledge.
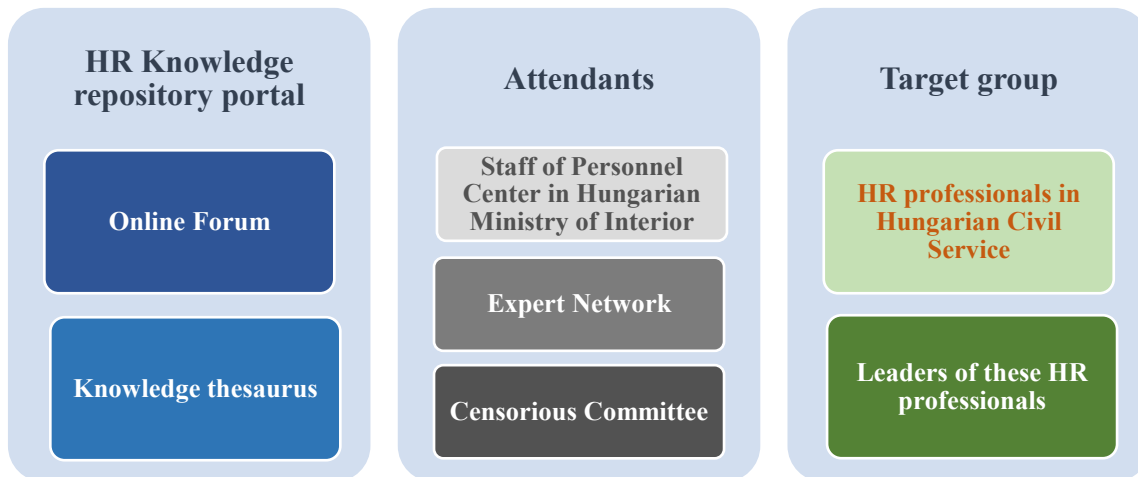
HR Knowledge repository portal	Attendants	Target group
Online Forum	**Staff of Personnel Center in Hungarian Ministry of Interior**	**HR professionals in Hungarian Civil Service**
Knowledge thesaurus	**Expert Network**	**Leaders of these HR professionals**
	Censorious Committee	

Figure 1: Structure of HR Knowledge Exchange System and Expert Network
Source: Authors

3. Introduction of the Healthy Organisation model

According to Lövey and Nadkarni's definition, an organisation can be considered healthy if the following statements characterize its functionality: (cf. [18], pp. 42-45)

•   A healthy organisation satisfies customer needs by providing great value for the customer. Thus it earns legitimacy for its existence and the ability to maintain the organisation as a going concern via the continuous stream of revenues,

•   A healthy organisation satisfies the needs of its members by creating an environment where members develop (grow) and believe that they matter, and so they can fulfil their individual objectives while they realize the objectives of the organisation,

•   A healthy organisation satisfies economic requirements (financial benchmarks such as profitability imposed mainly by markets and regulators) by using resources most efficiently and effectively in its pursuit of objectives,

•   A healthy organisation maintains a balance between these three fundamental objectives by developing a structure and a culture that encourage, considering all three simultaneously when making decisions,

•   A healthy organisation lives in harmony with its natural social and economic environment.

•   A healthy organisation grows and develops over time, increasing its reach and/or ability to handle complex situations.

Lövey et al. define organisational health as the holistic condition of these six main health criteria being satisfied to a high degree concurrently. [18]

Naturally, satisfying these is not a binary, yes no, choice but a question of degree. The objective of an attempted ‚assessment˙ is not the identification of this degree to minute detail; instead it is to indicate what may need to be addressed in order to build a healthier organisation.

When the problem-solving mechanisms are absent, weakened, or slow in response, problems occur, persist, or recur, wasting energy and resources in a preoccupation with short-term and partial remedies, not main purposes. This phenomenon is called organisational disease. The organisational diseases are those situations in which part(s) of the organisation do not fulfil their functions further

to the requirements, some of the organisation's processes persistently fail to meet requirements, and one or more of the fundamental objectives are repeatedly neglected in the decision-making process.

In order to understand the state of health of an organisation, must to mention and compare the identified symptoms of ill-health to a typology of organisational diseases in the absence of which the diagnosis of the state of health becomes a random collection of information. Typology associates the disease with the following: [18]

•   the part of the organisation where the malfunction is located,
•   the location where the effect of malfunction is mainly felt, or
•   the structures and systems that tend to perpetuate the problem.

If the organisation is oblivious to these problems, they become acute. Acute problems radiate outward to related areas of operations, decreasing functionality exponentially.

As problems become recurrent, typical behaviour manifests in organisations. These are observable behaviour patterns associated with problems, symptoms. Our diagnosis of organisational health consists of observing the various symptoms and classifying them similarly to diseases of the human body. Symptoms of organisational diseases must appear together to constitute the disease.

Diagnosis of organisational health entails a focused collection of data for the purpose of identifying and treating organisational diseases. To treat a disease, after ascertaining the nature of it, one must determine its cause. To be able to state that a cause renders an organisational disease, it must be noticed that whenever the cause happens, the disease happens. [18]

4. The HR Knowledge Exchange System and Expert Network as method of Healthy Organisation Model

HR Knowledge Exchange System and Expert Network can be at the back of prevention, intervention, cure of organisational illnesses by supporting some organisational health criteria. HR Knowledge Exchange System and Expert Network can strengthen the belongingness, mattering, growth and development of the organisation, can influence positively the relationship of the organisation and its natural social and economical environment, and can enhance transparency.

4.1. Strengthening Belongingness

Members of the organisation need to feel they are part of the organisation and the togetherness. The Belongingness receives marked place among the healthy organisation's conditions [19]. HR professionals and their leaders are given even personalized support for their work by HR Knowledge Exchange System and Expert Network to increase their achievement and efficiency of their work. Moreover HR Knowledge Exchange System and Expert Network offers them belongingness and an online and offline HR social network. They can get some kind of power and impact both in HR Knowledge Exchange System and Expert Network (through sharing ideas and best practises and using them other HR professionals) and their own organisation (through import and applying of the new knowledge).

Everyone wants to feel that things depend on them in situations, so it is very important for people to have a sense of importance in all areas of society. People do not tolerate lack of importance, they also need the feeling that they do count at their working place, and their opinions matter. [19]

Belongingness can be strengthened by HR Knowledge Exchange System and Expert Network through mattering. Also HR professionals and their leaders, members of Expert Network and Censorious Committee can feel mattering in this project. HR professionals and their leaders not only receive professional support from members of Expert Network, but also provide support to each other by sharing best practises and by applying new knowledge in their organisation and they may became important colleagues in their working place and in offline and online network. This allows them to be important members of both HR social network and their own organisation, additionally they can feel that they are beneficial part of public administration, because they effect on it with the new knowledge from the social network and from the experts. Experts can experience the fact that they are also important and respected members of the professional community network and may have an impact on organisations by providing personalized support to HR professionals and by creating publications. Mattering means for members of Censorious Committee, that they determine which knowledge can reach the target group by approving papers from Experts.

4.2. Develepment of Hungarian Civil Service's personnel management

One of the health criterias is that organisations grow and develop over time. Growth in Hungarian Civil Service is a state-defined factor, so this aspect is not being analysed in this article because the organisations themselves or the HR Knowledge Exchange System and Expert Network' s tools and methods have no effect on this factor. On the other hand development is an important factor in Hungarian Civil Service, because if an organisation lacks the ambition to improve or find and test new opportunities and to learn, it will stagnate. Employees feel internal motivation to develop their skills and to be in more complex situations. If an organisation does not develop, then their co-workers cannot develop either, that is why they become frustrated and eventually leave the organisation. [19] HR Knowledge Exchange System and Expert Network also improve personal and organisational development. The knowledge of HR professionals and their leaders is growing, and the number of ideas and solutions increase at the HR departments of Hungarian Civil Service because of the facilitation of newly imported up-to-date HR Knowledge. HR professionals will not only be administrative workers, they can also expand their scope of activity through theoretical and practical knowledge from Experts and from the HR Knowledge repository portal. Hence HR Knowledge Exchange System and Expert Network offers tools and methods to Hungarian Civil Service's organisations to develop themselves.

4.3. Enhancement of organisational brand in Hungarian Civil Service

Further to not only the organisations - including Hungarian Civil Service's organisations - are largely defined by the society around them but also organisations have effect on society and can shape the views of people about Hungarian Civil Service. If organisations do not adapt to their environment such as live organisms they will die or become extinct. [19] Organisations in Hungarian Civil Service will not be extinct because the state ensures their survival, but they are competing with the other organisations on the job market for highly trained, talented workers have a positive opinion. Having a positive opinion on Hungarian Civil Service and governmental institutes is essential to provide specialist supplies for public sector.

That is why it is highly important to enhance the decreased social trust in the EU, caused by the economic crisis in the public sector organisations, to make the public sector become an attractive working place again for the employees. [17]

HR Knowledge Exchange System and Expert Network can help the Hungarian Civil Service gain reputation among employees by having a professional support program for HR professionals. This program is modern, interactive, Internet-based and can keep Hungarian Civil Service up to date and provides new knowledge in an innovative way, and follow the expectation of 21th century. Besides it can create online and offline social network for HR professionals and their leaders, where they matter, develop themselves and the public sector so that makes positive opinion about Hungarian Civil Service and makes attractive workplace for jobseekers and colleagues.

Social trust and positive opinion can be further raised by transparency of HR departments of public administration through beginning of sharing best practises with each other. If an HR department has best practice, they can share it with other organisations. This sharing sets the new practical knowledge transparent and may make more efficient the tasks and processes in other organisations of Hungarian Civil Service, which can also lead to the impression of a modern and attractive workplace.

4.4. Prevention, intervention of organisational illnesses

You can see above that HR Knowledge Exchange System and Expert Network can have an impact on some of the organisational health criterias. The tools and methods used in the project can help to cure and prevent any organisational illness in the Hungarian Civil Service by affecting the following criterias of a healthy organisation:

HR Knowledge Exchange System and Expert Network meets the needs of internal customers (employees of Hungarian Civil Service) by providing great value to employees and leaders through the social network, new and summarized knowledge, organisational-fit solutions. HR professionals and their leaders can deliver these to all departments of institutions in the public sector, making the existence of HR department even more legitimate in the public sector.

The institutions of the public sector do not have economic requirements (eg. financial profit) because they are maintained by the Hungarian Government, so in this case the profit means the new knowledge, the good practices and the useful recommendations for internal colleagues of the Hungarian Civil Service's organisations.

The organisations in Hungarian Civil Service can satisfy the needs of its members through HR Knowledge Exchange System and Expert Network by creating an environment where members develop (grow) and believe that they matter, know that they are important so that they can achieve their individual goals while also achieving the organisation's aims. HR professionals and their leaders can fulfil this importance and development through up-to-date new knowledge, online and offline support from experts, knowledge sharing to each other, offline project related events and membership in online and offline HR social network. HR professionals and their leaders will also be able to create an environment for the other colleagues in the own organisations through the new knowledge provided by HR Knowledge Exchange System and Expert Network that will enable them to achieve their goals, develop and meet organisational aims, because HR professionals will not only be able to carry out administrative tasks. HR Knowledge Exchange System and Expert Network can therefore satisfy the needs of not only HR departments, but also indirectly of other employees of Hungarian Civil Service..

HR Knowledge Exchange System and Expert Network can contribute to the development of Hungarian Civil Service's organisations over time, increasing its ability to handle complex situations. The new, summarized HR methodological knowledge and best practices will be available equally to

registered HR professionals and HR leaders. So the knowledge of the organisation will grow, Experts create professional organisation-fit solutions to the problems, the online and offline social network generate contact between organisations in public sector, all of these allows all employees of public sector to reach ability to handle complex situations.

With the support of HR Knowledge Exchange System and Expert Network organisations in Hungarian Civil Service can lives in harmony with its natural social environment, because HR Knowledge Exchange System and Expert Network provides up-to-date theoretical and practical knowledge to HR professionals and their leader in modern, Internet-based, interactive way, which adapt to 21 st century's expectation and environment, additionally open to technological processes of present days.

5. Conclusion

Digitalization and decentralization puts double pressure on public administration. It cannot pull itself out of any of them. In order to be able to adapt to them, place and role of personnel activity needs to be rethought in organisational development, and human resources processes of public sector must be radically redesigned. In this transformation, renewal of HR knowledge and sharing of knowledge contents has a central position. We tend to see more and more innovation initiatives in some countries, their common role is the improvement and distribution of new HR methods, techniques, processes. Hungary is also part of this process. The focus of the HR development of Hungarian public sector is creating and sharing professional, and methodological HR knowledge, and creating and HR community network.

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LEARNING FROM ITIL FOR EFFICIENT INTERNAL SERVICES OF AUTHORITIES

Anne Diedrichs[1]

Abstract

In the following, we highlight why IT Infrastructure Library (ITIL) proposals, which have long been established for the management of IT services [8], can add value to the management of services offered by the Internal Services division of authorities.

The Internal Service divisions of authorities offer a wide range of services that may differ from one authority to another. However, as a rule, the following services are offered as core offers:

- *Mail processing, messenger service, document creation and management, duplication and printing, e.g. business cards.*
- *Facility management including winter maintenance and cleaning of buildings, access control and security, vehicle availability. However, facility management is usually a major part of provided internal services.*
- *Procurement and internal materials management, more and more as the implementation of decentralized activities of the consolidated processes.*

Adapting methods and procedures from ITIL can help to provide an overview about all offered internal services and makes the point of contact transparent for each of them. Furthermore, implementing support systems following that idea generate necessary information for keeping track of individual service requests. Hereon, even online steering mechanisms become possible as it is standard for IT services as of today.

1. Introduction and questioning

The Internal Services division of public administrations offers a wide range of services, which may vary from one authority to another. As a rule, however, the following services are offered as core offerings:

a) "Mail processing, messenger service, document creation and management, duplication and printing.
b) Access control and security services, procurement and internal materials management.
c) Car pooling and facility management (e.g. winter maintenance and cleaning)". [1]

In this context, facility management usually represents an extensive subdivision of the Internal Services division.

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This means that the area covers a broad, rather heterogeneous spectrum of tasks. All these tasks have in common, however, that they represent services that are primarily aimed at the employees of the authority itself. These are so-called support processes for the authority. For authority employees - who are finally the addressees or users of the services offered by the Internal Services devision - the department is often rather non-transparent from the outside. In some cases, users are not able to see directly which services are actually offered for them.

In a second step, users often need to research which contact person or which of several hotlines or service numbers is the right addressee to contact for their respective request. Once the request has finally been successfully put on the right track, the user often is not able to follow the status of his/her request.

Especially for the Internal Services division, it is often a special challenge to appear outwardly as one service unit and to create internally transparency and consolidated process structures.

In the following we will show why the use of the IT Infrastructure Library (ITIL), which has long been established for the management of IT services [8], adds value for the management of the services offered by the Internal Services division. This work focuses on the service desk and the service catalogue.

2. Fundamentals

In the current literature the term Enterprise Service Management is currently being formed. There is as yet no officially adopted definition of this term[3, p. 7]. One suggested definition is that this can be understood as "a strategic and structured extension of proven IT technologies and processes of IT service management to non-IT parts of the company"[3, p. 9]. Hennhöfer[3, p. 9] writes: „ESM [Enterprise Service Management] is a strategic approach to applying a service-oriented business model to the internal mode of operation of an organization. It is an operational architecture model in which each functional area of an organization that provides internal services is defined as a service domain. The actual services provide results for other functional areas. These in turn deliver results for external customers - the actual business model of the organization.

Basically, ESM is about simplifying and standardizing internal workflows, automating them where possible and making them traceable and measurable. Properly implemented, Enterprise Service Management can accelerate business processes, increase the productivity and profitability of the organization - and ensure satisfied employees."

Tisson [11, p. 245] describes „Enterprise services as the exchange of services between companies, customers and suppliers on the market and as the result of internal service processes".

Maurer [6] also defines ESM via ITSM. He writes: "It makes sense to also digitalize and offer standardized and (partially) automated services for departments such as HR, marketing or sales. Examples include electronic personnel files or automated lead and campaign management. In this case ITSM becomes the more comprehensive ESM".

There are suitable tools on the market not only to map IT service management processes and functions, but enterprise service processes in general [7]. So, ITSM tools are available, that explicitly address areas of application such as facilities management or personnel management[5, p. 13].

It is notable that, when researching the keyword Enterprise Service Management, just few scientific publications on the topic can be found, compared to several market providers from the ITSM, sector who have already extended their tools for Enterprise Service Management.

3. Study on first adaptions from ITIL

Our evaluation of business distribution plans of state and federal authorities has shown that in most authorities the Internal Service division is organised in one unit. In many cases, this is also called "Internal Services" or has comparable names such as "Central Services" or similar. In a few authorities, the area is divided into several sub-areas in organisational terms. Irrespective of the organisational form, requests concerning services from the employees of the authorities - the customers of the services - can, in our experience and research, rarely be addressed via a central telephone number or a central portal. Instead, in most cases separate telephone numbers or named contact persons are given for each sub-area - e.g. in the business distribution plan. In some cases, there are already existing service points for parts of the area. However, it is not uncommon for users to have to "ask their way". In order to improve this situation, a service desk implementation seems to be a first useful adaption from classic ITSM.

3.1. Service Desk

In IT Service Management according to ITIL, the so-called Service Desk represents an essential function. It is the single point of contact between users and the IT organization. Users should contact the Service Desk for all requests concerning IT matters. This includes in particular incident reports and the addressing of so-called service requests. This is because the ITIL-based service desk, as a service functional unit, primarily provides first-level support for the incident management and request management practices. In order to be able to adequately answer or process the wide range of user queries, the Service Desk employees are integrated into the IT processes as follows:

- First of all, of course, they know all the services that the IT sector offers.
- They know the service level agreements on which the services are based.
- They are informed about maintenance windows and upcoming changes such as new releases.
- They provide users (ideally proactively) with information on the processing status of their request and are corresponding involved in the processing information flow.
- In a best-case scenario, they can completely process some of the incidents, service requests, and possibly other issues themselves.

One goal is to ensure that the service desk represents the IT area to the outside world well. Another goal is to build up sufficient expertise in the Service Desk so that users prefer to call it, rather than asking a colleague directly ("hey-Joe principle"). For the IT department itself, the Service Desk also has several advantages [10, p. 182]:

- Since the Service Desk is always tool-bound, statistics can be called up at relatively short notice, e.g. an overview of which service has had the most problems in the past month or which services are particularly in demand.
- It is also tool-based and thus verifiable whether service levels have been maintained, if so which ones have been agreed. At least it is easy to determine how long it took on average to process a particular incident.
- It is easy to generate an overview of which incidents and service requests are still open.

- With the help of a central service desk, it is possible to find out relatively quickly whether users are affected by a whitespread incident.
- No requests are lost or forgotten.
- Structured processes with clear responsibilities lead to improved teamwork and better communication within the IT service.
- And last but not least: Competent IT specialists can deal with a problem without being interrupted by user calls again and again, since the Service Desk employees are responsible for communication with the users.

Just as in the IT service area, the Internal Services receive requests of the same structure. Users want to report incidents here and there, receive information or inquire about services offered. Examples of incidents in the Internal Service area could be, for example:

For the area of the Internal Service designated above under a)

- non picked up post
- the failure of a plotter/copier

For the area of the Internal Service designated above under b)

- a broken office chair

For the area of the Internal Service designated above under c)

- central failures of the building services (electricity, heating) or
- local faults such as a defective office lamp, a defective tap, defective sanitary facilities or missing soap/towels in the sanitary facilities

The decisive factor here is first and foremost which services the Internal Service provides for users. Examples of service requests from the Internal Service could be:

For the area marked a) above:

- A duplication order.

For the area marked b) above:

- Order of office supplies from a product portfolio offered

For the area marked c) above:

- Order of the transport service or a vehicle for a business trip
- Booking a conference room

In principle, the same advantages that a central service desk offers for the IT area - namely essentially user-friendliness, relief of the service area internally and the efficient acquisition of management information - would also result for the internal service area. However, an essential feature of a Service Desk according to ITIL is its integration into the ITIL process landscape. A service point that works

largely isolated from the rest of the service area would not be a service desk in the sense of ITIL. Nor would a Service Desk in the sense of ITIL be a Service Point in the midst of processes, none of which are based on the Service Management approach of ITIL. At least one incident handling process based on the Incident Management process should already be in place or should be introduced parallel to the Service Desk. In another study it has already been shown that a process based on Incident Management could be adapted to the area of Internal Services [2].

3.2. Service catalog - customer view

For a Service Desk to work well, users and Service Desk staff need to know the services offered. In the field of IT, the so-called service catalog according to ITIL can serve this purpose: "The service catalog is part of the overall service portfolio in the form of a database or a structured document with information on all live IT Services, including those services that are available for deployment" [4, p. 61]. By means of a service catalogue, transparency is created for users which services the service area offers for them. However, the service catalog goes far beyond a rudimentary list of responsibilities in a business distribution plan. It lists the individual services offered in a level of detail that is oriented towards the user, and indicates which approval processes an order must go through and when the result can be expected. In principle, a service catalogue is possible for all service areas, including internal services. In the Internal Services area, it could contain the following information, for example:

For the area marked a) above:

- With how much lead time must a print job be submitted? Can special orders such as large colour plates or similar be processed? What does the approval process look like?

For the area marked b) above:

- Are there different chair models or high desks for office equipment? What does the application process for this look like?

For the area marked c) above:

- In which cases can the transport service be ordered and how many days/hours in advance must the demand be announced?

All this can be made transparent to users via the service catalogue. Via single sign-on, identified users can view the service catalogue tailored to their individual needs. According to original ITIL literature, "the service catalogue acts as a procurement portal for customers and contains not only price information but also service level obligations and conditions for service provision [4, p. 113].

At present, users in many authorities still have to ask for this information individually, if it is known at all. A lot of time is lost in this process, both the working time of the users and the working time of the employees of the internal services.

3.3. Service catalogue – from service organisation perspective

Apart from that, the service catalogue is also a support for the service area itself that should not be underestimated: The service catalogue also provides employees in the service area with an overview

of all services offered from their department. However, the support of the service area through the service catalog goes far beyond an overview for information purposes. The service catalog according to ITIL has an internal view of the services in addition to the user view towards the customer - the so-called customer-oriented services [4, p. 111]. These are services that run in the background - usually invisible to the user. These are sometimes outsourced in whole or in part to service providers - be they external or internal service providers. The existing Operational Level Agreements (OLAs, agreements between work areas of the same authority) or Underpinning Contracts (UCs, contracts with third parties) are described, but also the required components [4, p. 115].

What could be supportive services in the area of internal service? In the area of the motor pool, a supporting service would be, for example, the maintenance of the vehicles. One component would be, for example, an IT-supported vehicle management and booking tool, which is generally being used in this area. This in turn has to be operated. There can either be an agreement with the internal in-house IT or an external service contract (or both).

In the area of building management, the supporting services could include the cleaning service, perhaps also the delivery or procurement service for new towels, soap, and so on. Probably there is also a maintenance or service contract for the heating system.

In the area of duplication and printing, supporting services would be, for example, the maintenance of the plotters and the supply of new plotter cartridges and printer paper.

3.4. Service catalogue - creation

Creating a service catalogue for a service area is certainly not trivial. Even the question of what a service is "cannot be answered as easily as it may seem at first glance" [4, p. 111]. "Every organization must develop a policy for what a service is and how it should be defined and agreed upon. As a first step, in many cases a survey of customers is helpful to find out what services they use and how these services are aligned with and support business processes" [4, p. 111]. This information, together with the existing knowledge of the service area itself, forms the basis for a strategic assessment as to whether services should continue to be offered in the current scope. An inventory and evaluation helps to identify services that are offered but for which there is little or no demand. Sometimes it is found that it makes sense to revise and adapt services in the light of current developments or to think about completely new services. In principle, ITIL recommends that you evaluate services not only once when you first create a service catalog, but on an ongoing basis. The help of the users is also sometimes required when it comes to using user-oriented terms for the services offered. This ensures that the service catalog is accepted by the users later on.

3.5. Request and incident models to supplement the service catalogue

The service catalogue clearly shows the customer which services are offered and how they can be ordered. The internal view of the catalogue gives the staff of the Internal Services devision information about the supporting services. To process a service request, ITIL also recommends creating a so-called request model for each request. Such a model contains a "standard process flow as well as the roles and responsibilities" [10, p.108-109]. Before a service is added to the service catalog, the corresponding request model should be created. This is possible because service requests can be completely planned from the start.

For the Internal Services devision, a service request could be a print job in the print shop. As an example, a cost-intensive print on a DIN-A-0 Kapa plate is to be ordered. In the service catalogue, it is transparent for the user who wants to order this plate whether and, if so, which approvals are required. Ideally, the approval workflow is tool-supported and the user can trigger the order immediately via the service catalog.

For example, the request would be submitted electronically via the supervisor and/or the responsible cost center. The printing company would receive the print job that has already been approved, would execute the print job within the agreed time, reorder material if necessary, carry out the necessary documentation and communicate the status as agreed.

For the area of Incident Management, the creation of Incident Models for recurring incidents is useful. However, it is not possible to create an incident model in advance for every incident in the IT area, since incidents cannot be planned and predicted completely. However, for some incidents - just those incidents that "concern an event that has already occurred in the past and can occur again at any time" [10, p. 86] - it is possible to create a model. For example, it would be conceivable to create an incident model in the Internal Services devision for the incident "Heating does not work as intended" and store it in the Service Desk. This would record the recommended process run-up in the event of a malfunction.

As an example, the following could be illustrated: who is responsible first, which heating parameters are to be checked, who is to be informed by whom next and by what means, etc. The internally agreed reaction and recovery times are also relevant here. An incident model for the malfunction of a non-functioning luminaire is also conceivable. In many cases, this malfunction can be safely remedied by replacing a lamp. Even if such a replacement seems simple at first glance, it is helpful to go through the process of the case of the defect and the steps to be taken and record them in an incident model. Such a model would then record who is responsible, which room-specific features exist, when new lamps have to be ordered, whether and what recovery times have been agreed and what has to be done if the lighting still does not work despite the replacement of the lamp and, last but not least, how the flow of information and documentation has to be carried out.

4. Consolidation of IT- and Internal Services

It is not always obvious to the user whether IT or Internal Services is the right addressee for a request. One area for which both, Internal Services and IT, can be responsible, is the area of copy printers in the sense of multifunctional devices. In the event of a fault, it is not always clear to the user what the exact cause of the fault is and which unit should be contacted accordingly. In the worst case, the user is referred from contact person to contact person. In our experience, both areas can be responsible for replacing a printer cartridge or for questions regarding printer functionality, depending on the area of responsibility of the printer. The IT department is usually responsible for the connection to the client. However, in the event of an error it is usually only clear to the user that the printer will not print for reasons that are not transparent to him.

A similar situation can often be found in the field of electronic media equipment for classrooms or meeting rooms. Smartboards can be procured by the Internal Services, the connection of the smartboards to the client is usually done by IT. If the media architecture does not function properly, the cause of the error is usually not transparent for the user and it is therefore unclear whom to contact.

The mentioned overlapping of responsibilities is not a marginal phenomenon, as our experience shows that the number of fault reports for printers is not negligible.

In the sense of a user-oriented view, it could therefore be useful in the future to create a joint service catalogue for the two service areas Internal Services and IT. For this purpose, both areas do not necessarily have to be organizationally combined in a joint service department.

A common external presentation of the service catalogues is possible, for example, via a portal. In order to ensure a uniform presentation of the catalog both externally and internally, the departments must coordinate their activities accordingly. This can be done, for example, as part of a joint project.

In this context, interfaces between the two areas should also be identified and agreed upon - if not already done sufficiently - and corresponding responsibilities should be defined. In a first step, clear internal support agreements between the service departments must be made before a joint service catalogue is created in a second step in the interest of user-friendliness. Accordingly, the request and incident models would also be modeled across departments.

It would certainly be convenient for users to have to remember just one service number, service e-mail address, or service portal and then be supported by a joint service desk competently, through which all inquiries concerning Internal Services and IT are jointly managed. This is only possible to a limited extent with organizationally separate service units, since a service desk means much more than just a common telephone number, but also and especially the integration into the service processes.

5. Summary

The preceding investigations have shown that the ITIL constructs Service Desk and Service Catalogue, extended by Request and Incident models, can be adapted with added value to the area of Internal Services. A common idea of service management of the Internal Service and IT departments would not only help the users but also both departments themselves, especially when it comes to handling cross-departmental incidents efficiently and in a customer-oriented manner.

Further work of evaluation needs to be done about the implementation using IT tools, and furthermore, whether such an approach is in practice really more efficient compared to the current way of work.

Besides, work covering the increase of organizational governance needs to be conducted.

6. Literature

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eGovernment II

MEASURING THE DEVELOPMENT OF THE HUNGARIAN ELECTRONIC ADMINISTRATION

Anna Orbán[1]

Abstract

The creation of electronic administration and the measurement of the results achieved have been one of the central themes of research into the development of the information society for two decades. The European Commission publishes annually e-government comparative analyses (eGovernment Benchmark reports), providing insight into the use of ICT in the public sector in the countries examined.

In recent years, the measuring system has been modified and supplemented several times. The Digital Economy and Society Index (DESI) and the benchlearning approach assess the performance of e-administration on the basis of additional considerations. Hungary's performance is improving, but still below the EU average. Exploring the causes of the underperformance is a priority for catching up.

On the basis of a survey of students at the National University of Public Service, the author analyses user characteristics (digital skills, ICT use) and the characteristics of public administration (quality of electronic administration services) in their context.

Keywords: *electronic administration, performance measurement, benchmarking, DESI, benchlearning*

1. Introduction

The European Union has examined the implementation of its strategies and programmes from the outset by means of indicators, comparing Member States' performance (rankings), highlighting the best-qualified (best practice) model.

In March 2000, the European Council adopted the Lisbon Strategy[2], based on guidelines and recommendations, which aims to make Europe the most competitive and dynamic knowledge-based society in the world by 2010. [11]

The tasks of developing the information society were formulated on the basis of the eEurope initiative launched in 1999. [9] Action plans (eEurope 2002 [10], eEurope 2005 [12], i2010 [14]) have been developed to achieve these goals.

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[2] The mid-term evaluations [29] [25] have already highlighted the errors and relaunched the strategy in 2005. [13] On the basis of the competitiveness reports, new substantive changes were made in 2008. [4] [5]

The strategic goals were intended to be achieved through open coordination[3] and benchmarking[4] methods, which is a simple and useful tool for comparing Member States, but has the disadvantage of focusing too much on benchmarks and ignoring national, territorial specificities.

Initially, the evaluation of electronic public services focused on online preparedness, infrastructure, provision and use of customer-side services [8], and was gradually supplemented with other indicators (e.g. customer experience, life events, service background).

The Europe 2020 Strategy has been developed on the basis of the lessons of the Lisbon Strategy. The aim of the renewed strategy has been to overcome the crisis, to achieve a smart, sustainable and inclusive economy, with stronger governance. [16]

One of the seven main objectives is to disseminate the accessibility and use of information and communication technologies, to improve their quality and to create a digital single market. The necessary measures for smart, sustainable and inclusive growth are set out in the Digital Agenda for Europe. [15] [18]

In line with the change in strategic goals, the performance measurement framework has also been transformed. The development of the information society is illustrated by more than 100 selected indicators, including a comparison of eGovernment performance over time and between Member States. In 2015, the implementation of the European Digital Single Market was a high priority [19], and a new measurement framework, the Digital Economy and Society Measurement System, was developed to monitor strategic goals.[21]

The study further illustrates the measurability of eGovernment development through data from Hungary on the basis of various international indicators.

2. eGovernment Benchmark reports

E-government benchmarking over the past decade[5] has assessed the accessibility, quality and usability of e-government services in four main areas. The four complex indicators are calculated on the basis of the weighted averages of several sub-indicators.

An important element of the evaluation system is the Mystery Shopping and the examination of the life event (starting a business, losing and finding job, studying, family life, business operations, moving, owning and driving a car, starting a small claim procedure). In the odd and even years, different life situations are examined, leading to delays in the appearance of results. Time is an important factor in evaluating data, and due to methodological changes, data may not always be comparable.[7]

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[3] The main components of this method are: definition of directives; the development of quantitative and qualitative indicators; comparison of Member States, sectors and best practices; taking into account national specificities; regular monitoring and evaluation of the results achieved in the framework of the mutual learning processes. [11 pp. 37-38]
[4] Benchmarking is a tool for continuously monitoring progress and evaluating the situation, allowing you to compare performance levels qualitatively and quantitatively, and thus to rank. It is an important tool for learning about best practices that can lead to higher performance in line with your goals. [27]
[5] The measurement framework has changed several times in line with eGovernment action plans (2011-2015, 2016-2020). [17] [20] [22] [23]

The four key indicators and their components are:

- User centricity: online availability, usability, and (from 2016) mobile friendship.
- Transparency: provision of services, control of public organizations and personal data.
- Cross-border mobility: online accessibility, usability, and (two key factors from 2016) cross-border use of electronic identification (eID) and authentic electronic documents (eDocument).
- Key enablers: electronic identification (eID), authentic electronic documents (eDocument), authentic data sources and (from 2016) digital post (digital storage).[6]

Top Level Benchmarks (Biennial averages[7])	2012 + 2013		2013 + 2014		2014 + 2015		2015 + 2016		2016 + 2017		2017 + 2018	
	HU	EU	HU	EU	HU	EU	HU	EU	HU	EU	HU	EU
User centricity	45	70	46	73	53	77	68	80	68.8	82.8	78.8	84.8
Transparency	23	48	25	51	27	55	26	59	32.8	58.6	47.3	62.3
Cross-border mobility	17	44	24	58	24	55						
Citizen							40	61	13.3	47.8	15.3	47.5
Business							30	65	37.5	61.0	49.0	63.0
Key enablers	30	49	30	50	20	54	33	52	46.5	53.5	62.6	58.3

Table 1: Hungarian e-government development compared to EU28+ average values
Source: National Interoperability Framework Observatory (NIFO) [28], own edition

The data generally show progress, although the performance of Hungarian e-administration is lagging behind the EU average. Hungary shows the worst result in the provision of cross-border services to EU citizens[8]. The Hungarian e-administration outperformed the EU average, which is mainly due to the 100% value of digital post (storage) services. We are still lagging behind in the area of transparency, although the control of personal data has improved significantly. Differences in interpretation, methodological changes and scoring of different life event can lead to contradictory results (e.g. key enablers 20, cross-border services for citizens 40). Although aggregations involve a significant loss of information, examination of detailed data can reveal problematic areas.

3. Digital Economy and Society Index (DESI)

Since 2015, the Digital Economy and Society Index (DESI) has been introduced to measure the progress of the Digital Agenda. The five main dimensions of DESI are subdivided into over 30 indicators[9]. [24]

According to the aggregate index Hungary is one of the poorly performing countries, despite the developments in recent years it ranks 23rd. The level of network interconnection is slightly above the EU average. The use of Internet services shows fluctuations. Social networking is outstanding, but

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[6] Modified indicators: ease of use, speed of use, secure electronic storage (eSafe) and single sign-on (SSO)

[7] The benchmark estimates that a country's performance is insufficient between 0-25%, moderate between 25-50%, fair between 50-75% and good over 75%.

[8] Although one of the objectives of the digital state is: "by 2018 citizens and enterprises should be able to manage all their public administration affairs electronically (where the nature of the process allows it, including cross-border management of affairs as well);" [26 pp. 81]

[9] DESI's methodology, indicator system and weighting of indicators have also changed year on year.

online voting, learning, banking and shopping are low. Hungary has the worst results in terms of digital technology integration and digital public services.

Dimension	2014	2015	2016	2017	2018	2019
Connectivity	17.	17.	14.	15.	15.	14.
Human Capital	19.	18.	18.	18.	19.	20.
Use of Internet	18.	15.	13.	14.	17.	18.
Integration of Digital Technology	24.	25.	24.	24.	24.	25.
Digital Public Services	22.	26.	27.	27.	26.	26.
DESI	22.	21.	20.	23.	23.	23.

Table 2: Corrected ranks of Hungary[10] in DESI dimensions
Source: https://digital-agenda-data.eu/datasets/desi), own edition
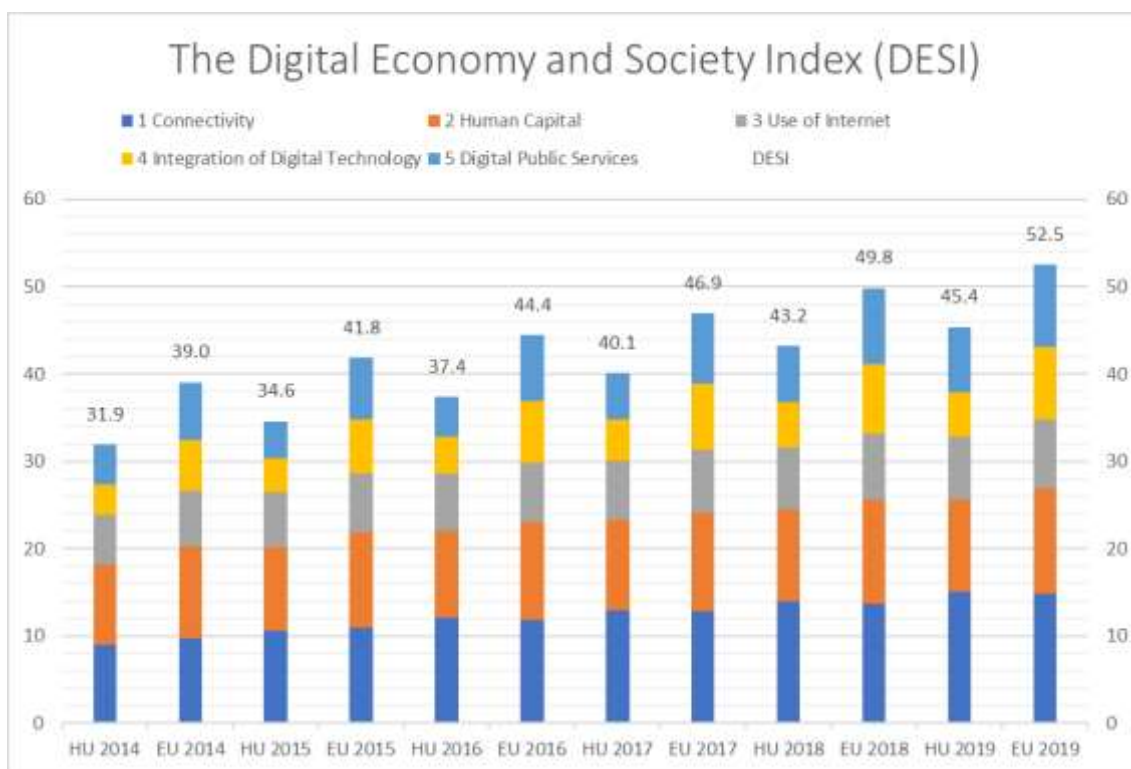
Figure 1: Change in time based on the values of Hungary and EU28 DESI
Source: https://digital-agenda-data.eu/datasets/desi, own edition

Among the digital public services, the performance of the Hungarian e-administration is improving, but it is still below expectations. With regard to open access data, the data source has changed since 2017, and Hungarian values are no longer known in recent reports. In the field of eHealth, the impact of launching the National eHealth Infrastructure (EESZT) has already appeared in 2019, but citizens' access to eHealth services is still low.

The main advantage of DESI is the ability to produce international comparisons and benchmarking at the level of dimensions, subdimensions and indicators. The methodological differences, the topicality of the data (use of earlier data), and the subsequent corrections are the disadvantages of the measuring system.[11]

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[10] Recalculated based on update and adjustments for metrics, so the rankings published in the annual reports have also changed.
[11] For more information on the analysis of the measuring system, see [1] [2] [6] [7]

The benchlearning approach: clustering of countries to drive learning

The benchlearning approach is used to link the assessment of eGovernment performance with the mutual learning process. The method used since 2015 compares countries with similar environmental characteristics.

The performance of eGovernment is measured through two main dimensions (absolute indicators). Penetration shows the availability of online eGovernment services. The degree of digitization (as an average of 4 indicators) is the level of digitization of administrative front office and back office processes. It is possible to highlight the relationship between these indicators. The analysis also covers influencing external factors (relative indicators): user characteristics (digital skills, ICT usage), administrative characteristics (quality of public administration services, openness) and characteristics of the digital environment (interconnection, digitalisation of the private sector).

Hungary was still a progressive group[12] based on 2012-2013 data, but has been reclassified as a high-potential country[13] in the following years. Despite developments, Hungary still belongs to the non-consolidated eGovernment group based on low-level digitization and medium-low penetration.

	Performance (Absolute)		Environment characteristics (Relative)					
	Penetration	Digitisation	User characteristics		Government characteristics		Context characteristics	
			Digital Skills	ICT usage	Quality	Openness	Connectivity	Digital in private sector
2017 EU28	52%	65%	51%	48%	71%	59%	60%	35%
2017 HU	31%	41%	44%	51%	58%	55%	60%	21%
2018 EU28	53%	63%	55%	53%	71%	72%	64%	41%
2018 HU	35%	42%	48%	54%	57%	53%	62%	25%
2019 EU28	57%	68%	49%	53%	70%	68%	60%	42%
2019 HU	42%	56%	42%	48%	57%	n/a	60%	25%

Table 3: Benchlearning indicators in Hungary compared to the EU average
Source: eGovernment Benchmark 2017, 2018, 2019 [3] own edition

Although the level of network connectivity is good, most indicators are below the EU average, and the country is still below the EU average in terms of digitization and penetration. There is a greater lag in digitization in the private sector and data of openness are unknown in 2019.

4. Examining the influencing factors (questionnaire survey among student)

The survey conducted among the students of the National University of Public Service Faculty of Political Governance and International Studies focuses on the use of ICT, Internet services and e-government services. The questionnaire was completed by 494 people.

Respondents have internet access: 88.1% with fixed broadband, 75.7% with mobile broadband. Only 3 people have no internet access at home. The Internet is used daily, often all day (99%). Smartphones (99.2%) and tablets (92.3%) are mostly used to access the Internet. Only 2 people have not used a mobile device.

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[12] Medium-level penetration and medium-level digitisation
[13] Medium-level penetration and low digitisation

Internet, e-mail, messaging and social networking are outstanding, but there is a low level of published public and political opinion. The low level of use of e-learning and blended learning courses was surprising, as the university uses an e-learning framework for both undergraduate and graduate courses.
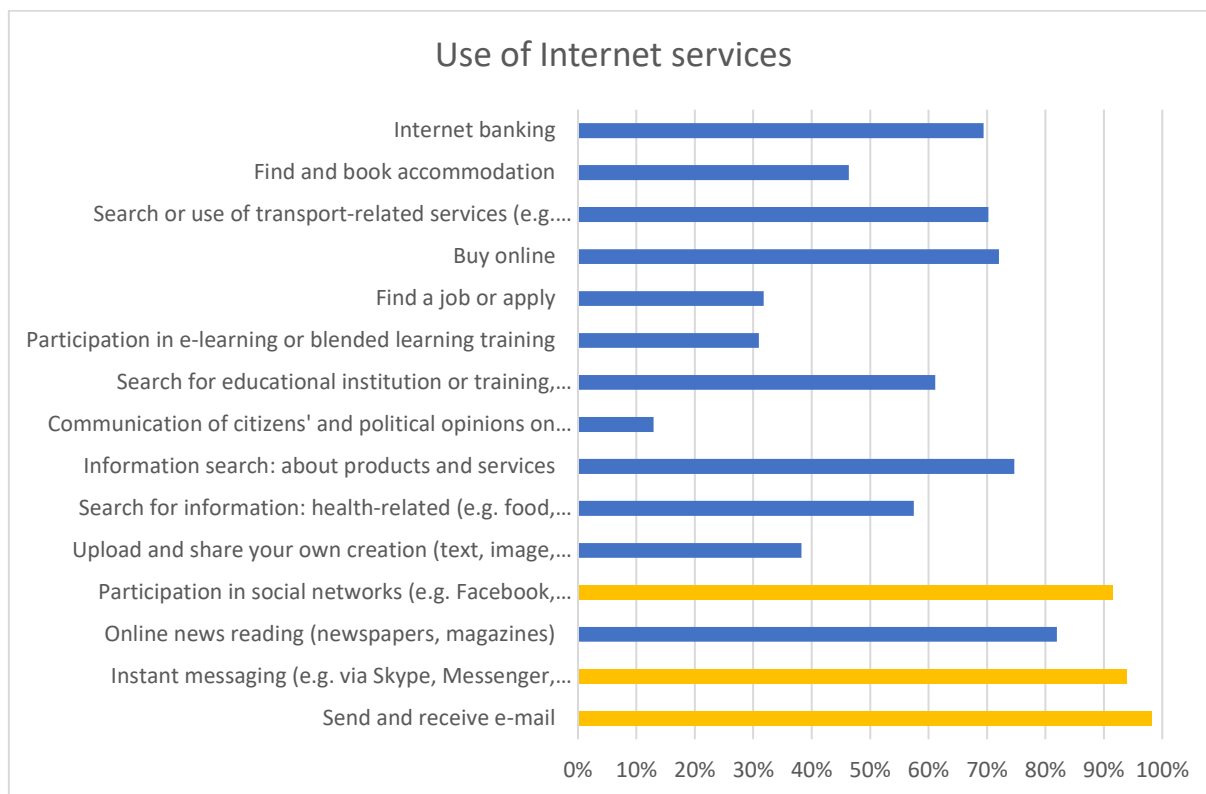

Figure 2: Using Internet Services as a citizen
Source: own edition based on questionnaire data[14]

Students have an ID for e-administration (Client Gate 98.6%). One in five students has an e-ID card but they are not using it due to the lack of a card reader.

Use of online public services is lagging behind. Most of the time they just get information on the web pages or download, print forms. Form completion and submission are low.

The most used services were the higher education enrolment procedure[15] and the proactive tax return, but they also requested documents, certificates and queried databases (real estate, motor vehicle, social security). Respondents rated the quality of eGovernment services on a scale from 1 to 7 points. Although services are generally rated as good (5 points on average), the need for future re-use of services is lower (4.2 points on average).

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[14] The values are higher than the DESI data because the respondents are students.
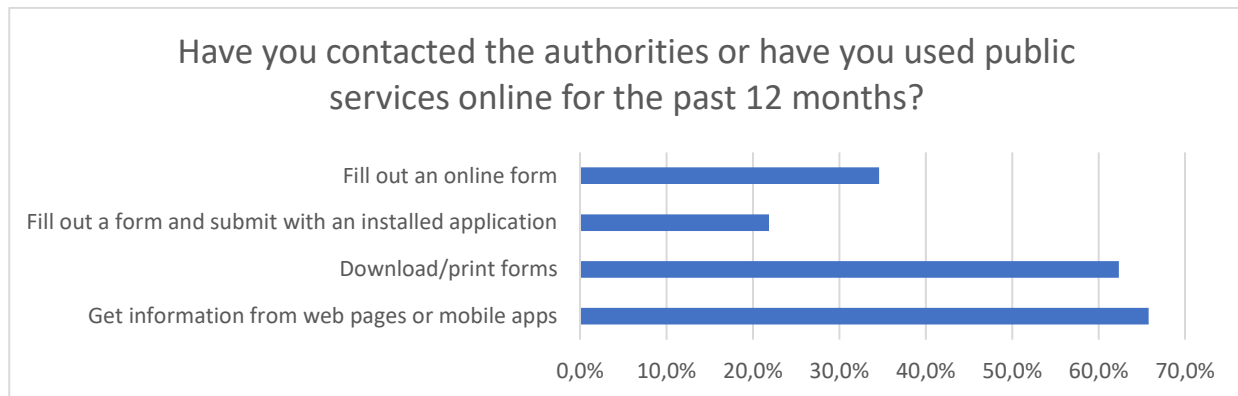[15] Electronic administration is mandatory

Figure 3: Use of e-government services
Source: own edition based on questionnaire data[16]

Although the questionnaire respondents had a high level of technical background, they only had basic digital skills (mostly searching for information, copying, moving, deleting folders, basic word processing, and spreadsheeting). The level of e-public services was rated better (5.5 point) assessed by those who, by their own admission, had little basic capabilities or no such skills.

5.   Summary and recommendations

Evaluating the performance of eGovernment at international level is also a challenge. The main objective of the European index systems presented in this study is to assess the performance levels of the Member States, providing guidance for further development. Most reports provide a snapshot of the examined period (or previous period) based on aggregate metrics. At the same time, it is a problem to follow longer-term developments due to changes in measurement methods and indicators.

It can be stated that Hungary is lagging behind in several areas besides continuous development. The positive impact of developments that have already been implemented or are ongoing (e.g. e-administration default, introduction of the Electronic Health Service Space, launch of a new personalized administration platform, Digital Welfare Program) are expected in the coming years.

The student survey data so far indicate that the prerequisites (Internet access, tools) for using e-public services are available, and Internet services are also used regularly. There would be a need to develop digital and administrative skills, digital public service knowledge (e-citizen knowledge). Experience has shown that most people are not even familiar with e-administration options or are too complicated for them, so they prefer to do their administration in person.

Once the legal framework and infrastructure are in place, another challenge is to encourage and prepare the client side to use the services.

Further research is needed to determine the impact of external factors affecting national performance (user characteristics, administrative characteristics and characteristics of the digital environment).

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[16] The values are higher than the DESI data because the respondents are students.

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USABILITY OF DIGITIZED CITIZENS' SERVICES – A HEURISTIC EVALUATION BASED ON EXPERIENCES WITH USABILITY LABS WITHIN THE IMPLEMENTATION OF THE GERMAN ONLINE ACCESS ACT

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Abstract

Germany's public administrations must go digital by law till 2022. The German Online Access Act (our translation for "Onlinezugangsgesetz", OZG) forces most services offered by public administration on federal, federal state and municipal level to become digitized. For most of these services still being paper-based and Germany not being one of the leaders in e- government according to many sources, the question of user acceptance arises. For answering the question whether the approach used in the digitalization labs leads to the development of digital public services that are accepted by future users, we conducted a heuristic evaluation of a prototype that was developed within the implementation of the OZG. The paper describes the setting, the test undertaken and the outcome and concludes with an estimate, whether the huge paradigm change towards the development of digital public services that are accepted by future users will be successful or not.

Keywords: Onlinezugangsgesetz (OZG), digitalization labs, usability evaluation

1. Introduction

E-Government is not state of the art in Germany. According to the Digital Economy and Society Index 25 of 27 European countries have advanced faster than Germany. [1] Currently, most public services in Germany are offered in a paper-based form only. Hence, the number of public services still to be digitalized is enormous and presents a major challenge for the public sector in the near future. With the "Onlinezugangsgesetz" (OZG) the national government has set the goal that Germany's public administration has to offer public services covered by the OZG digitally by 2022. [3]

For the implementation of the OZG the public services covered by the OZG have to be identified first, then prioritized and clustered. The basis therefore is the so-called OZG implementation catalogue. In summary, the OZG implementation catalog identifies about 575 public services that are covered by the OZG. These public services covered by the OZG are clustered into 35 life situations and 17 business situations. Each life and business situation is assigned to one of 14 topics. [3]

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A federal department and one or more federal states are jointly in charge for each topic. For the processing of each topic they develop an individual plan for how to digitalize each public service that is assigned to the topic. Public services that have high priority according to the OZG implementation catalogue get digitalized in digitalization labs. [4] In order to ensure the best possible transformation of the public services the team belonging to the digitalization lab consists of interdisciplinary team members such as professional experts, design experts and future users. [6] In the digitalization lab the interdisciplinary team develops a prototype of each digital public service using user-centered methods such as design thinking. [5] After the digitalization of the digital public service the prototype is handed over to the IT service provider of each federal state who then can implement the digital public service in their systems using the prototype. [4] Note that a single digital public service has up to 16 different implementations for the 16 federal states respectively.

From a quantitative perspective, the goal set within the implementation of the OZG is to digitalize the 575 public services covered by the OZG until 2022. [3] From a qualitative perspective the goal is to develop digital public services that are accepted and used by future users. This qualitative goal implies a paradigm change in the development of public services from a restriction-centered to a user-centered perspective. Hence, in the design process of digital public services, user's expectations should be in the focus of attention, while the previously more important restrictions are treated as framework conditions. [4] In this context, the question is if the approach used in the digitalization labs leads to the development of digital public services that are accepted by the future user.

Generally, a high degree of usability is a key factor for the acceptance of digital public services. [10] Due the different usability standards introduced by different experts and due to the different perspectives of different stakeholders the definitions of usability vary considerably. [7] We refer to the definition of usability by Jakob Nielsen who defines usability as "quality attribute that assesses how easy user interfaces are to use." According to Nielsen usability consists of five different quality components: learnability, efficiency, memorability, errors and satisfaction. Learnability considers "how easy it is for users to accomplish basic tasks the first time they encounter the design". Efficiency considers how quickly the users can perform tasks once they have got to know the design. Memorability regards how readily the users can restore their skill after they "return to the design after a period of not using it". Errors considers how many errors the users make, how severe these errors are and how readily the users can recover from these errors. Satisfaction regards how pleasant the use of the design is. [10]

In order to answer the question if the approach used in the digitalization labs leads to the development of digital public services that are accepted by future users, the lead author conducted a case study in her bachelor thesis. [12] In the case study, we conducted a usability evaluation of a prototype that was developed in a digitalization lab called "special use of public space".

2. Method

The prototype regarded within the usability evaluation shows how an application for the special use of public streets, such as e.g. setting up a container on a public street, could look like. According to the OZG implementation catalogue the digitalization lab "special use of public spaces" belongs to the topic "management and company development". The federal state of The Free and Hanseatic City of Hamburg and the German Federal Ministry of the Interior are responsible for the processing of this topic. All rights to the prototype are held by the Federal Ministry of the Interior. [5] For selecting a suitable usability evaluation method we firstly set up selection criteria. Since the evaluation is conducted by a single person with limited resources, the method should be feasible for one person

and be time and cost efficient. Nevertheless, the method should show the prototype's potential for optimization. Furthermore, when selecting the method the prototype's characteristic, that the way the evaluator clicks through the prototype is predetermined, has to be taken into account. Secondly, it must be differentiated between the usability evaluation methods in user-based and expert-based usability evaluation methods. After opposing each area's characteristics, advantages and disadvantages to the selecting criteria, the team decided to select an expert-based usability evaluation method. [2]

Considering the selection criteria, the team thirdly selected the heuristic evaluation as expert-based usability evaluation method. A heuristic evaluation is a usability evaluation method that is used to identify a user interface design's usability problems. Therefore, the user interface design is inspected if it complies with acknowledged usability principles, the so called "heuristics".

The outcome of a heuristic evaluation is a list of usability problems caused by the user interface design's violation of an acknowledged usability principle. [9]

According to Nielsen a single evaluator is able to find only 35 % of a user interface design's usability problems. Due to that findings Nielsen recommends to conduct a heuristic evaluation by a small group of 3 to 5 evaluators. [9] With respect to the limited resources the team had the evaluation conducted by a single evaluator. Therefore, the evaluator firstly familiarizes him- or herself with the prototype by clicking through the prototype several times. Secondly the evaluator conducted the evaluation in a two-hour session by inspecting whether any element of the prototype violates one of the acknowledged principles.

The acknowledged principles that were used for conducting the heuristic evaluation are seven out of ten of Nielsen's usability heuristics, these are #1: Visibility of system status, #2: match between system and the real world, #3: User control and freedom, #4: Consistency and standards, #5: Error prevention, #6: Recognition rather than recall and #8: Aesthetic and minimalist design. Moreover, the team included everything that doesn't violate one of the heuristics but will irritate the user while using the prototype under the heading "other usability problems". [8] Due to the predetermined way the evaluator clicks through the prototype the three heuristics #7: Flexibility and efficiency of use, #9: Help users recognize, diagnose, and recover from errors and #10: Help and documentation can't be considered within this evaluation. But since Nielsen's usability heuristics are rather a thumb rule than stationary usability guidelines [8], this doesn't detract the evaluations quality.

In addition, to the number and nature of usability problems, the team also assessed their severity. In order to find out to which extent each usability problem reduces the prototype's usability, they categorized the identified usability problems according to the estimated extent in which the usability problems will disturb the user while using the prototype and how easily the user can overcome the disturbance. They categorized the usability problems in three categories: severe, moderate and slight usability problems.

Severe usability problems disturb the user in a severe way. Due to the severe disturbance, users have to invest a high cognitive effort to overcome these usability problems. This is why overcoming severe usability problems is extremely difficult for the user. These severe usability problems disturb the user in such a severe way that it will prospectively lead to the demolition of the filing of application.

Moderate usability problems rather irritate than disturb the user. The cognitive effort the user has to practice for overcoming the moderate usability problem is lower than the cognitive effort that the user

has to practice for overcoming the severe usability problem. Accordingly, moderate usability problems are easier to overcome than severe usability problems and prospectively will not lead to the termination of the filing of an application.

Slight usability problems violate one of the inspected heuristics. They are usability problems by definition so they reduce the prototype's usability. Despite the reduction of the prototype's usability these problems do not disturb the user while using the prototype. Since slight usability problems do not disturb the user while using the prototype, the user can overcome slight usability problems without applying much cognitive effort for overcoming. Hence, slight usability problems are merely cosmetic and prospectively will not lead to the termination of the filing of application.

Depending on this categorization the team deflects the prototype's degree of usability. In this context, the team defines that the less severe usability problems are found the higher is the degree of usability.

3. Results

Altogether 28 usability problems were discovered.

Regarded Heuristic	Number of violations	Number of severe usability problems	Number of moderate usability problems	Number of slight usability problems
#1: Visibility of system status	0			
#2: match between system and the real world	6			6
#3: User control and freedom	1		1	
#4: Consistency and standards	3	1		2
#5: Error prevention	3	1		2
#6: Recognition rather than recall	2		1	1
#8: Aesthetic and minimalist design	9			9
other usability problems	4		1	3

Table 1: Results of the conducted evaluation

With nine violations the eight heuristic "Aesthetic and minimalist design" was most frequently violated. This means, that the prototype often shows information which is rarely needed or irrelevant. This rarely needed or irrelevant information competes with the relevant information and reduces the relative visibility of the relevant information.

The second heuristic "match between system and the real world" was violated six times. Three of these six violations mean that the prototype uses terms that are unfamiliar to the user, so the prototype does not speak the user's language. The other three of these six violations mean that the information appear in an order that is unnatural or illogical for the user.

The fourth heuristic "Consistency and standards" and the fifth heuristic "Error prevention" were violated three times. The three violations of the fourth heuristic mean that the user must think at three points of the prototype if different actions or words mean the same. The three violations of the fifth heuristic mean that at three point of the prototype there are error-prone conditions that are not eliminated or presented to users before they pledge themselves.

The sixth heuristic "Recognition rather than recall" was violated two times. This means that actions and objects are not made visible so the users have to remember information between different parts of the Prototype.

The third heuristic "User control and freedom" was violated one time. This means that if the user used the prototype in an unwanted way he would have to run through an extended dialogue to correct the unwanted use.

The first heuristic "visibility of system status" was not violated at all. This means that the prototype always informs the user about what is happening.

Under the heading "other usability problems" we assigned four issues that will irritate the user while using the prototype. These were issues such as information overloads or showing conflicting information.

A detailed explanation of all usability problems can be found in the bachelor thesis. [12] As result of the severity analyses, the team found out that two of the 28 identified usability problems are severe usability problems, three of 28 usability problems are moderate usability problems and 23 identified usability problems are minimal usability problems. Although these usability problems reduce the prototypes usability, they do not disturb the user while using the prototype so the user also does not even have to overcome these usability problems. These 23 usability problems were merely cosmetic. According to this evaluation the team found that despite existing usability problems the prototype has still a high degree of usability.

4. Discussion

The findings of our usability evaluation show that the evaluated prototype has a high degree of usability and therefore can be judged as a useful tool to facilitate developing digital public services of a high quality (i.e. high user acceptance).

However, there is a number of limitations regarding the evaluation process. First, the above described heuristic evaluation was conducted by a single person. According to Nielsen a single evaluator is able to find on average 35 % of a user interface design's usability problems. Due to this fact Nielsen recommends conducting the heuristic evaluation by a small group of 3 to 5 evaluators. [9] Hence, a larger group of evaluators might have detected more usability problems or judged their severity differently. If for instance further evaluators detected more usability problems and judge their severity rather as severe the prototype's overall usability could be lower than according to our conducted evaluation. If further evaluators detected more usability problems and judged their severity rather as slight the prototype's overall degree of usability could still be high. Second, the chosen method was an expert-based method. Hence, the evaluator was a usability expert and not a "real" user. This raises the question to which extent the usability problems identified by the evaluator correspond to usability problems an user would experience. [11]

Third, the three heuristics "#7: Flexibility and efficiency of use", "#9: Help users recognize, diagnose, and recover from errors" and "#10: Help and documentation" by Nielsen weren't considered within the conducted evaluation. Included these heuristics into the analyses might have led to different results.

Finally, it has to be taken into account that the degree of usability is only one of numerous key factors for the acceptance of digital public services. Other key factors for the acceptance of digital public services such as the user's trust in information security should also be considered.

The following implications for future research and evaluation may help to overcome the limitations listed above. The prototype should be evaluated by 2 - 4 additional usability experts. Furthermore, we recommend conducting another heuristic evaluation using the three not considered heuristics and conducting a user-based evaluation as soon as possible. Since the degree of usability is not the only key factor for the acceptance of digital public services, we also recommend regarding other key factors for the acceptance of digital public services.

In consideration of these limitations this heuristic evaluation is a first but very important step in the inspection of the paradigm change in the development process of digital public services.

Regarding only the degree of the prototype's usability, we still conclude that due to the prototypes high degree of usability the digital public services developed in the digitalization lab "special use of public spaces" will prospectively be accepted by future users. Regarding the qualitative goal set within the implementation of the OZG this means that the qualitative goal will prospectively be fulfilled.

Comparing the previous development of digital public services in Germany before the implementation of the OZG with the development of public services now within the implementation of the OZG, there is a fundamental difference. Within the implementation of the OZG the development of digital public services changed fundamentally from a restriction-centered to a user-centered perspective.

We assume that the reason for the fulfilling of the qualitative goal is the paradigm change in the development of digital public services form a restriction-centered to a user-centered perspective. Regarding the digitalization lab "special use of public space" this means, that the paradigm change led to the development of digital public services that have a high degree of usability and will accordingly be accepted by future users. In summary, this means that regarding the digitalization lab "special use of public space" the paradigm change towards the development of digital public services that are accepted by future users was successful.

Regarding the overall development of digital public services within the framework of the OZG we conclude that if the approach used in other digitalization labs for digitalizing public services will also be less restriction-centered and more user-centered like in the digitalization lab "special use of public spaces", the other digitalization labs also would prospectively fulfill the qualitative goal set within the implementation of the OZG. Within the bigger picture this would mean that all prototypes developed in the digitalization labs would have a high degree of usability. Translating these assumptions into the inspection of the huge paradigm change this means that the huge paradigm change towards the development of digital public services that are accepted by future users will prospectively be successful.

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THE NETWORK INFORMATION SYSTEMS DIRECTIVE (EU) 2016/1148: INTERNET SERVICE PROVIDERS AND REGISTRIES

Domenica Bagnato[1]

Abstract
The NIS Directive [1] defines critical infrastructures and operators of essential services. It also calls for organizational measures to ensure these infrastructures are protected from cybercrime and terrorism. This also includes the establishment of a national framework for emergency response. The list of essential services in Annex II does contain certain elements of Internet infrastructures, such as Domain Name Servers and Internet Exchange Points. However, in a truly remarkable omission, the Directive does not include Internet Service Providers (ISP) [2]. Since operators of essential services are subject to stringent security requirements, it would be helpful to include them as operators of essential services. This seems even more appropriate as many other Annex II infrastructures, such as banking, health and transport, heavily rely on a working Internet infrastructure, which is largely dependent on ISPs.

This paper discusses the omission in the NIS Directive of the ISPs and the incomplete list and co-dependent registries namely, the IP address space registry and the Autonomous System registry and their necessity in supporting the root Domain Name System.

1. Network Information Systems Directive (NIS)

On the 6th of July 2018, the Network Information Systems Directive (EU) 2016/1148, referred to in this paper as the NIS Directive, was passed by the European Parliament and the Council of the European Union.[2] The NIS Directive formulates a defence strategy against an impending threat to critical infrastructure <u>concerning</u> the EU Member States, namely cyber-attacks. The word "*concerning*" highlights the fact that not all critical infrastructure particularly digital infrastructure pertaining to the Internet may be located in the EU Member State region.

2. Internet Service Providers (ISP)

Loosely speaking, an ISP provides individual internet users or organisations, with their own private networks including servers and routers, with Internet access. RFC 1930 defines an Autonomous System (AS) as:

*"a **set of routers** under a **single** technical **administration**, using an **interior gateway protocol** and common metrics to route packets within the AS, and using an **exterior gateway protocol** to route packets to other ASes."* (my emphasis) [3]

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[2] [1] In the following, "Directive" or Recitals or Articles without further reference will refer to [1].

Technically speaking, an ISP is an instance of an "autonomous system" (AS), as defined in RFC 1930, that connects other ASes and end users to the Internet.

In the following, this functionality is discussed to provide an overview of what is involved but also the design choices a possibly updated Directive has to face. Two factors also have to be taken into account:

- ISPs (an instance of an AS) are sometimes not directly responsible for all the infrastructure discussed below;
- ISPs can take many forms as exemplified in the list of Austrian ASes: [4]
    - They can be large "classical" full range providers with (typically their own) land lines, mobile phone networks and other media, such as sub marine cables;
    - Purely mobile phone operators;[3]
    - Cable networks (which happens to be the largest provider in Austria in terms of IP addresses);
    - Private company networks; and
    - Municipal operators.

Nevertheless, they all have to, either by their own resources or in cooperation with other ISPs, operate the infrastructure of an autonomous system. This very infrastructure can be seen as a protected "asset" according to the Common Criteria for Information Technology Security Evaluation (CC) terminology. [5]

Result 1: Hence, an ISP, an instance of an AS with all the functionality associated with it, should be included in the NIS Directive in Annex II.

Furthermore, whether the NIS Directive makes use of the technical term "AS" or not is fundamentally a legalistic topic. In Recital 18 of the Directive, the term Autonomous System is defined as "a technically stand-alone network", which contrasts to the terminology of RFC 1930. It is recommended that RFC terminology be used in definitions in the NIS Directive.

3. The Internet Topology and its Physical Media

It is important to understand the basic layout of the internet because this influences the type of physical media and digital infrastructure that is used. The internet comprises of different types of ISPs that can be categorized into three tiers. Tier 1 providers, also called transit providers, are responsible for providing internet coverage over the entire internet region. These companies own or lease[4] from carriers terrestrial and sub marine fiber optic cables [6] that may expand thousands of kilometers all over the world and have a Settlement Free Peering relationship (SFP)[5] or transit free network, that is

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[3] Which nevertheless operate their own land lines for connecting their masts.

[4] Fiber optical cable to be leased is called Dark Fiber. See https://www.luxconnect.lu/dark-fiber/, https://www.Hawe telekom.com/mapa-sieci

[5] As an example see the Settlement Free Peering agreements of TeliaSonera, Telxius and Deutsche Telekom. TeliaSonera https://web.archive.org/web/20160817032814/http://www.teliacarrier.com/dms/teliasoneraic/Documents/tsic-pp-10.pdf; Telxius, https://telxius.com/wp-content/uploads/2017/08/Peering-policy-Telxius.pdf; AT&T, https://www.corp.att.com/peering/; Deutsche Telekom, https://www.peeringdb.com/asn/3320

they do not pay to access their peer's network. Each ISP has connection points, Points of Presence (PoP), where service providers may connect,[6] at the end or along their physical lines.

The backbone of internet is a transit free network that enables Access Service Providers, known as Tier 2 providers, to connect to it for a payment, who in turn enable end-users to connect to the internet. Some Access Service Providers may have a SFP relationship with each other, if it is mutually beneficial but fundamentally, they pay to enable their internet traffic to pass through another internet service provider's network as shown in Figure 1. They too may own or lease physical media that enables the transmission of data, but on a much smaller scale than the Tier 1 ISPs. [7]

The final type of Internet Service provider is a Tier 3 ISP who pays for internet transit connecting to higher-tier ISPs, usually but not exclusively Tier 2 ISPs, in connecting the end customers to the internet. However, Tier 1 ISP may also have tier 3 ISPs or transit ISPs as their customers as well, who provide the so-called last mile Internet access and own or lease physical media to connect the end customer. They connect end customers to the internet via cable, DSL, fiber optic or wireless networks for example. The question arises, which parts ought to be protected by the NIS Directive.
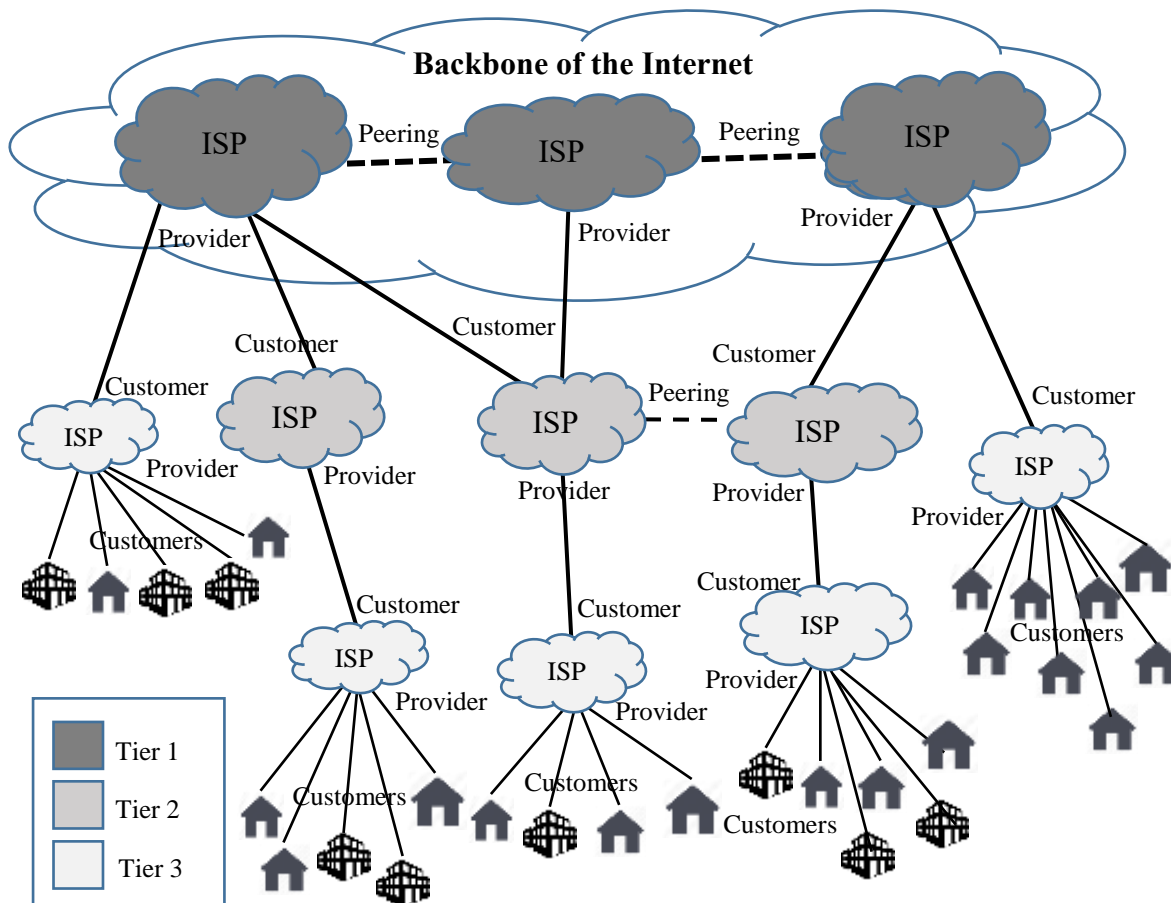

Figure 1: Internet Topology and ISP Tiers [7, p.116]

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[6] Examples of PoP locations and fiber optic networks include Telia carrier's fiber optic network and PoP locations, https://www.teliacarrier.com/Our-Network.html, PoP locations of Deutsche Telekom Global Carrier, https://globalcarrier.telekom.com/network.

Physical media will vary according to the level of the ISP and their access to resource. The last mile service provider may use fiber optic, coaxial or twisted pair copper wire cabling, wireless or satellite links. The Tier 2 ISPs as shown predominantly make use of fiber optics, wireless or satellite links and the backbone itself predominantly uses fiber optic cable as it is the fastest and most efficient of all the transmission media widely used. Figure 2 is a summary of the transmission media. Furthermore, not all physical media is owned by the ISPs and hence they rely on the carriers to maintain them.
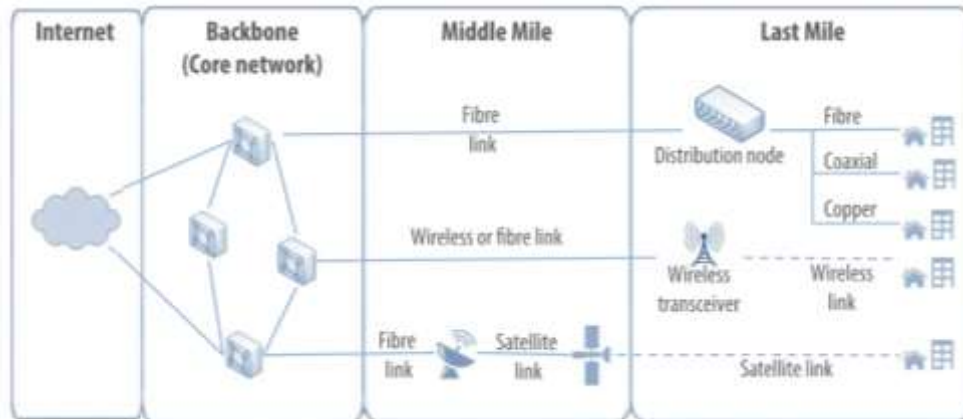

Figure 2: Segment from a Broadband Network [8]

Result 2: Tier 1-3 physical networks (including their access points) should be included in Annex II of the Directive.

4. How Autonomous Systems connect to each other

ISPs can connect to one another via private or public peering.

4.1. Private Peering

Private peering, also known as bilateral peering or Private Network Interconnect (PNI), is predominantly used by larger ISPs.[9] It is a direct connection into a data center or colocation center, usually using a simple dark-fiber cross-connect, between two peering routers.[10] Tier 1 ISPs make use of PNI because of the large amount of traffic between their peers. It also offers the most control due to the utilisation of the interface of traffic in both directions being clearly visible.[7, p. 127] This arrangement is most beneficial when there is large amounts of traffic and where ISPs want to choose with whom they share traffic to create a mutually beneficial exchange. Most PNI connections are located at carrier neutral colocation facilities and the costs are usually shared between the two ISPs peering (cf. the connection named "peering" in Fig. 1).

At this point, it is important to mention routers because they are fundamental in the functioning of the Internet. The routing process includes: (i) determining which links across a network should be used so that data is transmitted to the correct destination; (ii) transmitting data packets across the internetwork to its destination; and (iii) performing protocol conversions when the protocol used by connecting networks are different. [11, pp. 17f] Routing protocols are the software that enable the router to perform its function and the most common is Border Gateway Protocol (BGP). ISPs are essentially a network of routers and communication links. [3, 11] The responsibility of the routers is covered under the protection of ISPs because routers are an integral part of their infrastructure.

4.2. Public Peering

Public peering is done via an Internet eXchange Point (IXP)[7]. An IXP is defined as "*a physical network infrastructure operated by a single entity with the purpose to facilitate the exchange of Internet traffic between Autonomous Systems. The number of Autonomous Systems connected should at least be three and there must be a clear and open policy for others to join.*"[13] An IXP can also be seen as "*a layer 2 network where multiple network entities meet, for the purpose of interconnection and exchanging traffic with one another.*" [7, p.132]. An IXP usually began with a single layer 2 switch and as more participants connected, more switches were added. The European Internet Exchange Association (EURO-IX) states that an "*IXP is a single physical network infrastructure, (often an Ethernet local area network)*".[13] IXPs are popular because they enable smaller networks to connect together to provide Internet Service to a local area.
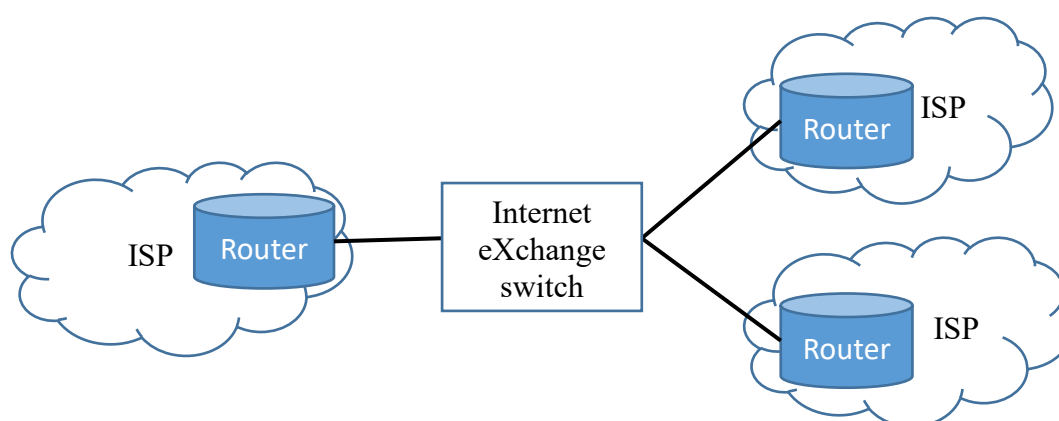

Figure 3: Internet eXchange Point (IXP)

Internet Service Providers can be commercially categorized into global, regional, national and local. IXPs facilitate that smaller ISPs join in order to cater for a particular area. They may enter into SFI agreements to provide transit to other participants and share the costs of connecting to a larger regional and/or global ISPs, which is usually costly. [14] It also facilitates the efficiency in routing Internet traffic and avoiding issues such as the trombone effect, where data takes a substantial detour to reach its destination. IXPs are essential in breaking the monopoly of larger ISPs and enable a more efficient and faster Internet Service in local and regional areas. Global ISPs may for example have PoP locations in major cities, such as London, Amsterdam, Sydney, Hamburg where it is most advantageous, which would leave many regional and local areas not covered. IXPs are essential in areas where it is difficult to lay terrestrial cables such as in densely populated cities or undeveloped countries who are looking to enable widespread Internet access in their country or area. [15] IXPs are usually managed by a separate entity, who is not an ISP and hence is not an ISP competitor in providing services to participants or end-users. [12] Therefore, IXPs are not necessarily the responsibility of the ISPs and therefore needs to be specifically addressed in the NIS Directive in order to protect this digital infrastructure.

Concerning the NIS Directive, there are 210 registered IXPs and 9,773 participants connected to IXPs in the European Union to date as shown in Table 1. Table 2 lists the top 3 IXPs with the most number of participants connected to IXPs in Europe. There are 807 participants connected to the Amsterdam

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[7] Also called IX, exchange Point (EP), Internet Peering Point (IPP), Network Access Point (NAP) and Transit Exchange. [12]

Internet Exchange in the Netherlands for example, demonstrating the large number of ASes that are connected to just one Exchange Point.

EU Member States	No. IXPs	No. Participants	EU Member States	No. IXPs	No. Participants
Austria	6	204	Italy	12	649
Belgium	3	71	Latvia	3	42
Bulgaria	8	268	Lithuania	4	93
Croatia	1	34	Luxembourg	2	79
Cyprus	1	3	Malta	1	0
Czech Republic	5	315	Netherlands	14	1862
Denmark	5	106	Poland	13	1570
Estonia	4	38	Portugal	4	60
Finland	5	97	Romania	8	181
France	34	1124	Slovakia	3	108
Germany	35	1892	Slovenia	1	27
Greece	2	53	Spain	12	298
Hungary	1	67	Sweden	18	456
Ireland	5	76	**TOTAL**	**210**	**9773**

Table 1: Number of IXPs and participants per EU Member State
Collated by author from data at [16]

Country	City	Exchange Name	No. Participants
Netherlands	Amsterdam	Amsterdam Internet Exchange	807
Germany	Frankfurt	Deutscher Commercial Internet Exchange DE-CIX Frankfurt	776
Netherlands	Amsterdam	Neutral Internet Exchange	654

Table 2: The three largest IPXs in the European Union Member States
Collated by author from data at [16]

This data shows the massive scale of the infrastructure involved. There is, however, little information about the PNIs and the extent of their connections. IXPs are already in Annex II of the NIS Directive as critical infrastructure (see [2]).

The NIS directive states that an

"'*internet exchange point (IXP)*' *means a network facility which enables the interconnection of more than two independent autonomous systems, primarily for the purpose of facilitating the exchange of internet traffic; an IXP provides interconnection only for autonomous systems; an IXP does not require the internet traffic passing between any pair of participating autonomous systems to pass through any third autonomous system, nor does it alter or otherwise interfere with such traffic;*" [Article 4, (13)]

Firstly, the NIS Directive fails to protect PNI connections, connecting two ASes, which may be used to connect Tier 1 ISPs and many larger Tier 2 ISPs. Some IXPs have a small "service subnet" for monitoring and troubleshooting and may even host an email server and other services for members. Additionally the AS may provide routing information and information on network activity for its members such as a looking glass and commercial software is available and no doubt used to manage

IXPs.[8] It is common that an IXP be in itself an AS. The NIS Directive's definition would exclude these IXPs and hence they are not protected.

Result 3: The author recommends that the NIS Directive include and hence protect all points of exchange from the very basic such as a port-to-port connection right through to commercially managed IXPs, which are in themselves Autonomous Systems managed by commercial software.

5. Registries and their implementation on the Internet

The NIS Directive in Annex II, lists Top Level Domain (TLD) name registers as critical infrastructure[9] and hence it is the author's proposal that two registries that are closely related to TLD and fundamental to the internet should also be included, namely AS and IP registries.

5.1. AS and IP registers

The Internet Assigned Numbers Authority (IANA), located in the US, is responsible for globally coordinating the "*full range of IPv4 and IPv6 addresses and the whole 32-bit Autonomous System (AS) Number range* and ensuring the uniqueness of the full set of these Internet resources. [16, 17] IANA allocates AS numbers and IP address blocks to five Regional Internet Registries (RIRs), namely APNIC (South/East Asia, Oceania), ARIN (US, Canada), RIPE NCC (Europe, Central Asia, Arabia), LACNIC (Latin America), and AFRINIC (Africa). [10]

An IP address is a unique identifier that enables the navigation of data packets to a recipient on the Internet. Furthermore, information is stored pertaining to IP addresses such as: (i) postal address of registrant, (ii) location of the user; (iii) routing information; (iv) services such as email, DNS, HTTP; (v) History; and (vi) Abuse. [18] The ability to be able to match up a person or entity and location with an IP address goes a long way combatting cyberattacks. There are two types of Internet Protocols, namely, (i) IPv4, which is a 32-bit address space, which creates an address pool of 2^{32} in size; and (ii) IPv6, 128-bit address space, which is 2^{128} in size. [19] On the 3rd of February 2011, IANA declared that the IPv4 central address pool was depleted, after having allocated the last of its IPv4 addresses. IPv4 contained over 4.3 billion IP addresses. The solution was to introduce the Internet Protocol IPv6 [20], which created an additional 340×10^{36} IP addresses, which was successfully deployed. IANA allocates RIRs IPv6 address space when a RIR's IPv6 addresses are: (i) less than 50% of a /12; or (ii) less than its established necessary space for the following 9 months. In every case, IANA makes a single allocation to satisfy a RIR's established necessary space for 18 months [21].

An Autonomous System Number (ASN) uniquely identifies a group of IP networks run by one or more network operators with a single clearly defined routing policy. Information that is required for an applicant to receive an ASN is the applicants peering partners ASNs (at least two), their contact details and the routing policy in the Routing Policy Specification Language [22]. Each registry has a pool of AS Numbers (ASNs) from IANA and when this pool reaches a low threshold of either 20%

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[8] European Internet Exchange Association (Euro-IX), https://www.euro-ix.net/en/forixps/set-ixp/ixp-bcops/technical-recommendations/ixp-management/
[9] NIS Directive, Annex II
[10] https://www.apnic.net/about-apnic/organization/history-of-apnic/history-of-the-regional-internet-registries/, https://www.icann.org/en/system/files/files/what-icann-does-22jun12-en.pdf, https://www.ripe.net/manage-ips-and-asns/db/support/documentation/ripe-database-documentation/download-as-a-pdf

or the number of free ASNs is less than its two month need, IANA allocates another 1024 block of AS numbers.[11]

RIPE NCC, "Reseaux IP Europeens" Network Coordination Center is responsible for Europe, the Middle East, and Central Asia's Regional online Internet Registry and the EU Member States lie within its domain. Members of RIPE NCC called Local Internet Registries (LIRs) receive blocks of IP addresses and AS numbers, allocated by RIPE NCC, who in turn distribute them to end users. According to RIPE NCC, LIRs are ISPs, academic institutions, telecommunication companies and large enterprises[12] and LIRs must be a legal entity in the RIPE NCC service region.[13] There are 25,353 LIRs in the RIPE NCC region to the date of this publication.[14] The RIPE NCC database, according to the RIPE Database Documentation manual contains allocations and assignments of IP address space, reverse domain registrations, routing policy information (Internet Routing Registry (IRR)), contact information for the Internet resources used in the operation of networks or routers, and their organisations.[15] The IRR contains the routing policy of operators and their BGP route origins.[16] It is used to assist in debugging, configuring and engineering routing and addressing. The IRR enables the mapping of an origin AS to a list of networks and the validating of BGP announcement messages.[17] In relation to the database an "*AS is a connected group of one or more IP prefixes run by one or more network operators which has a SINGLE and CLEARLY DEFINED routing policy*", where the word prefix refers to "*one or more networks*".[18]

Result 4: Therefore, in order for the Internet to function it requires both ASes and the IP address space registers to remain up to date and complete. Hence, the registries, which are in the EU Member States region, administered by RIPE NCC, should be included in the NIS Directive in Annex II as critical infrastructure.

5.2. Top Level Domain (TLD) Registries

A TLD register contains all the top-level domains. The TLD name is the last part of the domain name that follows the last dot. For example, www.google.com, the TLD is .com. The generic TLDs, called gTLDs, initially published in the 1980s were .COM, .EDU, .GOV, .INT, .MIL, .ORG and .NET. [19]

As of April 2020, there are 1513 TLDs[20] and this number is expanding yearly. The TLD name list is managed by Internet Corporation for Assigned Names and Numbers (ICANN) based in the United

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[11] See section on RIR Pools, https://www.potaroo.net/tools/asn16/, https://www.icann.org/resources/pages/global-policy-asn-blocks-2008-07-31-en; For the ASNs assigned to the RIRs, see https://www.iana.org/assignments/as-numbers/as-numbers.xhtml#as-numbers-2; For the IPv4 address space assigned to the RIRs, see https://www.iana.org/assignments/ipv4-address-space/ipv4-address-space.xhtml; For the IPv6 address space assigned to the RIRs, see https://www.iana.org/assignments/ipv6-address-space/ipv6-address-space.xhtml
[12] https://www.ripe.net/participate/member-support/payment/russia/RussianFactBookEN.pdf, For a list of LIR in each country in the RIPE NCC's domain, https://www.ripe.net/participate/member-support/list-of-members/europe
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[17] http://www.irr.net/docs/overview.html
[18] ftp://ftp.ripe.net/ripe/docs/ripe-234.txt
[19] http://archive.icann.org/en/tlds/
[20] http://stats.research.icann.org/dns/tld_report/, For a current list of all of TLDs registered with IANA, https://data.iana.org/TLD/tlds-alpha-by-domain.txt

States with a regional office in Belgium.[21] Among other functions, ICANN is responsible for "*the generic (gTLD) and country code (ccTLD) Top level Domain Name System management and root server system management functions*."[22] The DNS translates a domain name typed into a web browser into an IP address and connects the user to the desired website.[23] The TLDs are transferred and stored in root Domain Name Systems (DNS), also referred to as the "*the phone book of the Internet*" [23], situated around the world connected to the Internet. ICANN is also an operator of the root DNS, l.root-servers.net. ICANN delegates the responsibility for registering gTLDs to its affiliates, only registering domain names for .INT.

There are over 2000 accredited ICANN registrars or resellers,[24] who are accredited by ICAAN and certified by the registries to sell gTLDs.[25] ICANN registrars are bound by a Registrar Accreditation Agreement and are required to register gTLDs by submitting data to registry operators,[26] who are responsible for generating the zone files for the root DNSs.[27] Mirrored root DNS servers are located around the world, including in Europe as shown in Figure 4.

5.3. Root Domain Name System (DNS)

A DNS is responsible for resolving unique alphanumeric domain names with IP addresses. [24] Using Domain Names makes it easier for users to remember and if the physical location moves, then Domain Name can be easily changed to reflect the new location that is the new IP address. [25] As of the 16th of April, 2020, there were 1088 instances of 13 Doman Name Root Servers situated across the world operated by 12 organisations, who are responsible for their upkeep. Table 3 lists the operators, the Domain Name root server or host name, its IP address and the total number of duplicated server sites for which the operators are responsible.[28] One of them is directly relevant to the EU, depicted in bold.

Host Name	IP address	No. Sites	Operators
a.root-servers.net	IPv4: 198.41.0.4 IPv6: 2001:503:ba3e::2:30	53	VeriSign, Inc.
b.root-servers.net	IPv4: 199.9.14.201 IPv6: 2001:500:200::b	6	Information Sciences Institute
c.root-servers.net	IPv4: 192.33.4.12 IPv6: 2001:500:2::C	10	Cogent Communications
d.root-servers.net	IPv4: 199.7.91.13 IPv6: 2001:500:2D::D	156	University of Maryland
e.root-servers.net	IPv4: 192.203.230.10 IPv6: 2001:500:a8::e	308	NASA Ames Research Center
f.root-servers.net	IPv4: 192.5.5.241 IPv6: 2001:500:2f::f	252	Internet Systems Consortium, Inc.
g.root-servers.net	IPv4: 192.112.36.4 IPv6: 2001:500:12::d0d	6	Defense Information Systems Agency
h.root-servers.net	IPv4: 198.97.190.53 IPv6: 2001:500:1::53	8	US Army (Research Lab)

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[21] https://newgtlds.icann.org/en/about/program; https://forms.icann.org/en/contact

[22] https://www.icann.org/resources/pages/cctlds-21-2012-02-25-en

[23] https://www.icann.org/resources/pages/cctlds-21-2012-02-25-en

[24] https://www.icann.org/registrar-reports/accreditation-qualified-list.html

[25] https://www.icann.org/resources/pages/register-domain-name-2017-06-20-en

[26] https://www.icann.org/en/system/files/files/approved-with-specs-27jun13-en.pdf

[27] https://www.domaintools.com/support/what-is-icann-and-how-is-it-related-to-registries-and-registrars#

[28] https://root-servers.org/

i.root-servers.net	IPv4: 192.36.148.17 IPv6: 2001:7fe::53	70	Netnod
j.root-servers.net	IPv4: 192.58.128.30 IPv6: 2001:503:c27::2:30	185	VeriSign, Inc.
k.root-servers.net	**IPv4: 193.0.14.129** **IPv6: 2001:7fd::1**	**76**	**RIPE NCC**
l.root-servers.net	IPv4: 199.7.83.42 IPv6: 2001:500:9f::42	165	ICANN
m.root-servers.net	IPv4: 202.12.27.33 IPv6: 2001:dc3::35	9	WIDE Project

Table 3: Domain name route servers and their operators
Author's collation, source https://root-servers.org/

Figure 4: Root DNSs in Europe
Source https://root-servers.org/

The DNS is a critical part of the Internet because nearly all services need the ability to resolve names and addresses in the globally unique DNS namespace,[29] and therefore the root DNS providers should be included in the NIS Directive in Annex II as providers of critical infrastructure. The difficulty with this is that the operators or service providers, as stated in Annex II of the NIS directive, are not all located in EU Member States, even though (mirrored) root Domain Name Servers themselves are. It may make sense to name the digital critical infrastructure opposed to the entities that are responsible for them in the NIS Directive.

Result 5: The TLD registries and the DNS service providers are included in Annex II as critical infrastructure, however DNS service providers should be changed to <u>root</u> DNS Service providers, because the root DNS servers are not protected under the term ISP.[30]

6. Conclusion

The most pressing addition to the critical infrastructure that the author is proposing to be included in the NIS Directive, particularly but not exclusively in Annex II, is Internet Service Providers (ISPs) as they are the essential operators, quasi the building blocks of the Internet, which enable among other

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[29] Threat Mitigation for the Root Server System, https://root-servers.org/publications/Threat_Mitigation_For_the_Root_Server_System.pdf

[30] The current NIS Directive fails to account for the difference between DNS infrastructure that is part of an AS and DNS servers outside the "administration" (see RFC 1930) of an AS (a.k.a. ISP).

things end users to connect to the Internet. The NIS Directive includes the TLD registry but failed to recognise that it has dependents particularly information in registries such as the IP address space registry for IP addresses are unique identifiers of every connection on the Internet and hence is fundamental to its functioning. Furthermore, AS registries should also be included as critical infrastructure as they define every network on the Internet and enable data packets to be routed to their destinations and without this numbering system, data would never be able to find its way in the vastness of the Internet. In this way, it is a given that the DNS be included in the NIS Directive, however, this should be read <u>root</u> DNS as every network on the Internet can have its own DNS server. The truly critical infrastructure and that infrastructure that is not under the jurisdiction of ISPs is the <u>root</u> Domain Name System.

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Privacy and Data Protection

INSIGHT INTO THE PERCEPTION OF PERSONAL DATA AMONG LAW STUDENTS

Vivien Kardos[1]

Abstract

In the period of the fourth industrial revolution, it can be established that the issue of data protection has become more important than ever before. There is no doubt that data, especially personal data represents a significant commercial value. Additionally, it has many impacts for the legal profession. In accordance with the increasing role of data protection, the question arises whether law students have appropriate knowledge of privacy literacy.

Based on the results of empirical research, this study has demanded a response to the question of what their attitudes are towards the importance of their personal data, how it works in practice, when, for example, using various kinds of social network sites, and which data protection guarantees are known by them. The aim of this study is to provide a brief insight, based on the results of in-depth interviews, into the reasons behind the specific privacy literacy gaps, which can be ascertained from the findings of the preliminary quantitative research.

Anticipating, it should be emphasised, that law students are not fully aware of how much personal data they may provide about themselves on social network sites. Moreover, identifying personal data through practical examples causes difficulties for law students, such as cookie ID or data concerning health. Consequently, the privacy literacy of law students needs to be improved.

1. Introduction

According to the latest publication of *Internet World Stats*, there are approximately 4.54 billion Internet users worldwide.[2] (Internet World Stats, 2019) Nowadays it is not a recent establishment that the use of social media platforms is ordinary among the life of 'digital natives'. (Prensky, 2001) According to the Article 4 (1) of the Regulation (EU) 2016/679 of the European Parliament and the Council of 27 April, 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation; hereinafter referred to as 'GDPR') personal data means any information relating to an identified or identifiable natural person ('data subject'); an identifiable natural person is one who can be identified, directly or indirectly, in particular by reference to an identifier such as a name, an identification number, location data, an online identifier or to one or more factors specific to the physical, physiological, genetic, mental, economic, cultural or social identity of that natural person. It can be stated that this definition involves a lot of information about a natural person, it has a broad interpretation, that is the reason why it is important to identify personal data in any situation.

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[2] World total Internet users: 4,536,248,808.

In this context, the question arises as to, for instance how the perception of personal data develops among a special subject group, namely law students, who also increase their knowledge of data protection. The first question is what their viewpoint is about the importance of their personal data and regarding this question, how it works in practice when using, for example, different kinds of social media platforms. Can it be clearly established that they can identify personal data properly or are some difficulties caused because of a lack of knowledge of the broad interpretation of personal data. Moreover, the question is why the perspective of law students has been chosen to be mapped and what their attitude is to data protection and privacy in the world of social media sites.

One reason for this is that they embody future lawyers even though they are still sitting on the university benches. In this context, it is difficult to imagine that some aspects of data protection will not be encountered in their work, thus it is particularly important that they focus on improving their privacy literacy beforehand. Furthermore, it is assumed that their knowledge related to data protection has been enhanced during the university years. In support of this assumption it may be established through the responses of law students that they have dealt with data protection at different depths in various kinds of courses. The aim of this study is to provide a brief insight, based on the results of in-depth interviews, into the reasons behind certain privacy literacy gaps, which can be ascertained from the findings of the preliminary quantitative research (hereinafter referred to as 'preliminary research' or 'questionnaire') performed by the author. Some of the significant issues in connection with the privacy literacy of the law students will be shown.

2. What is privacy literacy?

Literacy can be defined with the fusion of two terms, which are knowledge and skills. (Sideri et al., 2019) The concept of digital literacy may seem to have the same sense as privacy literacy, notwithstanding it should be emphasized that there are significant differences between the two terminologies. The term of privacy literacy is focused on the understanding of the responsibilities and risks associated with sharing information online, on the contrary digital literacy focuses on the task-based use of information in a digital environment. (Wissinger, 2017)

Privacy literacy is *'the understanding that consumers have of the information landscape with which they interact and their responsibilities within that landscape'*. (Langenderfer & Miyazaki, 2009) Another point of view *Trepte et al.* stated that online privacy literacy is a combination of declarative and procedural knowledge. (Trepte et al., 2015) From the point of view of developing the data protection of the students, privacy literacy has many useful aspects, for instance it is a good basis for strengthening online privacy. (Bartsch & Dienlin, 2016) Research has highlighted the users' lack of knowledge and skills to protect their privacy. (Park, 2011)

'Online privacy literacy within the frame of digital literacy is thus crucial for users' knowledge and awareness increase as well as skills enhancement in order for them to be able to assess risks resulting from information disclosure, adopt technical mechanisms and strategies for combating cyber threats and, consequently, protect themselves efficiently.' (Sider et al., 2019) According to *Givens*, the definition of privacy literacy can be established as 'one's level of understanding and awareness of how information is tracked and used in online environments and how that information can retain or lose its private nature'. (Givens, 2015) The question could be raised as to precisely which skills are included terms of privacy literacy. At present there is no sanctioned list of privacy literacy skills concerning this issue. (Wissinger, 2017)

3. Background – the preliminary research

3.1. Method

Before presenting the research on which this study is based, it is important to emphasise the factors that have contributed to and have warranted the conduct of the research detailed as follows. The questionnaire, which was carried out on a voluntary basis, was conducted on an online interface, with a total participation of 205 law students from all eight Faculties of Law in Hungary. The majority of them were full-time students, involving all years from the freshman year to the final year. Moreover, some correspondence students also took part in order to broaden the investigational spectrum. The data collection took place at the beginning of 2020. This questionnaire covered several fields of data protection and privacy literacy.

With regard to the structure of the questionnaire, which included themes of general data protection and the usage of social network sites (hereinafter referred to as SNSs), it is primarily related to the sharing and accessibility of personal data. Without mentioning all of the issues, it can be stated that it also comprises topics of daily usage of SNSs, password protection of digital devices and personal data breach. The key consideration in the creation of the questions was to be able to use them for measuring knowledge, attitudes and habits. To achieve real results, there were some questions related to practical life, such as what types of personal data are shared on SNSs. Among the questions, some of them pertained to single and multiple responses in the form of direct and indirect questions. Furthermore, scales of one to ten were also used.

3.2. Main findings

Apart from a detailed analysis of the results, the main findings of the questionnaire can be determined as follows: Although the recognition of the importance of data protection appears among law students, their "activity" on SNSs is not fully accordance with their statements. Approximately 95% of respondents use some form of SNSs on a daily basis. Not surprisingly, Facebook is the most common, however, nearly three quarters of them do not read the privacy policy at all. This is also decisive in terms of attitude.

One of the most remarkable results of the preliminary research is that it can be established that identifying personal data through practical examples causes difficulties for law students. In this context, significant gaps can be established in relation to data concerning health, as well as in the case of the cookie identifier (hereinafter referred to as 'cookie ID'), so it became justified to ask additional questions to law students in order to shed light on the underlying causes.

Knowledge gaps were also revealed in connection with the cookie ID, which will be presented in detail afterwards, given that the highest error rate was in the case of this kind of personal data, and contradictory results were obtained. Anticipating, it can be stated that most of the law students basically do not have knowledge of what exactly cookie ID means. Furthermore, approximately three quarters of the law students asserted that they were unaware of data protection guarantees.

4. In-depth interviews – the qualitative research

4.1. Method

In order to identify the underlying causes and achieve a broader scope of research, sixteen in-depth interviews were conducted with two law students from each of the Faculties of Law[3] in Hungary. It should be emphasised that the interviews were conducted with the voluntary consent and participation of the interviewees, and the information was used anonymously. The interviews were conducted with the aid of a telecommunication tool, the interviews lasted an average of 18 minutes.

The age of the interviewees, who attend different years at the universities, ranges from 21 to 29 years, the average age is 22.81 years. The gender distribution more or less can be considered as balanced, considering that nine men and seven women were interviewed. The questions focused on assessing privacy practices, attitudes, and the knowledge of law students in the context of the mentioned gaps.

4.2. Results

Before analysing the in-depth interviews, it should be noted that the vast majority of the respondents have already heard about certain aspects of data protection in university courses. In this regard, the degree to which the depth is divided is that the students could only tangentially gain knowledge or gain experiences in the courses of semesters over a number of years. The responses included, but were not limited to constitutional law, info-communication and media law, legal informatics, civil law, and labour law. Moreover, one student reported that she had had a course specifically on data protection.

Additionally, all of them stated that they had already encountered data protection beyond the university walls in several situations. Examples include writing research papers in the field of data protection, internship in law firm regarding data protection matters, participation in a briefing at the National Authority for Data Protection and Freedom of Information (hereinafter referred to as 'The NAIH') or even approving the data processing policies, other briefings and regulations on the social media platforms. All interviewees use Facebook and 13 of them also use Instagram daily. Furthermore, LinkedIn, Snapchat and Reddit were also mentioned on occasions.

4.2.1. 'Is it personal data?'

Based on the results of the preliminary research, it became evident that through practical examples, the identification of personal data, particularly cookie ID, and data concerning health[4] have posed difficulties, thus eleven pieces of information were presented during the interview. These were the following information and personal data: Cookie ID; a medical prescription that must be purchased at a pharmacy; the advertising ID of 'your' mobile phone; the IP address of 'your' laptop; cell phone location data; X-ray of 'your' broken tibia; sonogram of your internal organs; the company registration number of the commercial service company in 'your' place of residence; ID number on the residence card; 'your' own address; diagnosis on the outpatient information sheet. Most of these were mentioned in the preliminary research.

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[3] DE-ÁJK, ELTE-ÁJK, KRE-ÁJK, ME-ÁJK, PPKE-JÁK, PTE-ÁJK, SZE DF-ÁJK, SZTE-ÁJK
[4] Art. 4. (15) GDPR
Data concerning health means personal data related to the physical or mental health of a natural person, including the provision of health care services, which reveal information about his or her health status.

In accordance with results of the questionnaire, it can be seen that the address, and the diagnosis on the information sheet is obvious for approximately 93% of the respondents. It should also be noted that there were no examples when all of the law students knew the correct answer. That is also thought- provoking, because these were the easiest ones. However, the 'not typical' kind of personal data, for instance cookie ID or the IP address of the laptop, is more difficult not to mention the advertising ID of the mobile phone or the cell phone location data. That is the reason why the majority of the law students selected and stated the wrong response.

It became apparent that the identification of personal data is a real challenge for law students, when 'not typical' personal data should be identified. Interviewees gave different responses to similar data concerning health, thereby confirming the uncertainty of their knowledge in connection with personal data. All of the interviewees knew that diagnosis on the outpatient information sheet is personal data, but only three of them gave a correct answer in connection with a medical prescription, which must be purchased at a pharmacy. In addition, ten interviewees said that X-rays and sonograms are also personal data. These questions pointed out that they did not have knowledge even though the aforementioned four examples are personal data, particularly data concerning health. A significant difference could be established – over 13% – in determining the legal nature of X-rays and the diagnosis on the outpatient information sheet.

Confirming the results of the preliminary research, it can be established that the most difficult one was the cookie ID, that the majority of students' point of view is that cookies are not personal data. However, this is a mistaken statement. Summarising the identification of personal data by the two types of methodology, almost the same results can be seen.

4.2.2. 'The most personal data' which is shared

The personal data, which is considered as the most personal data (hereinafter referred to as 'most personal data'). It was a separate question concerning the attitude of the law students to the 'most personal data' that they still share or would share on social media platforms and the ones that are so personal that they do not share at all. The responses were quite varied, showing significant differences.

The telephone number and the email address are closely related to the interviewees' privacy, as the vast majority of them are not shared on social media platforms, although, one of the interviewees shares both with their friends. Based on the research most of the interviewees share their date of birth and their university on these platforms. One of the interviewees stated that she would not share her educational background. The responses are indicated that most of the interviewees share their place of residence, but not the exact address. In this context, it is important to mention that three students do not share the location where they exactly are, for instance a holiday abroad, because they are afraid of a burglary. It should be emphasised that this process shows knowledge and appropriate action too, in this case the action is not sharing personal data. From the point of view of data protection, it is certainly questionable that one of the interviewees would also share their identity card number on SNSs. Contrary to this viewpoint, the other interviewees stated that they had not shared any personal documents and cards at all.

This question highlighted what significant differences can be established with regard to the sharing of personal data. Consequently, some students may not be aware of the possible risks and consequences and therefore share a lot of personal data about themselves.

4.2.3. Issue of the 'cookies'

The question could be raised as to why this issue is so important. The questionnaire showed that law students have an incomplete knowledge in this field of personal data, and conceptual disorders can also be identified. This theme is considerable from the perspective of knowledge and attitude too. Bearing in mind that cookie ID has an extremely close relation to data protection and law students could encounter many examples of it every day, that is the reason why it has been given a prominent role in the preliminary research.

One of the main findings is that law students often encounter pop-up 'cookie-windows' in everyday life and most of them could determine the meaning of it by choosing the right response from the alternatives. Notwithstanding, there are significant shortcomings in the evaluation of their operation and legal nature. Given that 87 percent of the respondents indicated the correct answer from the six alternatives to define its meaning. In this context, it should be emphasised that barely more than a quarter of law students classified a cookie ID as personal data. Nevertheless, two thirds of the law students considered it 'risky' from a data protection point of view.

The results prompted me to ask further questions to explore where this uncertainty of knowledge could be originated from. The first question is related to the habits of the interviewees whether they would accept cookie policies and allow cookies. With the exception of two respondents, all interviewees accept them, but significant differences can be established between the underlying reasons.

One of the two negative responses have inherent privacy, data protection reasons and the other one has a convenience role, as the interviewee stated that they did not consider it important, it was just slowing down the sites. The other answers were basically about streamlining the browsing experience. Furthermore, articles cannot be read, or the person is not able to move on to the websites without acceptance. Four of them indicated that they were otherwise aware of the consequences. One interviewee pointed out that he used to delete all of the cookies monthly, while others minimized the placement of cookies in settings. It is also decisive for attitudes that one student admitted that he was not aware of what he was accepting, and two interviewees stated that it was an inappropriate behaviour and habit, moreover, irresponsible to accept without consideration. Against this background it can be concluded that the majority of the law students have given their consent without being aware of the fact that their browsing habits can be followed in this way.

Subsequently, it was asked what cookies meant. Reflecting on the high correct response rate of the preliminary research, it can be seen that inference played a more important role than real knowledge, as, when no response alternatives were available, only three interviewees were able to give a relatively satisfactory response. Eleven interviewees explicitly stated that they had not known what it was, nor had they attempted to circumscribe the definition of it.

Nearly 70 percent of the law students indicated cookies as 'risky' from the point of view of privacy. Therefore, interviewees were faced with the question of whether they had a privacy concern in connection with cookies and given their way of reasoning. The open-ended question provided an opportunity to visualise, in the light of the reasoning, how broad the spectrum of the interviewees' opinion is. Seven interviewees responded that they had already thought about privacy concerns in the context of cookies, four of them mentioned personalised marketing as an example. Two interviewees points of view were explicitly positive about the convenience feature of the cookies. Three law students said that this topic was neutral, because they had no negative experience with the utilisation

of their personal data. Two respondents inferred from the question that they probably have, however they also noted that they had never been interested in this theme enough to look for further information. Differences in attitudes were also evident in this case, as, contrary to the previous responses, one interviewee admitted that he had not possessed the knowledge, but considered that is was a huge mistake on his part and he stated that he should have read up on this subject.

Another interviewee stated that he had discussed it with his friends because they had talked about this topic in the course of legal informatics. One of the answers drew attention to a specific potential privacy concern, when visiting sites via a mobile phone and cookies have been accepted, by the way in which it is recorded, also gives rise to a degree of intrusion into personal messages.

Confirming the results of preliminary research, it can be stated that there is a significant lack of knowledge of many law students regarding cookies. They give their consent without even knowing what it is exactly, and this could make efficient data protection difficult. Moreover, this attitude is likely to manifest itself in other cases as well. This question is not new because according to *Conger* the students voluntarily provide this consent without any consideration to its collection, and ignoring that information is currently not under their control, but under the control of the organisations that possess it. (Conger et al., 2013) Furthermore, many of them are not interested in what happens with this information.

4.2.4. Personal data breach

During the interviews law students were questioned whether they had already had a personal data breach and in general what their knowledge is about its meaning. According to the Article 4 (12) of the GDPR the personal data breach means a breach of security leading to the accidental or unlawful destruction, loss, alteration, unauthorised disclosure of, or access to, personal data transmitted, stored or otherwise processed.

Based on the responses, it can be concluded that the vast majority of students were able to describe what the concept of personal data breach means. However, it should be noted that it was interpreted restricted, it was shown by the examples. Only one student stated that it could happen accidentally, without bad faith. In all other cases, the unlawfulness appeared in connection with the personal data breach. Four interviewees mentioned hacking of various user accounts as an example, and in seven cases, they identified it in general terms, for instance unauthorised use of the personal data by third party, misuse of personal data, unauthorised data transfer, and unauthorised use of a telephone number. One interviewee pointed out that he has not heard of this legal term at all, which also draws attention to the need to increase awareness, as on the one hand, the personal data breach has to be recognised before taking any further actions.

The main finding of this issue is that the concept of personal data breach needs to be interpreted in a much broader way. It can be established that most of the law students have a lack of knowledge in this field. The importance of this issue is that if the student does not have sufficient knowledge of what constitutes a personal data breach, then he or she will not be able to effectively deal with a potential breach, as it should be remembered that it can happen accidentally.

4.2.5. Data protection guarantees

As referring to the preliminary research the majority of the law students cannot list or outline a data protection guarantee at all. This may also call into question the effectiveness of data protection.

Hence, this issue can clearly be classified as one of the areas in which knowledge needs to be extended and recounted as soon as possible. A separate question is designed to measure the knowledge and awareness of the law students, namely what kind of data protection guarantees they have known. The preliminary assumption which they referred to was for example the principle of purpose limitation or the right to be forgotten. None of them were expressed, only two respondents stated the necessity of consent, and the acceptance of privacy policy statements.

Seven interviewees stated that they could not, had not remembered, or had not learnt in depth to remember it. Six students mentioned examples of the European and national legislation in connection with this issue. It should be noted that a student referred only to an international treaty, thus presuming that he is not familiar with either GDPR or domestic law, especially the Act CXII of 2011 on the Right of Informational Self-Determination and on Freedom of Information, although nowadays both are highlighted in many contexts. It could seem to be just one answer, but the respondent is probably not alone with this lack of knowledge, which is also important to establish. In addition, the NAIH was listed in two cases, although it should be noted that in both of them its full name was determined incorrectly.

4.2.6. Changes in the content sharing habits

The interviews were extensively studied to identify potential changes in the content sharing habits of the law students. Basically, as the number of social media sites grows, the amount of personal data shared by users has constantly increased. (Wissinger & Wilson, 2015) This establishment can be underlined in general.

Notwithstanding, eleven interviewees stated that nowadays, considerably fewer photos, posts and comments are shared on social media platforms by them than they shared five years ago. Based on the responses, university life and age-related differences played a decisive role in these changes, and the preferences of the interviewees had also changed, according to them they want to share fewer personal data. One respondent stated that the reason why she had shared less information and personal data is connected to her future job.

5. Conclusion

Nowadays, it can clearly be established that personal data is becoming more and more valuable. In order for data protection guarantees to prevail, it is essential for individuals to pay attention to data protection in their daily habits as well. All interviewees acknowledged the importance of data protection, nevertheless considerable differences were shown in the degree to which the interviewees have knowledge of privacy literacy. In support of the questionnaire, it can be stated that the identification of personal data through practical examples is difficult for law students.

The results of the research have shown that the field of privacy literacy needs to be improved in order to achieve an even higher level of data protection with appropriate efficiency for law students. Improvement of the existing knowledge and developing the shortages of privacy literacy is essential. Overall, based on the results, it can be stated that law students have only superficial knowledge in many areas of data protection, they have difficulties with it and the existing knowledge has not been properly adapted in practice.

The 16 in-depth interviews, together with the preliminary research of the total participation of 205 law students, are suitable for establishing a pattern and raising further research questions, such as how

well students are aware of the data protection risks and possible consequences. In addition, less self-evident deficiencies in knowledge may have surfaced so far. Given that, presumably due to the profession, law students pay more attention to data protection, it is likely that the average university students do not reflect on this. In order to develop privacy literacy, it is necessary to present practice-oriented knowledge in education as well, so that law students can apply their knowledge properly in practice.

6. Acknowledgement

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DATA PROTECTION MATURITY: AN ANALYSIS OF METHODOLOGICAL TOOLS AND FRAMEWORKS

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Abstract
This paper discusses the maturity of data protection and privacy measures in order to develop a better understanding of the importance and impacts of this domain.

The practical relevance of this topic is that the General Data Protection Regulation provides that data controllers in EU Member States shall comply with uniform data protection rules. Even though European legislation sets detailed requirements for data controllers, the implementation of appropriate technical and organisational measures can be realised at different levels of maturity. Based on the analysis of the pertinent literature, various maturity models are available to assess privacy policies, but GDPR requirements are addressed just partially. The exploration of the issue of maturity offers a new relevant research opportunity to assist data controllers in finding the appropriate methodology for the assessment and further development of their data protection measures.

This paper has three main objectives. First, to systematically review the relevant literature on the issue of maturity. Second, to analyse the relevant maturity models and their main methodological elements. Third, to make suggestions for a new specific model focusing on GDPR requirements.

1. Introduction

Rapid technological developments and globalisation have brought new challenges for data protection[3]. Technology has transformed both the economy and social life and should further facilitate the free flow of personal data within the Union and the transfer to third countries and international organisations, while ensuring a high level of data protection. [7, Recital (6)] Technological changes bring about the transformation of public sector services and the appearance of new and more sophisticated e-government solutions. Technology allows both private companies and public authorities to make use of personal data on an unprecedented scale.

In order to ensure a consistent level of protection for natural persons throughout the Union and to prevent divergences hampering the free movement of personal data within the internal market, the European Commission drew up and adopted a regulation to provide legal certainty and transparency for economic operators and to provide natural persons in all Member States with the same level of legally enforceable rights. [7, Recital (13)] The above regulation (Regulation 679/2016 of the European Parliament and of the Council) became known as the General Data Protection Regulation (hereinafter referred to as 'GDPR') in the scientific discourse.

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[1] Private individual
[2] Private individual
[3] 'personal data' means any information relating to an identified or identifiable natural person ; [GDPR, Article 4]

According to GDPR controllers[4] shall implement appropriate technical and organisational measures to ensure that data processing[5] complies with the prescribed data protection requirements. These measures shall take into account the nature, scope, context and purposes of processing as well as the risks for the rights and freedoms of natural persons. [7, Article 24]

GDPR compliance can be described as a journey. The applied measures shall be reviewed and updated as the technological and legal environment changes. Besides, GDPR applies a risk-based approach to data processing activities, namely controllers shall comply with legal obligations according to the level of risks. [6] According to the approach of this article the progress made along this journey and the scalability of obligations could be best described with the methodology of maturity models. Maturity models can be used to assess both the completeness (whether a controller has implemented all elements of a privacy program), and readiness (to what degree the measures applied are effective) of a privacy program. [23] These models are methodological tools for the preparation for privacy certification as well. Based on the analysis of the pertinent literature, only a few researchers have nevertheless addressed the problem of privacy maturity.

This paper reviews the methodology of maturity models and compares twelve models in the domain of privacy based on their main methodological elements. The results and findings of the analysis pave the way for further research and the paper makes suggestions for a new GDPR-specific model.

2. The methodology of maturity models

Lahrmann et al. define maturity as "the state of being complete, perfect or ready" where this stage can be achieved by an evolutionary progress from an initial stage to an end stage. [13] The concept of maturity measurement was published by the Software Engineering Institute (SEI) – Carnegie Mellon with the introduction of the Capability Maturity Model (CMM). [21] Reviewing the relevant papers, we found that more than a hundred different models have been created since for various domains. [2] In this section, the article discusses the role and typology of maturity models to develop a better understanding of their methodological background.

2.1. The role of maturity models

Caralli et al. define a maturity model as a set of characteristics, attributes, indicators or patterns representing progress in a particular domain or discipline. These models help organisations to evaluate and benchmark their practices, processes and methods against a clear set of standards or best practices of the given domain or discipline. Organisations can apply maturity models to define their current level of maturity and then determine the expected path of improvement. [5] According to *Bruin et al.,* maturity models are evaluative tools to assess and increase the maturity (competency, capability, level of sophistication) of a specific domain on the basis of an agreed set of criteria. [4]

A maturity model represents a desired evolution path for organisations or processes as discrete stages (a sequence of maturity levels). [2] The most frequently-used way of evaluation is a five-point Likert scale where Level 5 represents the highest level. [4] *Levels* represent the transitional states in the model; they describe evolutionary steps. *Attributes* are the core model components measured on each

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[4] 'controller' means the natural or legal person, public authority, agency or other body which, alone or jointly with others, determines the purposes and means of the processing of personal data; [GDPR, Article 4]

[5] 'processing' means any operation or set of operations which is performed on personal data or on sets of personal data, whether or not by automated means [GDPR, Article 4]

level. They are based on best practices or standards expressed as indicators or processes. In many models attributes are grouped together into so called *process areas or domains*. [5]

In the model, organisations or processes advance between an initial stage and a final stage which represents total maturity. During this advancement the capabilities of the organisations or process performance progresses evolutionarily. The maturity model is a tool to determine the position of the organisation or the process on the evolution path by providing criteria and characteristics to be fulfilled to reach a particular maturity level. [2]

2.2. Typology of maturity models

Reviewing the relevant literature, it can be noticed that maturity models focus on different maturity factors such as *process maturity* (to which extent a specific process is defined, managed, measured, controlled, and effective), *object maturity* (level of sophistication of a piece of software) and *people capability* (ability of knowledge creation and proficiency enhancement). From the perspective of maturity factors models can be one-dimensional or they can address different factors. [15]

As to their nature, maturity assessment models can be descriptive, prescriptive or comparative. A *descriptive model* is simply used for the assessment of the current state of play, i.e. the 'as-is' situation without any provisions for further improvement of maturity. A *prescriptive model* focuses on maturity improvement and enables the elaboration of an improvement roadmap for a specific domain. A *comparative model* enables benchmarking across different organisations, industries or regions. [4]

Concerning the structure of maturity stages, two models types can be distinguished (*fixed-level* and *focus area maturity models)*. Fixed-level models consist of generic maturity levels and they are well-suited to the assessment and benchmarking of organisations. In many cases, these models cannot capture the interdependencies of the different processes that need to be improved in a specific domain. Focus area maturity models identify focus areas that need to be developed and the distinct focus areas have a different evolution path i.e. the number of development stages may vary from area to area. These models enable a more balanced and incremental improvement by helping organisations to address the complexity of the factors determining the effectiveness of a specific domain. [3]

3. The specifics of GDPR

Privacy regulations respond to the challenges and changes of the technological environment. The legislation seeks to promote the implementation of data protection principles and the enforcement of the rights of natural persons in all continents. Nonetheless, different regulations are characterised by specific features, so this section provides an overview of the unique dimension of GDPR.

GDPR expressly commits itself to have a risk-based approach to privacy compliance. Trying to align with data protection rules, controllers have to consider the likelihood and severity of the risk to the rights and freedoms of the data subject taking into account the nature, scope, context and purposes of processing [7, Recital (76); Article 39]. However, the road to privacy compliance is rarely interrupted by Y road junctions; answers to challenges are not black and white. Each organisation should define the acceptable level of risk that it considers appropriate across the breadth of its business. [10, p7] Given the wide range of the possible answers to privacy challenges, risks can vary in case of different

organisations and data processing activities according to the risk appetite[6] of controllers and processors. It is reasonable to suppose that the level of compliance can be measured alongside the risks identified.

An example of the risk-based approach is the data protection impact assessment methodology which is a unique requirement of GDPR. Where processing operations are likely to result in a high risk to the rights and freedoms of natural persons, the controller shall carry out an impact assessment to evaluate, in particular, the origin, nature, particularity and severity of that risk. Based on the above assessment, the controller shall design and implement appropriate measures to mitigate the identified risk. [7, Recital (84)] Following the risk-based approach, another unique requirement of GDPR is the establishment of special rules for the processing of special categories of personal data[7].

GDPR states that the protection of natural persons should be technologically neutral and should not depend on the techniques used. [7, Recital (15)] It is conceivable to hypothesize that European legislators intended to create a long-lasting regulation in the quickly developing domain of data protection and sought to prevent creating a serious risk of circumvention.

Probably the most typical and thus unique characteristic of GDPR is the identification of the legal basis. The regulation defines a closed list of legal bases which shall be identified in case of each data processing activity carried out. Besides, controllers shall inform data subjects of the legal bases of activities in their privacy notice. Finding the right legal basis and preparing the relevant documents in accordance with the accountability principle (the "super principle"[8] of GDPR) is one of the most time-consuming tasks on the road to GDPR-compliance. Following the principle of accountability, records of processing activities constitutes the basis of GDPR compliance and its obligatory content is established in the regulation. Some kind of data inventory, data mapping or data register is usually a part of privacy compliance programs and regulations worldwide. Meanwhile some elements of the records, like transfers of personal data to a third country or the description of the purposes of the processing, are typically European.

4. Privacy and data protection maturity models

This section presents the main objectives and the maturity levels of twelve models from different continents. The list of models is the result of a search carried out in different scientific databases (*Sciencedirect, Google Scholar, Researchgate, Taylor and Francis*) and among the documents of different privacy consulting firms. Although the issue of privacy maturity is discussed in the pertinent scientific literature, the majority of the examined models do not stem from academic sources.

Model 1. - AICPA/CICA Privacy Maturity Model (AICPA PMM): this model provides entities with a tool to assess their privacy management activity against criteria based on the list of Generally Accepted Privacy Principles (GAPP). GAPP convert complex privacy requirements into a single privacy objective supported by 10 privacy principles. In the model, principles are backed by 73 attributes that form the basis for the effective management of privacy risks and compliance. [1]

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[6] The ISO 31000 risk management standard refers to risk appetite as the "Amount and type of risk that an organization is prepared to pursue, retain or take".
[7] GDPR prohibits the processing of the special categories of personal data by default. They can be processed under special circumstances detailed in Aticle 9
[8] The controller shall be responsible for, and be able to demonstrate compliance with the rules of GDPR; Article 5 (2)

Level	Level name	Description
1st	ad hoc	procedures are generally informal, incomplete, and inconsistently applied
2nd	repeatable	procedures exist; they are not fully documented and do not cover all relevant aspects
3rd	defined	procedures are fully documented and implemented, and cover all relevant aspects.
4th	managed	reviews are conducted to assess the effectiveness of the controls in place
5th	optimized	regular review supports continuous improvement towards optimization of the given process

Table 1: Maturity levels of AICPA PMM

Model 2. - MITRE Privacy Maturity Model (MITRE PMM): this model is based on concepts in foundational laws and guidance applicable to U.S. organisations. The main pillars of the framework are the seven privacy elements of a privacy program. [23]

Level	Level name	Description
1st	ad hoc	privacy program requirements are not yet reliably implemented, or documented
2nd	defined	program requirements are documented but may not be implemented consistently
3rd	consistently implemented	program requirements are established and enforced standard business practices
4th	managed & measurable	requirements are managed along agreed metrics; process effectiveness is monitored
5th	optimized	continuous process improvement and automated monitoring of effectiveness

Table 2: Maturity levels of MITRE PMM

Model 3. - Minnesota Privacy Consultants Maturity Model (MPCMM): this model applies the methodology of AICPA PMM and extends it with an additional maturity level. MPCMM is special among the models because it is based on a risk-based approach measuring the risk of a privacy breach, regulatory noncompliance, or customer attrition. [16]

Level	Level name	Description
0	nonexistent	very high risk across the organisation
1st	initial	high risk across the organisation, and very high in key parts
2nd	repeatable	moderate risk across the organisation, with some pockets of high risk
3rd	defined	moderate risk across the organisation
4th	managed	low risk across the organisation
5th	optimized	risks are remote across the organisation

Table 3: Maturity levels of MPCMM

Model 4. - Security & Privacy Capability Maturity Model (SPCMM): this model aims to provide objective criteria for the assessment of cybersecurity and privacy controls. The model follows the structure of the Systems Security Engineering Capability Maturity Model[9]. [20]

Level	Level name	Description
0	not performed	controls are not performed
1st	performed informally	controls are performed, but lacks completeness & consistency
2nd	planned & tracked	practices are tailored to meet those specific requirements for controls
3rd	well-defined	practices are well-defined and standardised across the organisation
4th	quantitatively controlled	well-defined and standardised practices; detailed metrics to enable oversight
5th	continuously improving	well-defined, standardised practices; detailed metrics; continuous improvement

Table 4: Maturity levels of SPCMM

Model 5. - Privacy Road Web: this model is a focus area model enabling maturity assessment alongside seven focus areas having two to four levels. Being a focus area model the Privacy Road Web has no generic levels. The model integrates the activities an organisation needs to adopt in order

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[9] Systems Security Engineering Capability Maturity Model (SSE-CMM) Project, Web: https://apps.dtic.mil/dtic/tr/fulltext/u2/a393329.pdf, (1999)

to be privacy respecting. [14]

Model 6. - ISACA Paris Chapter Maturity Model (ISACA MM): this model was developed as a multisectoral tool for enterprises to assess their maturity level of control as the requirements of privacy legislation concerns.. The model was publishes in French, the original level names are shown in brackets in *Table 5*. [12]

Level	Level name	Description
1st	incomplete (incomplet)	obligations are not fulfilled causing a complete lack of compliance.
2nd	partially compliant (conformité partielle)	obligations are met partially
3rd	optimized and compliant (optimisé et conforme)	organisation is deemed to be compliant with the legal requirements
4th	sustainable (pérenne)	compliance is sustainable, processes and their compliance are revised periodically
5th	leader (leader)	organisations at this stage go beyond the legal requirements

Table 5: Maturity levels of ISACA MM

Model 7. - Privacy Culture GDPR Maturity Framework (PCMF): Privacy Culture developed a nine-stage GDPR maturity framework where controllers need to fill a questionnaire on twelve privacy domains. The model provides an overall maturity score for each domain which enables organisations to assess their procedures and controls. [8]

Level	Level name	Description	Level	Level name	Description
0	non existent	score 0	5th	defined controls and fully implemented	scores 2.5-3
1st	initial but ad hoc	scores 0.5-1	6th	Managed controls but not benchmarked	scores 3-3.5
2nd	ad hoc but some controls	scores 1-1.5	7th	Managed controls and benchmarked	scores 4-4.5
3rd	repeatable controls	scores 1.5-2	8th	Optimal and independently verified	scores 4.5-5
4th	defined but not fully rolled-out	scores 2-2.5			

Table 6: Maturity levels of PCMF

Model 8. - Intel Privacy Maturity Model (Intel PMM): Intel developed a five-stage maturity model based on GAPP as well as AICPA/CICA Privacy Maturity Models and other industry criteria. The model applies the structure of the AICPA PMM but defines different privacy domains. [11]

Model 9. - Fort Privacy Maturity Model Framework (Fort PMMF): Fort Privacy developed a five-stage maturity model in order to bring much structure to data protection programs and provide a tool to measure their effectiveness. [8]

Level	Level name	Description
1st	ad hoc	chaos reigns at level 1 in an "ad hoc" ill-defined and undocumented world
2nd	established	the organisation has, at the very least, documented the requisite procedures
3rd	implemented	the organisation has implemented and adopted the documented procedures
4th	measured	quantitative measurement of the effectiveness of the adopted procedures
5th	optimised	procedures are constantly being improved after reviewing the feedback and measurements being reported

Table 7: Maturity levels of Fort PMMF

Model 10. - Personal Data Protection Maturity Model (PDPMM): this model offers a methodology for companies in the micro financial sector to improve their data protection capabilities. [9]

Level	Level name	Description
1st	none	organisations are totally or partially unaware of personal data protection
2nd	initial	organisations know data protection aspects starting to establish initial privacy processes
3rd	defined	organisations have defined processes related to data protection
4th	managed	processes are managed in a way that identification, analysis, and evaluation activities exist
5th	optimized	level of excellence; periodical process evaluation; high level of effectiveness

Table 8: Maturity levels of Fort PDPMM

Model 11. - Privacy Capability Maturity Model (PCMM): PCMM was developed for controllers in the telecommunication sector to assess organisational capabilities to protect information privacy. [19]

Level	Level name	Description
0	non existent	no data protection activities are performed in the organisation
1st	initial	ad hoc activities; no defined policies, or procedures; lack of teamwork and commitment.
2nd	repeatable	defined privacy policy; general awareness and commitment; specific plans in high-risk areas
3rd	defined	privacy policy and risk assessment; priority setting and coordination to deploy effective controls
4th	managed	consistently effective privacy management, privacy considerations reflected in the organisation
5th	optimizing	continuous improvement of privacy policies; changes are systematically scrutinised for privacy impact; dedicated resources to achieve privacy objectives; measured quality goals

Table 9: Maturity levels of PCMM

Model 12. - Privacy Maturity Assessment Framework (PMAF): this model was developed by the New Zealand Government to help agencies meet core expectations of the government in privacy management. [17]

Level	*Level name*	*Description*
1st	ad hoc	unstructured approach; initiatives by individuals rather than processes
2nd	developing	overall approach is largely reactive with some documented guidelines; limited central oversight
3rd	defined	privacy policies, processes and practices are defined and comprehensive; holistic and proactive approach with widespread awareness of privacy management
4th	embedded	well-defined governance and oversight structures exist.
5th	optimised	clear culture of continual improvement; leader in privacy management

Table 10: Maturity levels of PMAF

5. Comparative analysis of maturity models

This section aims to compare the characteristics of the above models in order to map the scene of privacy models and identify contingent needs to develop a new model. The following subsections analyse the models according to their methodological elements and general features.

5.1. Level names and number of levels

Analysing the structure of the models, most of them have five to six stages but the PCMF is an exceptional one providing a refined methodology to score privacy maturity at nine levels. If a model incorporates a "Level 0", it symbolises the lack of the desired activities. In the rest of the models, "Level 1" may stand for the absence or the initial state of activities. Most of the models tend to use similar stage names to CMMI (initial, managed, defined, quantitatively managed, optimizing) [21] in case of upper levels. It can be assumed that these methodologies mainly follow the pattern of the CMMI model in terms of number of levels and the stage names.

Model	Level 0	Level 1	Level 2	Level 3	Level 4	Level 5
AICPA PMM		ad hoc	repeatable	defined	managed	optimized
Mitre PMM		ad hoc	defined	consistently implemented	managed & measurable	optimized
MPCMM	non-existent	initial	repeatable	defined	managed	optimized
SPCMM	not performed	performed informally	planned & tracked	well-defined	quantitatively controlled	continuously improving
Privacy Road Web	four stages without common stage names					
ISACA MM		incomplete	partially compliant	optimized & compliant	sustainable	leader
PCMF[10]	non existent	initial but ad hoc	ad hoc but some controls	repeatable controls	defined but not fully rolled-out	defined controls, fully implemented
Intel PMM		ad hoc	repeatable	defined	managed	optimized
Fort PMM		ad hoc	established	implemented	measured	optimised
PD PMM		none	initial	defined	managed	optimized
PCMM	non existent	initial	repeatable	defined	managed	optimizing
PMAF		ad hoc	developing	defined	embedded	optimised

Table 11: Comparison of model level names

5.2. Year, sector, country and source

This subsection compares the models based on their year of publication, targeted sector, country of origin and source. This comparison helps identifying the models that respond to the specific challenges of GDPR and the ones that foster the improvement of general privacy measures. Models are listed according to their year of publication.

Model	Year	Sector	Country	Source
PCMM	2007	Telecommunication	South Africa	scientific
AICPA PMM	2011	Business sector	Canada	non-scientific
MPCMM	2012	Commerce	USA	non-scientific
PMAF	2015	Government sector	New Zealand	non-scientific
Privacy Road Web	2015	Non-sectoral	Netherlands	scientific
ISACA MM	2017	Enterprises	France	non-scientific
PDPMM	2018	Microfinance	Peru	scientific
Fort PMM	2019	Non-sectoral	Ireland	non-scientific
Mitre PMM	2019	Non-sectoral	USA	non-scientific
PCMF	2019	Non-sectoral	UK	non-scientific
SPCMM	2019	Non-sectoral	USA	non-scientific
Intel PMM	N/A	Computer industry	USA	non-scientific

Table 12: comparison of general model features

Half of the models were published before the adoption of GDPR, between 2007 and 2015. The rest of the models were created after the adoption of the regulation. It can be conceivably hypothesised that GDPR gave a special impetus to the issue of privacy management globally.

The majority of the models published after the release of the GDPR is not sector-specific generally targeting a wider audience. These models are also applicable in the public sector providing state-of-the-art methodological assistance for the assessment of privacy programs.

According to their geographical origin, the examined models stem from different continents showing that privacy maturity measurement is a globally-accepted tool to improve privacy programs and

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[10] This model has three more levels.

measures. It can be noted that the minority of the models were published in scientific journals. Taking into consideration the indisputable advantages of maturity models there is room for further research on this field.

5.3. Model domains and GDPR requirements

The number of domains varies model by model according to the pertinent regulatory framework or the objectives of the model. In many cases models use unique names but cover very similar process areas. This paper compares the above models by classifying model domains into common categories according to the main chapters of the GDPR prescribing obligations for data controllers and processors (Chapter II., III, IV., V. shown as Category 1-4 in *Table 13*).

Categories	Classification	AICPA PMM	Fort PMM	Privacy Road	Intel PMM	Mitre PMM	PCMF	SPCMM	MPCMM	ISACA MM	PDPMM	PCMM	PMAF
1. Principles (GDPR Chapter II.)	Transparency	x	x	x	x	x	x		x	x	x	x	
	Lawfulness	x	x			x	x		x	x		x	
	Accountability		x			x	x			x		x	x
	Further principles (purpose limitation, storage limitation, accuracy, data minimisation)	x	x		x	x	x		x	x	x	x	x
2. Data subject rights (GDPR Chapter III.)	Data subject rights	x	x	x	x		x		x	x		x	
3. Controller and processor (GDPR Chapter IV.)	Governance (General obligations, technical and organisational measures)	x	x	x	x	x	x	x	x	x	x	x	x
	Privacy by design			x	x	x	x			x		x	
	Data breach management		x		x	x	x		x	x		x	x
	Risk management		x	x		x	x	x	x	x	x	x	x
	Impact assessment		x			x				x	x		x
	Security	x	x		x	x	x		x	x	x	x	
	Training, awareness (Data protection officer)			x	x	x	x			x	x	x	x
	Third party management (third parties or data processors)	x	x		x	x	x		x	x		x	x
4. Transfers of personal data to third countries or international organisations (GDPR Chapter V.)	Trans border data flow (General principle for transfers)				x					x			

Table 13: Comparison of general model features

This article does not analyse whether the models are completely in line with the GDPR which could be the subject of a further more extensive research. As to the method of classification, domain descriptions and the related attributes were analysed in each model and domains were linked to the relevant articles or sections of the GDPR. *Table 13* shows which GDPR provisions are reflected in the models. In certain cases domains were linked to more than one category. The *appendix* illustrates the classification of model domains. [11]

Most of the models (*PCMM, AICPA PMM, MPCMM, PMAF, PDPMM, MITRE PMM, Intel PMM*) are targeted at compliance with non-European legislation or general privacy principles instead of GDPR compliance. Though the Privacy Road Web is European, it focuses on requirements of the pre-GDPR legislation. One of the models does not focus on organisational compliance rather than on cybersecurity and privacy controls (*SPCMM*). It can be assumed that models created after the release of the GDPR (*PCMF, ISACA MM, Mitre PMM)* respond to most requirements of the regulation.

GDPR views processing activities through the spectacles of risk. The "risk-based approach" goes beyond the "harm-based approach" taking into account every potential and actual adverse effect instead of concentrating only on damage. [6]. This is a holistic requirement determining the complete privacy management of an organisation. It can be noted that risk assessment is an integral element in almost all models. Nonetheless, risk is one of the model domains but not a holistic requirement in many cases. From this perspective, the MPC maturity model is an exceptional best practice where risk is the main determinant of maturity levels. This model, however, is based on U.S. privacy requirements. The SP-CMM model addresses some holistic risk considerations by stating that the risk associated with the controls in question decreases with maturity, however, it provides no further details.

Based on the findings above, it is advisable to develop a GDPR-specific model that addresses the relevant requirements of the regulation to achieve compliance and levels should be defined according to the risks taken. The methodology of the model shall take into account that the identified risks are not simple organisational ones but risks affecting the rights and freedoms of natural persons and maybe larger groups of people. Needless to say that controllers obligations are scalable according to the level of risks but data subject rights shall be respected regardless of the levels identified. [6]. Several experts believe that it is inevitable to regard risk as a holistic approach to privacy compliance not just because of the general risk-based approach of GDPR but also because it can be reasonably assumed that the desired or achieved privacy maturity level basically depends on the organisational risk appetite[12]. Risk appetite is dependent upon the business objectives of the organisation determining the scope of risks to be taken. [10, p7]

The different levels of privacy maturity may be defined by the appropriateness of the implemented measures indicating how much they are suited to reduce the risks of infringing the rights and freedoms of data subjects. [22, p.6.] The level of maturity shall be connected to the level of risks potentially threatening the rights and freedoms of data subjects because one of the main goals of GDPR is to eliminate or reduce the risks of data processing activities. Furthermore privacy risk can induce further business-related or organisational risks such as the financial consequences of non-compliance or a data breach. Decision makers might focus on the latter risk types and prioritize privacy risks to the

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[11] It needs to be noted that certain models (Fort PMM, Intel PMM, PCMF) were available only in a summarized form for the public, so the comparison shown by Table 13 is made on the basis of the available information.

[12] The amount of risk that an organisation is prepared to accept, tolerate, or be exposed to at any point in time. The Orange Book: Management of Risk – Principles and Concepts HM Treasury, (2004)

extent they influence the running the business or the organization. The models examined use a different focus and do not evaluate the connection and the correlation of the different risk types. The planned new privacy maturity model shall address these linkages and support decision makers deciding which measures to take on the road to privacy compliance. The structure of the above models addressing most provisions of the GDPR and the risk based methodology of the MPC model can be used as a starting point for the new model.

Risks may appear in both public and private sectors. Hence, the new model shall be applicable in different sectors, in the course of the development of new products or services or the development of e-government solutions.

6. Summary and conclusions

In order to ensure a consistent level of protection for natural persons throughout the Union and to prevent divergences hampering the free movement of personal data within the internal market, the European Commission drew up a new data protection regulation (GDPR). Pursuant to this legislation controllers shall implement appropriate technical and organisational measures to ensure compliance. Besides, GDPR applies a risk-based approach to data processing activities, namely controllers shall comply with legal obligations according to the level of risks. [6] According to this paper, privacy compliance and the completeness of privacy programs could be best described with the methodology of maturity models. Based on the analysis of the pertinent literature, only a few researchers have nevertheless addressed the problem of privacy maturity.

This paper analysed twelve models available in the scientific discourse and in the business sector. These models stem from different continents showing that privacy maturity measurement is a globally accepted tool to improve privacy programs and measures. Model objectives are determined by the local regulatory environment or general privacy principles. It can be assumed that models created after the release of the GDPR respond to most requirements of regulation. As to the risk-based approach, it can be noted that risk assessment is an integral element of almost all models. Nonetheless, risk is one of the model domains but not a holistic requirement in many cases.

Based on the findings, it is advisable to elaborate a GDPR-specific model that addresses the relevant requirements to achieve compliance and its levels should be defined according to the risks taken. The planned new privacy maturity model shall handle the interconnections between different risk types and support decision makers deciding which measures to take on the road to privacy compliance. The elaboration of this model paves the way for further research and could provide a specific tool for organisations to measure their privacy management activities.

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PRIVACY CHALLENGES IN CHILDREN'S ONLINE PRESENCE – FROM THE DEVELOPERS' PERSPECTIVE

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Abstract
Parents nowadays are facing with the fact that their children are using apps like TikTok or Instagram, and have the same question as millions of other dads and moms: how can they protect their beloved from the dark side of internet? Most parents are anxious about their kids' online presence, but they don't have the right tools to protect them. Teens feel that they neither can find useful information, nor turn to their parents for advices to protect themselves. There are two options: parental control and educational software. For the first one, there are nearly 140 software for parents. Mostly they offer the same: filtering, banning, spying. These solutions are not just ineffective, because the kids can circumvent the solutions, but usually deepen the issue between the teenagers and their parents. The latter one is too generic, and do not provide hands-on tips. Mongu for Teen is an educational app designed for 9-13-year-old kids and their parents that gives a solution for this problem. In our paper, we highlight the current threats to children's online privacy, the European legislation, that aims to protect them and as a case study, our experiences how a developer should follow this privacy regulation and how effective can be an eduware to improve the privacy awareness of digital families.

1. Introduction

Because of their curiosity, children have been exploring the world from a very young age, not only in the physical world, but also in the virtual world. The now growing Z (born between 1995-2010) and Alpha (2010-) generations [1] have been impacted by several impulses by mass media from infancy through adolescence. Just as every parent teaches his or her child the basic functions and tasks they need to learn – as with precaution when crossing the road – these days, it is essential for parents to provide their children with information when using the Internet.

But this responsibility not solely depends on parents, governments also have serious tasks to express the need of children's safety not only in the physical, but the cyberspace as well. Even the Geneva Declaration of the Rights of the Child of 1924 states in Article 1 that "The child must be given the means requisite for its normal development, both materially and spiritually." and in Article 4 that "The child must be put in a position to earn a livelihood, and must be protected against every form of exploitation." [2] and these principles are serving as a legislative basis for governments for almost a century.

In the digital era, there are countless security problems that juveniles are facing with, but privacy protection is one of the major challenges that needs to be solved by legislators. In the European Union,

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the REGULATION (EU) 2016/679 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC, better known as General Data Protection Regulation or GDPR regulates this issue. [3] In paragraph (38) of its preamble, it says that "Children merit specific protection with regard to their personal data, as they may be less aware of the risks, consequences and safeguards concerned and their rights in relation to the processing of personal data. Such specific protection should, in particular, apply to the use of personal data of children for the purposes of marketing or creating personality or user profiles and the collection of personal data with regard to children when using services offered directly to a child. The consent of the holder of parental responsibility should not be necessary in the context of preventive or counselling services offered directly to a child." This regulation is both a protective shield for kids and a headache for digital service providers due to the complex technical balance between service quality and compliance requirements on the field of security and privacy.

2. Mongu for Teen Application

In April 2018, two of the authors (László Dóra and Csaba Krasznay), together with a third founder, Veronika Hittner-Horváth, has decided to establish a startup company. Our goal was to educate the growing generation so that they can use digital social services on a secure way and would be able to make responsible decisions in the digital space. All this in such a way that does not impose an additional duty for parents who are not dealing with this issue due to lack of time, intention or experience. We believe that children's desire to explore should not be limited, but a guidance should be given. For this to be accepted, trust must be built, which includes respecting their privacy and producing relevant, accurate, and fun tutorials.

In the application there are two views: one for parents and one for kids. In kids' view, we made them clear what are the threats in social media, what are the potential impacts of their acts, and how they should behave or configure their social application so that they can protect themselves and behave on a responsible way. We apply the technique of gamification in short conversations and show them short videos to let them learn in an exciting way. Once parents connect their accounts with their kid's account, they get relevant information, and tips how to start conversations about social apps used by their children. They can even suspend the usage of the social applications until their kids watch all relevant videos and collect enough points. The application is available from the App Store for iOS devices, Android version will come later.

Parenting experts say the age group which can be influenced the most and who are already using social apps is between 9-13. This is the beginning of the teenage era, which is an important phase of separation from parents and they are our target audience. In that sense, privacy should be mostly protected from the parents from the kids' perspective. For this reason, we consider it important that the parent should not be informed of everything but only the events where he or she needs to intervene (e.g. too much social media consumption). Generally speaking, we're trying to avoid indoctrination or prohibition in our teaching materials. We consider it important for children to understand the consequences of their actions, both for themselves and for others. We assure them that if they wish to avoid certain unwanted events, they will have access to the information they need within the application. Meanwhile, we also consider education as important for parents. In this case, besides the risks, it is also necessary to explain what the application is for and what it is typically used by children.

In the long run, we want to build a complete application that covers all the typical risks a teenager could have with his mobile device: e.g., connecting to an untrusted Wi-Fi network. Further

development of the solution is planned to make the tutorials appear related to a specific event, not just in general. This way, tutorials on free hotspots appear when the child is connected to a free Wi-Fi hotspot. In addition, we are planning to adapt the solutions used in classic parental control features that are required by the parents and follow our philosophy described above.

Today, iOS and Android systems both provide parental controls by default. Because operating system developers are in the best position to customize their platform's services, they are expected to provide the best technical solution. However, in this area, only the easiest-to-operate solutions are built into the platform, and they only provide a good solution for things related to the mobile operating system, not for any community/social/family problems. In addition, platform interoperability is not a goal for any of them, meaning that if the family has both an iPhone and an Android device, these solutions cannot be used in the family with a full feature set.

For these reasons, there are many third-party solutions on the market. Over 100 applications can be found on the internet. Interestingly, however, these solutions basically serve as parental monitoring or they can limit the child. In practice, the education-based approach usually stops at blogging on the websites of some companies, which is hardly reaches the kids. In addition, classical surveillance and/or restraint-based solutions have an increasing impact on parent-child relationships. It is important to mention that in this case the children have an interest to circumvent these systems.

3. Online privacy and security threats

As part of the preparation, we participated several events organized around online children safety. In Hungary, such events are used to held in connection with the International Children's Day in May or occasionally, in elementary and secondary schools. Those events gave us an opportunity to ask the interested parents and their children to fill out a questionnaire and highlight their major problems using digital services. We also ran some direct Facebook campaigns in order to get a feedback on our concept from the parents of our relevant target audience. Although these answers are not representative, we could use the representative research of Psyma Hungary Kft. that was made for the Hungarian National Media and Infocommunications Authority in 2017. [4] Our research can finetune and update the study's results that measured media usage, media consumption and media understanding of 7-16 years old children and their parents.

According to the Psyma research, 48% of the 9-10 years old have their own mobile phone, this number changes to 87% in the age group of 13-14 years old kids. They are 10.17 years old as an average when they get their first own device. 88% of the first devices are smart phones. 69% of the parents in our target audience are using some rules and controls on internet usage. Only 46% of the parents who are using some controls, discuss the acceptable usage and threats before the young one starts using the internet. This is the fourth countermeasure only. Most of them ask what the children is doing, when they see the teenager next to the device. 74% of the adults are aware with the existence of content filtering, but 53% don't use any technical countermeasures as they trust in their children and 45% discuss these issues personally. 84% of the parents of our target audience agrees that his son or daughter uses the digital service on a secure way.

The most common activities on the internet are browsing, listening to music, instant messaging, watching videos, learning and playing. 42% of the 11-12 years old age group and 71% of 13-14 years old age group are registered to a social media service. The first registration is made when they are 11.57 years old as an average. According to this study from 2017, 99% are using Facebook, 63% are

using YouTube, 39% are using Instagram. 75% of the families are registered on the same social media service. 7% of 11-12 years old and 9% of 13-14% suffered from cyberbullying.

The main information sources for the youngsters are the parents (82%), the school (80%) and the friends (51%). The study had 8 basic questions, e.g. what a secure password is. Even the most educated parents and their kids could answer for these relatively easy questions only with a 41% success rate. The average was around 35% in our target audience. In the lower educated families, the children's competence was much higher (47% gained better results than their parents).

Our user research confirms the representative study, but also highlights an interesting anomaly in the perception of parents on children's digital existence and the way how kids are really using their devices. Besides the repetition of Psyma's study, we also asked the participants about their major concerns on the internet and the applications the kids are using. We got totally different answers from the adults and the teenagers. Meanwhile the parents have a fear on harmful content, addiction and over usage, their children don't really care about these risks, but are worried about phishing that is equal to the loss of their user account on social media and cyberbullying, that mostly happens through the social media services they are using.

The other question tried to discover the applications youngsters are using. For the experts, it is not surprising, that Facebook is no longer used by teenagers, as they turned to Instagram and TikTok and will use different, maybe yet unknown services in the near future. For the teenagers, it is not important, what they use, but how they use is it. They want to be connected and live their social life 7/24/365. But the parents can't follow these changes and they still believe that their beloved is playing games and using Facebook. Our experience is that most of the parents have never heard about TikTok which has around half billion users nowadays and is operated from China that raises several cybersecurity and privacy questions.
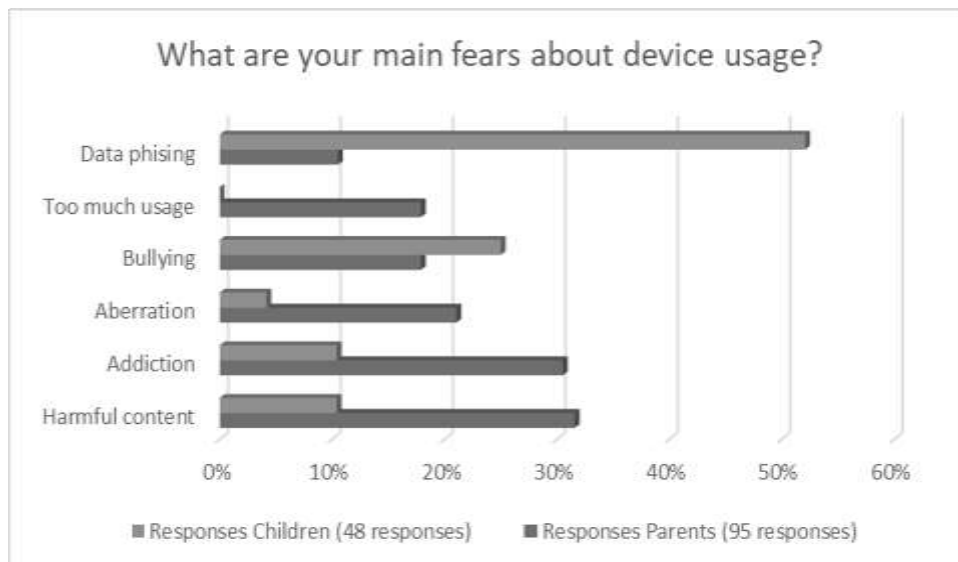
Figure 1: What are the main concerns about device usage?
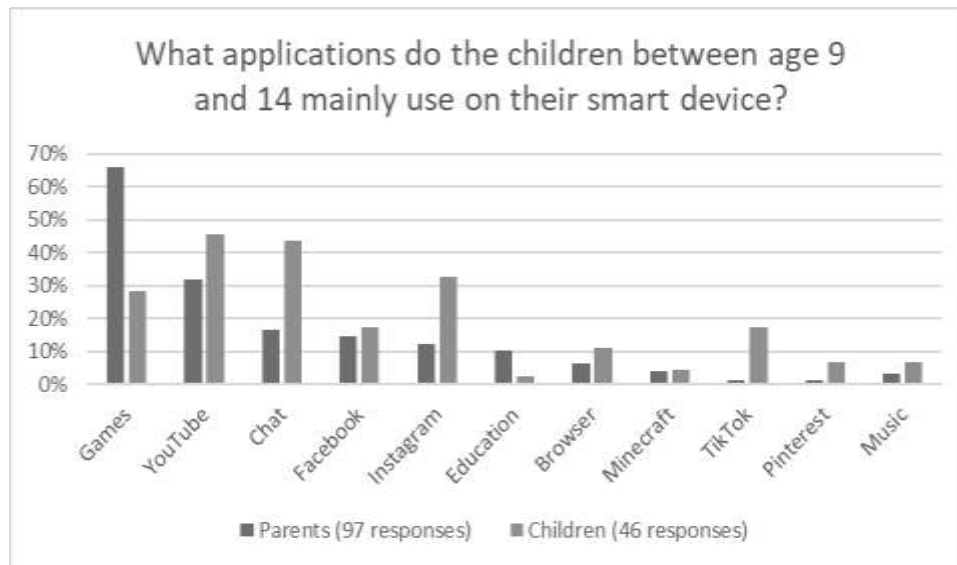
Figure 2: What applications do the children between 9-14 use?

4. Legislative requirements

4.1. European Strategy for a Better Internet for Children

As the application had to be designed in alignment with the European and Hungarian legislation (that is the same from the privacy perspective due to GDPR), first of all, we went through the relevant legal texts. Besides GDPR, there is another important strategy that should be considered. This is the European Strategy for a Better Internet for Children and was declared as a communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions in 2012. [5] Although this strategy is rather old and uses outdated data, the basic statement related to privacy is still valid: "Research shows that there is a serious digital skills deficit amongst Europe's children, despite the popular view that they are "digital natives". For example, 38 % of 9-12-year-olds in Europe who use the internet report that they have a personal profile on a social networking site. However, only 56 % of 11-12-year-olds say they know how to change their privacy settings. Research also found that the range of digital skills and online activities are linked. Therefore, developing safety skills may encourage other skills associated with other online activities."

Our assumption is that Mongu for Teen can support this strategic goal. However, the same document describes what should a digital service provider do for the privacy of children: "Although risks to privacy exist for all users, children are a particularly vulnerable group. Very young children in particular do not know how to change their privacy settings and do not understand the potential consequences of their actions, such as becoming an easy target for grooming or exposing themselves to risks to their online reputation. Therefore, default privacy settings for children should be managed in ways that ensure they are as safe as possible.

Industry is expected to:

- implement transparent default age-appropriate privacy settings, with clear information and warnings to minors of the potential consequences of any changes they make in their default privacy settings and contextual information on the privacy level of every piece of information required or suggested to set up an online profile.

- implement technical means for electronic identification and authentication."

As this strategy is coming from the pre-GDPR era, it also highlights some steps that should be done by the Commission and the member states. We must be stated that most of the requirements below are part of the GDPR now.

"The Commission:

- proposed a new data protection regulation that takes specific account of children's privacy and introduces the "right to be forgotten".
- intends to propose in 2012 a pan-European framework for electronic authentication that will enable the use of personal attributes (age in particular) to ensure compliance with the age provisions of the proposed data protection regulation.
- will support R&D to develop technical means for electronic identification and authentication on relevant services across the EU and their deployment.

Member States should:

- ensure the implementation of EU legislation in this field at national level.
- encourage the adoption of self-regulatory measures by industry and follow their implementation at national level.
- support awareness raising activities at national level."

4.2. General Data Protection Regulation

Children, like adults, have the right to privacy and to the protection of their private and family life. Privacy encompasses the protection of personal data and the confidentiality of the processing of data within online social services. Simplified, data can be collected for a specific purpose under the GDPR, and can be stored for a reasonable time, keeping in mind the time of usage and the principle of data minimization. GDPR gives special protection to children's personal data and imposes greater obligations on data controllers who manage children's data in the course of their activities.

Besides the already quoted paragraph, some other parts also highlight the requirements for application developers. According to (58), "The principle of transparency requires that any information addressed to the public or to the data subject be concise, easily accessible and easy to understand, and that clear and plain language and, additionally, where appropriate, visualization be used. Such information could be provided in electronic form, for example, when addressed to the public, through a website. This is of particular relevance in situations where the proliferation of actors and the technological complexity of practice make it difficult for the data subject to know and understand whether, by whom and for what purpose personal data relating to him or her are being collected, such as in the case of online advertising. Given that children merit specific protection, any information and communication, where processing is addressed to a child, should be in such a clear and plain language that the child can easily understand."

Paragraph (65) says that "A data subject should have the right to have personal data concerning him or her rectified and a 'right to be forgotten' where the retention of such data infringes this Regulation or Union or Member State law to which the controller is subject. In particular, a data subject should have the right to have his or her personal data erased and no longer processed where the personal data are no longer necessary in relation to the purposes for which they are collected or otherwise processed,

where a data subject has withdrawn his or her consent or objects to the processing of personal data concerning him or her, or where the processing of his or her personal data does not otherwise comply with this Regulation. That right is relevant in particular where the data subject has given his or her consent as a child and is not fully aware of the risks involved by the processing, and later wants to remove such personal data, especially on the internet. The data subject should be able to exercise that right notwithstanding the fact that he or she is no longer a child. However, the further retention of the personal data should be lawful where it is necessary, for exercising the right of freedom of expression and information, for compliance with a legal obligation, for the performance of a task carried out in the public interest or in the exercise of official authority vested in the controller, on the grounds of public interest in the area of public health, for archiving purposes in the public interest, scientific or historical research purposes or statistical purposes, or for the establishment, exercise or defense of legal claims."

According to paragraph 71, decisions based on automated data management, e.g. profiling, including actions taken as a result, should not be applied to children. Paragraph 75 states that risks connected to the rights and freedoms of natural persons may result from the processing of personal data, which may result in physical, material or non-material damage. It also classifies children's data as a high-risk factor.

In Article 8, Conditions applicable to child's consent in relation to information society services, there are additional requirements: "in relation to the offer of information society services directly to a child, the processing of the personal data of a child shall be lawful where the child is at least 16 years old. Where the child is below the age of 16 years, such processing shall be lawful only if and to the extent that consent is given or authorized by the holder of parental responsibility over the child. Member States may provide by law for a lower age for those purposes provided that such lower age is not below 13 years."

5. Privacy in Practice

5.1. Legal implementation

GDPR requires to keep and to comply its strict obligations particularly for an application that collects and process children's data. Thus, we faced with a lot of challenges when we wrote the privacy policy that is suitable for both parents and legal experts and can be understood by the youngsters as well. The true defiance is to create a text that is easily understandable, general, protective, brief but at the same time, it contains all the points that the regulation requires.

Writing of the privacy policy had different phases. First of all, it had to be collected and examined the different rules of data protection of the most popular social media sites and applications. Then we could merge these texts in accordance with GDPR rules and from other manuals for example: Children and the GDPR guidance. [6] After the draft has been created, we discussed and further specified it, by focusing on the technical and legal details. We had the possibility to make an interview with dr. Júlia Sziklay, the head of department of the National Authority for Data Protection and Freedom, responsible for the children's privacy. We could ask our questions in connection with the privacy policy. Then we rewrote our policy rather and we sent it to a data protection lawyer for review.

After her advices, we made a more logical and legally specified policy with 11 points with legal definitions too. Although we wrote a well detailed text, we felt that it could be hardly understood because of the legal language, so we decided to make a simple, "child friendly" version of it. The

source that we used was the UN Convention on the Rights of the Child. [7] The most difficult challenge we met is how to explain something complex and difficult subject like data protection for the children? How to comply with GDPR that requires clear, comprehensive formulation, meanwhile some parts of it are confusing even for the experts? Another issue was how to gather the approval of the parents for data collection. In the technical implementation, we provided our policy for reading as the first step during the installation. The policy itself is using a child-friendly composition. As soon as the parent read it, he or she can create a family through the app, confirming the approval of data collection.
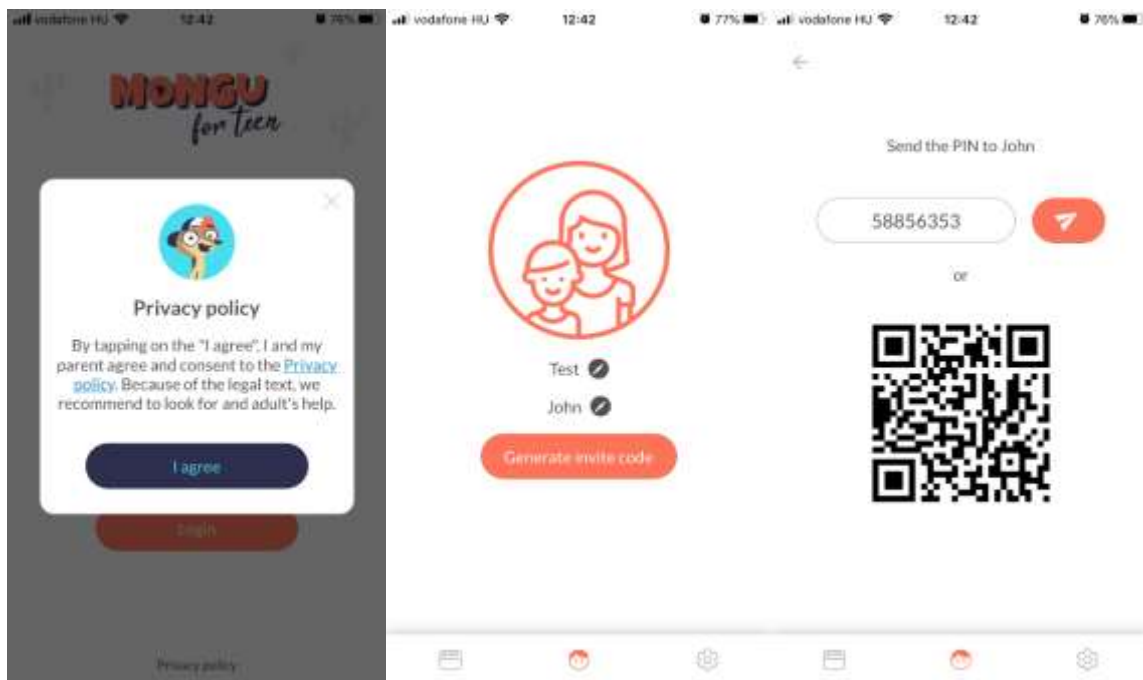
Figure 3: Lettering of figures

5.2. Technical implementation

As highlighted earlier, one of the key aspects of the solution is the user privacy and as a such the data security. We followed the security by design methodology. We put special efforts on the following topics:

1.   User management
2.   Authorization
3.   Secure process for linking family members
4.   Secure channels
5.   Security handling of log messages
6.   Intrusion detection system
7.   Minimal data to handle

First of all, we separated the user management data from the application data. Google Firebase were selected as a third-party solution for user management. It is a widely used solution, therefore, the security weaknesses are quickly detected and repaired. Their privacy policy is clear, and it makes sure that the data stored there is not used by Google or any third parties for other purposes than providing authentication services. The framework supports user to login with their Google or Facebook account, or register with their e-mail. On Mongu for Teen side, no other data than a user

specific random identifier is saved in our database. We don't even have access to the users' password, and we don't fetch the e-mail address or anything which can be bound to the user.

The mobile client communicates via API calls with the server. Based on the random identifier, on server side we perform client authorization. It assures that the users can access only data which are specific to them or their families. The authorization is performed on the server side. Even if someone reverse engineers the API, which might be easy for an expert, cannot access any data without valid login credentials. All in all, a child can access data only about himself, and a parent can access data only about him- or herself and the linked children.

Linking family members together is initiated by the parents. They can add kids to the family by defining the family name, kid's name and generate a one-time 8-digit password. This password can be sent to the kid via multiple channels including offline and online methods. Once the kid initiates the joining process, he or she needs to set the one-time password. If it is a valid one, the kid has to confirm that the family name and his or her name is set properly. It is important to make sure that the kid does not join a wrong family.

Beyond what a regular user faces on the security of the Mongu for Teen, there are other considerations which protects the users' data under the hood. First of all, all communication channels are encrypted, and server is authenticated following the best practices, using TLS. We paid special attention to configure to support only secure cipher suites. This assures that no information leaks on the network.

There is a channel which cannot be protected with TLS, but requires special attention, because sensitive information may be transferred. It occurs when a user wants to report an application problem and sends mobile client related logs via e-mail for evaluation performed by the development team. As e-mail channels cannot be trusted, we applied asymmetric cryptography to make sure that all data is encrypted all the way from the user's device to the developer team. Thanks to the asymmetric cryptography only the development team can read the logs. It is important to note that user specific data are not sent without a user action. Logs may contain also network traffic related information. It is used only for debugging. We delete the data according to the data retention policy, and never used for user profiling.

We minimize the amount of data stored. However, still there are valuable information on the server side which must be protected. Therefore, we use the services of a cloud provider which is security focused in order to decrease the chance of data leakage.

6. Conclusions

With the advancement of technology, privacy seems to be lost, as with our consent, we disclose our personal information to the outside world through online digital services. As we have an unimaginable opportunity to be visible for the whole world, we can generally say that we all want to make something lasting in our life, to be visible in the crowd. However, in practice, images, posts, articles, reviews, contacts that appear on the web pages and are associated with our person become data and may be used unlike we intended. This contradiction raises many questions for the end users and legislators as well.

Generations Z and Alpha who have been born into the digital era had no choice. The rapid flow of information affects their psychological behavior, can cause personality disorders, and can even lead to a deterioration in literacy. As parents, who have grown up before the age of Internet and it is

frustrating to think of the societies that will live in the coming decades. In our paper, we highlighted some aspects of the misunderstanding between kids and adults and stressed the importance of trust and communication in a digital family. We also described the actual EU strategies and legislation to protect children in the cyberspace and the difficulties of being compliant as a digital service provider. Lastly, we presented a case study, how an application developer should follow the rules and protect the privacy of the youngest generation.

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Cyber Security

CYBER SECURITY MASTER'S DEGREES IN THE UNITED KINGDOM: A COMPARATIVE ANALYSIS

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Abstract

In today's digitized world, where most of our activities are related to online platforms, the information security has become more essential than ever. Most countries have launched national strategies for the implementation of cyber security. In these, the education and training of information security professionals get particular roles. The National Cyber Security Centre created a common framework for cyber security education in the United Kingdom for the universities offering degrees in information security. The aim of this paper is to examine and compare the British cyber security degrees. The first chapter examines and compares the British universities and degrees from a theoretical aspect, including the necessity of these programs. The second chapter examines the degrees from several aspects based on the data of the Scopus database, with a special focus on the thematic modules, and the academic activities of the 1,650 examined university instructors.

Keywords: cyber security education, National Cyber Security Centre, United Kingdom, Scopus

1. Introduction

Greater dependence on the Internet has brought new kinds of dangers and challenges related to cyberspace. Since we store a large part of our data in cyberspace and create personal profiles with different functions, we have become virtually predictable and vulnerable [3].

Cybercrime is a completely new dimension of crimes, affecting the whole world beyond borders Governments and national security organizations must counter these crimes, design regulations and strategies for effective defence. [6] At the same time, it is a global challenge that we all must tackle through precautionary measures and correct use of the Internet. In most cases, criminals try to exploit these gaps and shortcomings, so information security education and awareness have become a basic need. [5] Many positive effects can be observed by cyber security education reducing vulnerability at individual, organizational and national levels.

Our article aims to provide a research focus comparison of cyber security master's degrees in the United Kingdom based on empirical analysis. The selected universities have obtained full certificate of the National Cyber Security Centre and they are highly ranked institutions by the QS World University Rankings[3].

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[3] The Quacquarelli Symonds (QS) World University Rankings is an annual publication of university rankings. The QS system now comprises the global overall and subject rankings.

The article follows scientometric approach, research collaboration and research activities will be emphasized. The empirical analysis is based on data from a 20-year scale ranging from 1996 to 2006 available on SciVal and Scopus. Scopus database is one of the main citation catalogues of internationally recognized, high impact research articles and due to this, university rankings. Both the QS University Ranking and THE Times University Ranking insist on bibliometric data gathered from Scopus database when measuring the research impact of academic. In university rankings one of the most objective indicators is the bibliometric indicator, although some factors, for example the size of the university influence them significantly. For this reason, in the following analysis, per capita (academic) or per document averages are analyzed. The structure of degrees will be compared as well. In addition to providing an overview of the United Kingdom's information security degrees, our article aims to give recommendations on publication strategies based on the empirical results.

2. Need for cyber security degrees

Due to the proliferation of cyberattacks and their potential as a new global challenge, the organization of cyber security education should be included within the priorities of states. These trainings focus primarily on how to prevent the attacks and reduce the risk factors, aiming to train well-prepared professionals. This kind of cyber security knowledge enables professionals to take further steps in organizing effective defence.

The official websites of the British universities offering cyber security degrees emphasize the wide range of employment opportunities that attracts many youngsters. There is a huge demand for cyber security professionals both at the public and private sphere. [8] Four main categories can be divided among the actors of cyber security. University lecturers and academics dealing with the theoretical elements of the discipline; professionals hired in the private sphere and industry; employees in the public sphere and finally the members of the society who have information security awareness. [1]

Cyber Security education can help to increase the awareness of the society for the correct Internet use. Consciousness and self-confident use of different online applications can also enhance people's trust which is a very important factor in developed, isolated societies. In these countries, information security is among the top priorities of the state. National strategies have also been formulated with the common point of providing basic education for every student in elementary schools.

University degrees aim to provide theoretical and practical knowledge at the same time. The theoretical background is essential to deepen and expand the discipline with new methods and techniques. Its purpose is to enable professionals to keep up with criminals and be able to supervise the security systems. Practical knowledge will help them to deal with different situations in their workplaces later. This does not include only information security knowledge but also specific skills and abilities essential in the business world. Students can choose from different degree structures, all beginning with a bachelor's degree in computer sciences and continuing with more specific master's degrees.

3. Degrees of the National Cyber Security Centre

In the field of computer sciences, the dominance of the anglophone states is undisputable regarding the university degrees. Based on the list of QS World University Rankings, we can see that eight of the top ten universities were anglophone in 2016. The list is headed by two universities of the Unites States, the Massachusetts Institute of Technology (MIT) and Stanford University, followed by the British University of Oxford at the 3rd place. The British universities selected for the analysis are in

the first 350 places which is a good result on the top 500 world ranking. Seven institutions (meaning the half of the studied universities) are ranked among the top 150.

The UK government set up the National Cyber Security Centre on the 1st of January in 2016 and created the National Cyber Security Strategy for 2016-2021. Chapter 7 of the Strategy deals with cyber security education. The state aims to balance supply and demand by offering competitive university degrees and continuous trainings. In accordance with the strategy, a system has been established for British universities which aims to synchronize the curriculum and course structures. Although many British universities offer cyber security degrees, only the best are awarded by the certificate of the National Cyber Security Centre. This helps universities to attract the best students and to recruit well-trained lecturers. In order to obtain the certificate, an institution has to submit a tender including the names of the academics (involved to the cyber security program), the names of courses, the assessment plan, some drafts of thesis, the entry requirements, the thesis already submitted, the student IDs, and their feedback on the degree. The list of the awarded universities can be retrieved from the official website of the National Cyber Security Centre including the institutions with full and provisional certificates. 13 universities offering master's degrees have been chosen from the list for further analyses.

4. Structure of degrees

For the very first time, Eugene Spafford [7] defined the areas which every cyber security degree must contain. In his research, he identified 18 subtopics as the following: computer architecture, criminology and law, cryptography, database management, analysis of human-computer interaction, information acquisition, theory of information, management and business aspects of information, mathematics, military sciences, mobile computing, networks, operation systems, philosophy and ethics, programming languages, software development, statistics and probability and finally the web programming.

Basically, seven major modules can be identified and classified into distinct groups, in which the courses are interdependent and cumulative based on proposed course structures of the universities. Each group contains overlaps and common points, but they have well-defined topics and fields. Each category includes 3-4 courses in the master's degree structure. The structure of each university can be analysed and compared through these seven modules, because although they all have specialized courses according to their main scientific profiles, the main structure is unified. Due to unified structure of cyber security degree, National Cyber Security Centre can develop common guidelines efficiently. It is not a unique model however, other countries tend to harmonize their cyber security degrees as well, such as the United States.

The seven modules are:

- Cryptography and Data analysis,
- Forensics and Malware,
- Network security,
- Software security,
- Hardware security,
- IT from Other aspects (including law, management and psychology),
- Project and Research.

Based on the seven modules, it is worth noting the weight and impact of each subject in cyber security degrees as it is described in Figure 1. Most subjects have similar weight regarding the universities,

but some shifts can be found between institutions in this respect. Among the modules, the Software security contains the second most courses (4th module), the least are on Hardware security (5th module). Most courses are related to the 6th module because it covers several disciplines, for example law, management and psychology. These courses offer a more general aspect of information security. Courses in the 2nd module are the most closely related to the specific field of cyber security due to their main topics of forensic computing, but it appears that the courses of the 1st module are also emphasized. The courses of this module have the most mathematical nature, so the universities with social sciences profile do not teach them. The University of Southampton emphasizes the most on these courses of cryptography and data analysis, where four courses are built into the degree. This institution has an engineering profile which explains clearly the focus on mathematical approach of cyber security. The 6th module is the most widely taught, while the rarest is the 5th module. As regards to the course numbers two emerge, one is the Software security with 6 courses at the University of Birmingham, and the other is the Project and Research at the University of Southampton with 7 courses. The Queen's University Belfast has the least courses with 6, while the University of Southampton has the most with 18. The most structured degree is offered by the University of Southampton, where the courses are gathering around theoretical and business aspects, and cryptographic and data analysis skills.
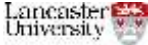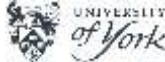
University/ Modul/ Number of courses	Cryptography and Data analysis	Forensics and Malware	Network security	Software security	Hardware security	IT from Other aspects (including law, management and psychology)	Project and Research
Cranfield		3	2	4		3	2
Lancaster University		2	1	1		3	2
Edinburgh Napier		1	2	2		1	1
Queen's University Belfast	1	2	1	1		1	
Royal Holloway	3	2	1	3	2	3	2
UCL	3	2		2	1	3	3
University of Birmingham	3	1	3	6	1	1	3
University of Oxford	1	2	4	2		5	1
University of South Wales		3	1			2	1
University of Southampton	4	2		2	1	4	5
University of Surrey	3		2	2		3	
University of York	1	2	1			2	2

Figure 1: Number of courses by modules and institutions

After the analysis of the degree structures, we can observe that even if the degrees are unified in accordance with common guidelines, the universities create their own curricula based on their main profiles and proficiencies.

5. Research activities of academics

A total number of 1,651 academics' research activity were studied based on the Scopus database.
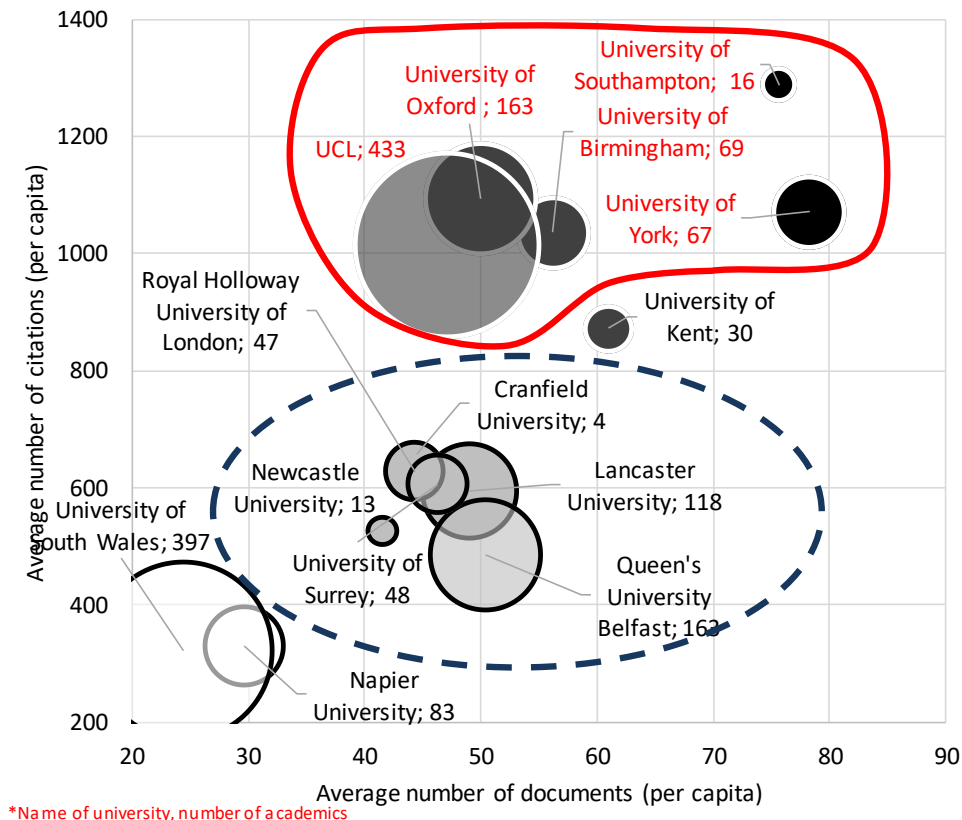
**Figure 2: Number of citations, the average of documents per capita,
and the number of cyber security researchers and lecturers by institutions**

On Figure 2 a clustering of the examined universities can be observed based on the average number of documents per capita (academic) and average number of citations per documents. The size of the bubble shows the total number of academics involved in the analysis. These two factors define three distinct groups among the 14 examined universities as it is shown in Figure 2 by a clustering statistic. The grouping mechanism drives us to the different publication intensity. The universities in the first group can be described with intensive research and education activities. They are followed by a middle-class group in which the universities deal with research and education roughly at the same level of intensity but their scientific achievements is considered to be average. Cranfield University, Newcastle University, the University of Surrey, Lancaster University, Queen's University Belfast, and Royal Holloway University of London belong here. Within the evaluation a third category could be identified as well with universities dealing only with the education of cyber security. Their research activities are not significant in computer sciences. The Napier University and the University of South Wales are included here. The University of Kent is in a unique position because it does not belong to any of the groups since its publication intensity is somewhere between the top and middle-grouped universities regarding both factors.

It can be observed that cyber security academics publish their research findings in many Scopus-indexed publications. Primarily the University of York and the University of Southampton seem to be outstanding with high average document numbers, however in case of the University of South Wales (which has the lowest value) it scores up to 24 Scopus-indexed publications per capita.

6. Research network

It is worth noting the networks of researchers between institutions in the field of computer sciences. Figure 3 describes these networks including the strength of the correlations.
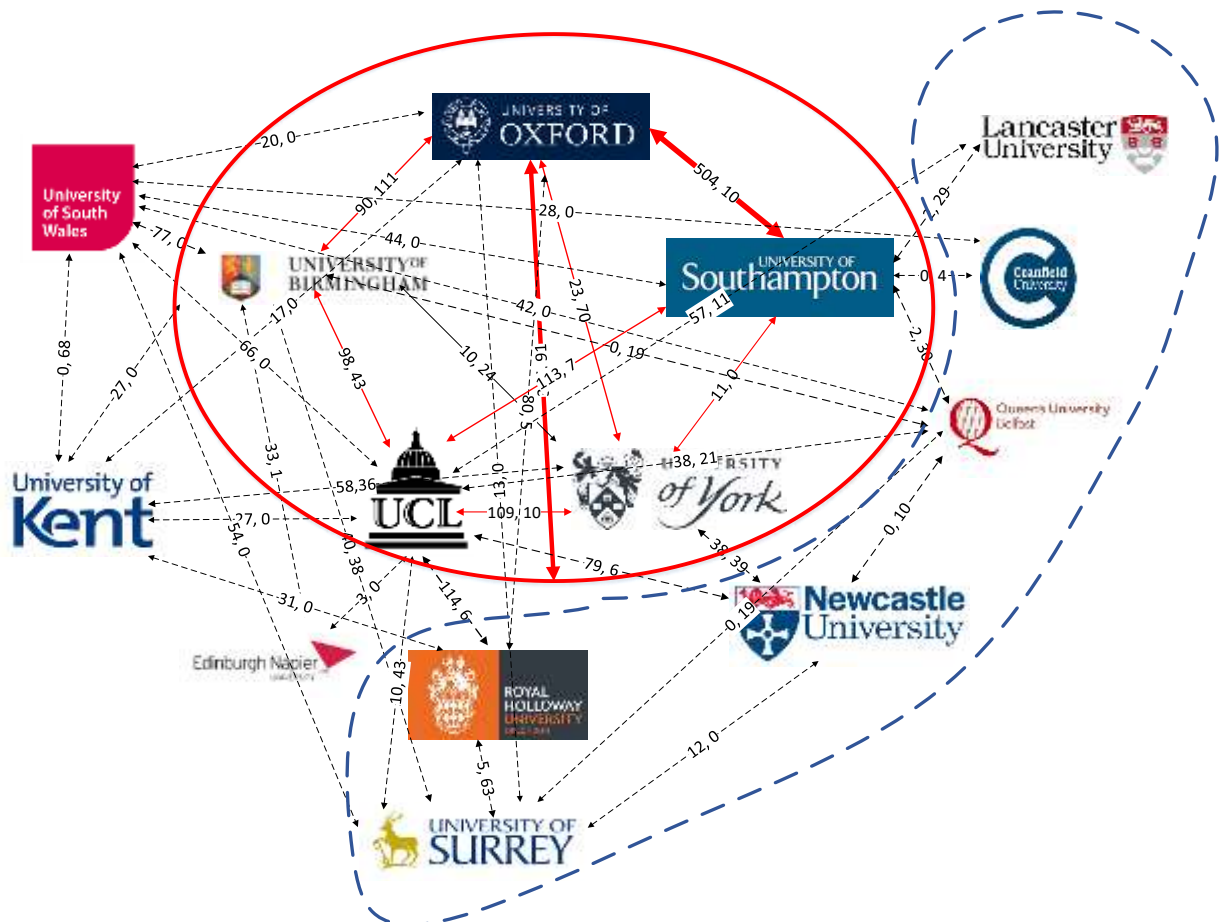
**Figure 3: Cooperative networks of researchers in higher education institutions
of the United Kingdom in the field of cyber security**

The UCL is the most embedded with 911 articles published within the network, while the least embedded is the Cranfield University with 12 articles. The examined universities get 7.5% of their total publication within this network on average. The most cooperative is Newcastle University, where 13% of the whole amount of publications comes from this collaboration, while Queen's University Belfast has the lowest value of 1.7%. As Figure 3 shows, universities with intensive IT research have the most relations with other institutions. Strong collaborations emerge between them, from which the most productive is the one between the University of Oxford and the University of Southampton. The University of Oxford, UCL, the University of Southampton, the University of York and the University of Birmingham are the most active when creating research network. The network of cyber security researchers is primarily seen at higher education institutions having intensive research on cyber security.

7. Scientific performance of academics

Scientimetric analyses have been carried out regarding cyber security. [4] The 14 analysed universities have published a total of 60,583 articles in Scopus-indexed journals. 54,4% of the articles were published after 2010 meaning 32,962 volumes. 2016 was the most productive year with 5,488 giving 9% of the total number of articles.

The fewest articles in the field of computer sciences were published by the Napier University (958), the University of South Wales (1,252) and Cranfield University (1,890). While the UCL (9,502), the University of Oxford (9,157) and the University of Southampton are the leaders, concerning the number of publications. The UCL has published 5,606 volumes since 2010 giving 59 % of the total.
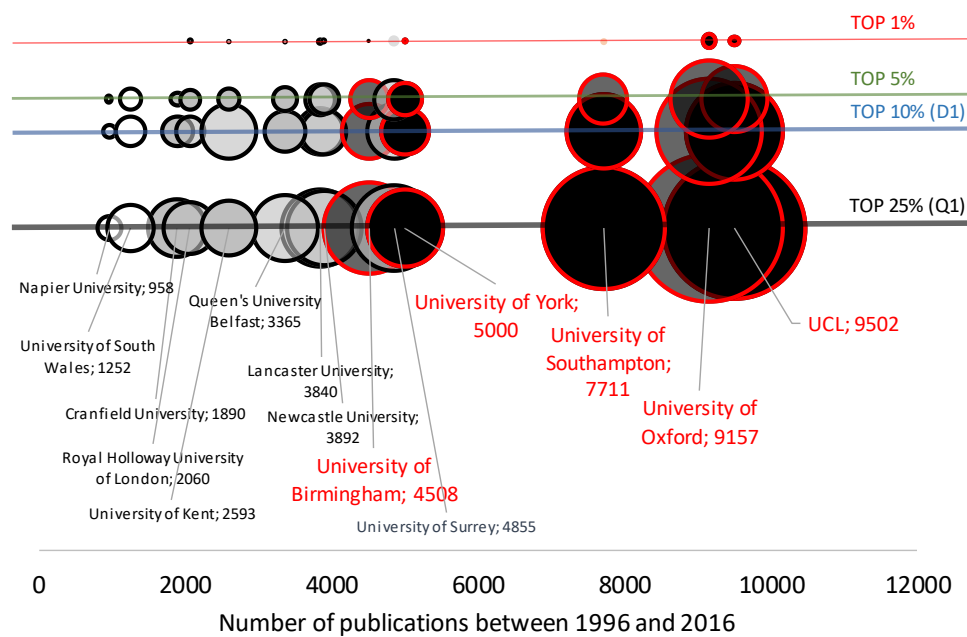
Figure 4: The total number of Q1, D1, TOP 5% and TOP 1% articles published between 1996 and 2016 by British universities in computer sciences

Among the top 25% (Q1) according to the SJR ranking, the 14 universities published a total of 13,328 articles at computer science between 1996 and 2016 as it is included in Figure 4. Since 2010, 7,813 units have been published, representing 58.6% of the total. Only in 2016, 1,472 publications were published, giving 11% of the total. The three least productive universities among the top 25% are the Napier University (95), the University of South Wales (305) and the Royal Holloway University of London (359). However, we can see that the Napier University's backlog is significant as its number of publications is just one-third of the University of South Wales. The three most productive universities are the University of Southampton (1,854), the UCL (2,421), and the University of Oxford (2,681). The performance of the University of Oxford represents 20.1% of the total number of publications (13,328). Since 2010, 1,643 articles have been published at the university among the top 25% journals giving 61.3% of the total. 2016 was the most successful year with 281 articles.

In the top 1% journals according to SJR rankings, the analysed British universities published a total of 107 articles between 1996 and 2016 in computer sciences. From this, 35 were published in 2016 giving 32.7% of the total. Since 2010, 60 articles have been published, while in the last 5 (from 2012)

52. This means that 56% of the total number were published in this decade. There are differences between the universities' performance. Three universities could not publish any articles in a top 1% journal in computer sciences. These are the Cranfield University, the University of South Wales and the Napier University. The three most productive universities are the University of Surrey (14), the UCL (20) and the University of Oxford (37). The Oxford's performance is almost two times (1.85) higher than the UCL's. What is more, its performance shows a growing tendency by publishing 26 articles giving 70% of their articles after 2010. In 2016, 18 articles were published which is almost the half (48.6%) of their performance. With these results, 2016 was the most productive year for the University of Oxford, and this can be stated about the performance of the UCL (5) and the University of Surrey (7).

Even though the University of Oxford stands as second after the UCL regarding the quantity of the publications, when comparing the quality of the publications, it is the most productive university in every category (top 25%, top 10%, top 5% and top 1%). The analysis based on the Scopus database give us the same results as the QS ranking that the higher ranked universities carry out more significant research activities. The members of the university groups mentioned before show the same picture with the leading of the University of Oxford and the UCL. These universities are ranked 6th and 7th in the QS world ranking in computer sciences that is reflected in the intensity and quality of cyber security research.

8. Places of publication

When analysing the citation index and reference numbers, we can observe that the most cited research publications are published in conference proceedings as the following figure (Figure 5) shows it.
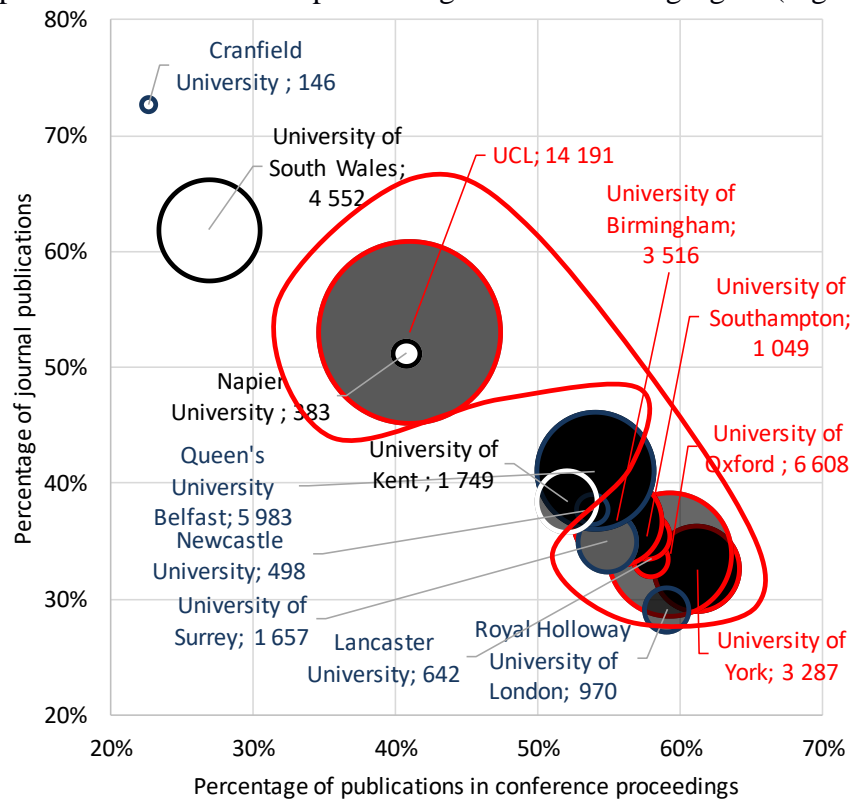
Figure 5: Form and places of publications by cyber security researchers and lecturers by institutions

Among the five leading universities, only the UCL shows different behavioural patterns since it does not publish primarily in computer sciences. Thus, the general research and academic culture of the UCL prefers journal articles. It also appears that the middle-class universities dealing both with education and research try to catch up with the best universities and publish 50 to 60% of their publications in conference papers. The University of York is the most committed to conference volumes, publishing more than 60% of their total number of publications in conference papers. Being represented in conference papers, on the one hand, increases the total views because they are internationally accepted platforms of researchers, and on the other hand, it allows to publish the latest results quickly and at a high level. In a fast-changing discipline such as computer sciences these features, such as speed and up-to-date result communication play an important role. What is more, conference proceedings ensure high-quality publications even beside a more informal structure.

9. Breakdown by disciplines

It is also worth noting at which disciplines the lecturers publish their research publications. The publication has a clear and undisputed breakdown among three main disciplines. These are the computer sciences, engineering and mathematics as it is included in Figure 6.

A correlation can be observed because at the universities which hire more academics in these three disciplines, have bigger success and higher relevance in Cyber security sciences. There is also a correlation in this respect that universities with more educators who are active in these three disciplines are more successful in cyber security. Among the universities having intensive research and leading education, the University of York publishes 48% of the total publications in computer sciences but similarly high rates can be seen in the case of the University of Oxford (47%), the University of Birmingham (42%) and the University of Southampton (37%). In this respect, UCL is somewhat different from this picture but the three disciplines together play a prominent role at this university as well. The ranking ends with Cranfield University, the University of South Wales and Napier University. In relation to the last two universities, it is important to mention that social sciences are emphasized in their academic profile, explaining the weaker results in the field of the three examined disciplines.

In conclusion, university lecturers at the examined universities mostly publish their research findings in three disciplines. These are the computer sciences, engineering and technology, and mathematics.
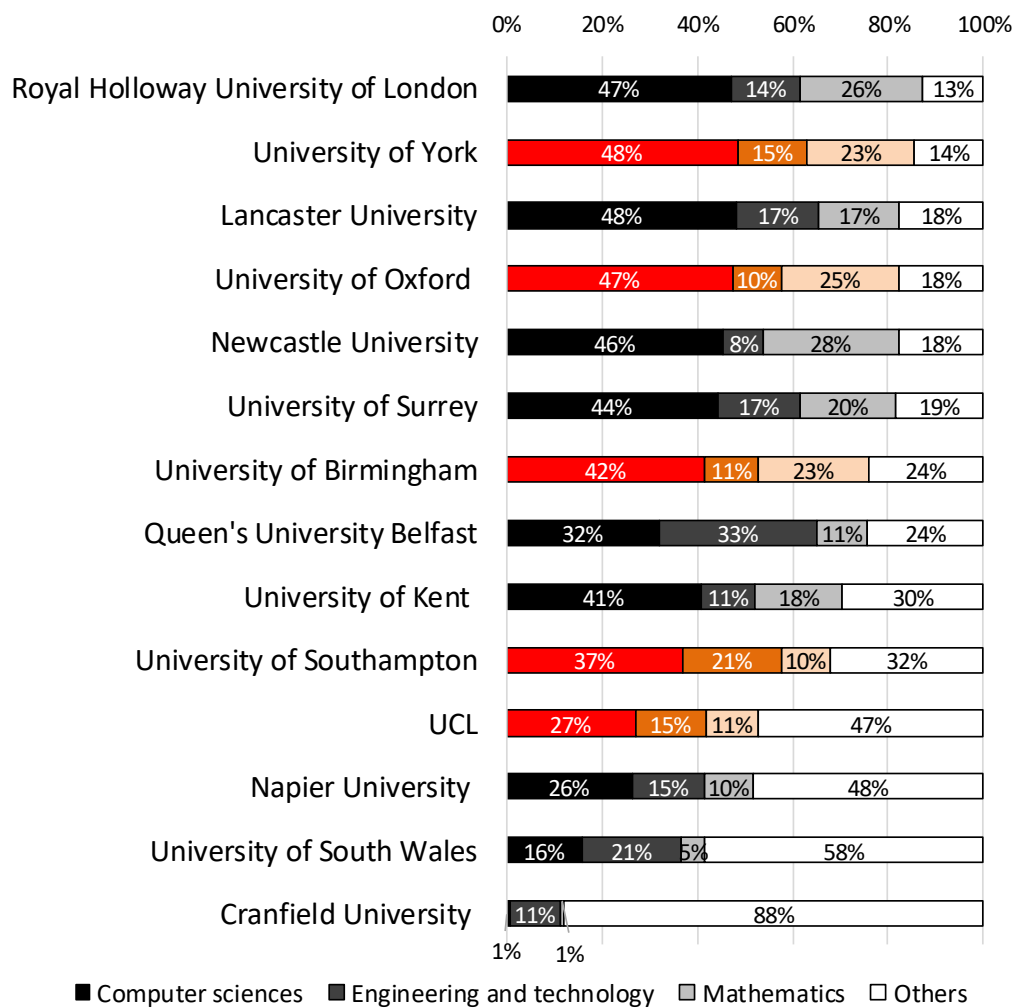
Figure 6: Scientific classification of publications by cyber security researchers and university lecturers

10. Conclusion

Recommendations can be made mainly based on the British unified model which can contribute to any cyber security degrees. With respect to the courses, we can say that there are disciplines that are fundamental elements in the British model. Topics of the cryptography and data analysis, computer forensics, and, the introduction of basic mathematical models. These courses would help experts to become familiar with information systems and information security which is essential to managing these systems well. Limitations of the study is that it emphasizes on scientometric data, but this trend can be observed among international university rankings placing a great accent on research focused approach and on ranking methodology using bibliometric data. The aim of the analysis is to compare the highly recognized British cybersecurity master's degrees, which obtained the national certificate. Although the certificate declares the curriculum, significant differences can be seen between the examined universities related to their research performance. The national certificate also places a great accent on the research capacities of these institutions so the study has its aim in identifying common publication patterns and collaboration networks among these academics.

Concerning the academic activities of the lecturers, we can observe that they tend to follow the international trends in their publications as they publish their findings in conference proceedings. The presence at international conferences either as a lecturer or as audience is important from the aspect

of creating international cooperation as well. Finally, the research findings should be published in conference papers to achieve more readers and gain a higher impact.

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IDENTITY IN THE AGE OF SOCIAL NETWORKS AND DIGITALISATION

Daniele Fiebig[1]

Abstract

There is increasing pressure in public administration to expand eGovernment offerings and to use other digital technologies in order to offer services in a more transparent and citizen-friendly manner. The law to improve online access to administrative services (Onlinezugangsgesetz - OZG) obliges the federal, state and local governments to realize more administrative services digitally by the end of 2022.

Electronic services require user registrations and the creation of electronic identities for users.

Considerations of efficient and secure user registration, recognition and transparent presentation of activities and transactions are desirable and necessary. For example, applications must be legally assignable to an applicant.

In public administration, security, availability and authenticity play a major role alongside other security objectives. In the analogous area, activities and decisions can be verified by means of forms, applications and signatures. This proof must be preserved during digitisation. Therefore, digital identities and data security must be given attention when planning new eServices and web offers.

Furthermore, the factor of resource scarcity plays an important role in such considerations. Internally, new ways of collaboration, information exchange and knowledge management must be tested in order to cope with increasing demands and to maintain or improve employee motivation despite increasing workloads.

This article analyses current technologies and their transferability to public administration applications.

1. Identity - a definition

Defining the identity of a person or applications is more complex and important today than ever. Identity is a Latin term and generally describes the essential unity of a person.

Psychologists often use the Petzold 5-pillar model to describe identities [Petzold, 2012].

In today's world, the nature of social identity is changing and expanding to include identities for objects or virtual objects. In the digital world, identities are linked to rights, obligations, affiliations and securities.

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Identity is defined as the totality of the characteristics, the features of a person but also of an object. The physical characteristics can be supplemented by the possession of objects of legitimation such as ID cards, tokens or keys and special knowledge such as passwords, PINs, secrets, etc.

Each identity must be able to be substantiated with meaningful data that make it possible to check whether this identity is legitimate and valid. In short, it must be possible to credibly prove that the owner of a legitimation is also who he claims to be!

Identity features can be static, i.e. they can remain the same for a lifetime, such as a person's date of birth, or dynamic (changeable, limited in time), such as a password. Frequently found are dynamic identities and identity features that are only valid for the duration of a person's membership in a group or for a transaction. This means that not every identity feature is fixed and therefore not every identity has to exist for a lifetime. It can change at any time, be linked to new characteristics or features or be freely assigned. As with characteristics, a distinction is made between static identities, which remain the same throughout a lifetime, and dynamic identities, which people can create and delete themselves, for example, an account in an online shop. Electronic identities can "die" and use virtual features such as user names and passwords, which have a limited validity. [B. Giesen; R. Seyfert, 2013] Therefore a person can have several digital identities, a digital identity can exist without reference to a person and digital identities can be "stolen". Certain characteristics of a person can be captured digitally - whether these "make up" his or her identity, describe a particular real person or "disappear" in the anonymity of all the bearers of characteristics can always be controversial. [G. Hornung / Ch. Engemann, 2016] Digital identities thus differ from conventional identities such as identity papers in particular by their usually short lifespan. Not to be dismissed is the trend towards the creation of eIdentities (eID or eIdentity) for various applications and services such as banking accounts in e-commerce or for use in social networks. In the following, only digital identities will be analysed.

2. Identity in the digital world

In the digital world, identities have the task of restricting access to IT systems and applications in order to protect sensitive data and control its use.

In this context, the term IT system covers the combination of different hardware and software, mobile, network-enabled devices and machines (smartphone, tablet, smart devices, robots, machine controls, etc.), networks as well as administration and users. Global networking enables the worldwide use of IT systems. Globalization thus increases the range of identities and makes them more difficult to verify. The result is a balancing act of flexible use of services and secure authentication of all users.

In other words, digital identities move in a field of tension between a flood of globally usable services requiring registration, confidentiality and convenience, control and security, and the efficiency achievable with the offers.

Many applications and digital services require digital identities. They are created by creating a user account for a digital service.

Already today, each of us has an increasing number of eIdentities and profiles with different characteristics and content with a wide variety of service providers!

Everyday things are becoming more and more digitalised and thus done online. Web services in the field of eCommerce, banking, insurance, energy provider portals, navigation or entertainment are increasingly displacing stationary services. [BVDW, Dig. use in DL 2018]

The administration also offers eGovernment services. The eGovernment MONITOR 2019 [Kantar, 2019] shows a significant increase in the use of digital administrative services.

Almost every digital service requires registration and thus the creation of a digital identity (eIdentity) and thus the filling of a profile with various personal details. Depending on the application, the profiles may contain sensitive personal data such as e.g. your name, identity card number, date of birth, address, bank account, etc. This is data that is constant throughout a lifetime and data that can change.

Digital administration usually provides government services through a single user account. This means that in the future, all administrative services will be available with different end devices via a single eIdentity. [Kantar, 2019]

This poses challenges on several levels:

1.   secure and up-to-date authentication and authorisation systems are required
2.   secure transmission paths must be made available
3.   secure administration of user data at the service provider
4.   ensuring data sovereignty
5.   traceability of all accesses (read and write)
6.   100% transparency f the stored personal data for the user and all rights to the data. Which authority, institution, bank, insurance company, company etc. is allowed to access which data?
7.   withdrawal of access rights and 100% deletion (right to delete!) [25].
8.   users have to remember different access names and passwords, logins, secrets, tokens (eCards), eID cards, smart phone keys (via NFC) and manage them securely

A challenge for any new service is user-friendliness and accessibility. In addition to documentation, manuals and tool tips (input aids in the application), videos and language assistants can help with the use of eServices. Here, eServices are confronted with the problem of the diversity of access devices and the associated technical possibilities in terms of presentation, processable information volume and security. In this environment, not only user registration but also recognition and legally secure assignment to services must be solved. Therefore, current technologies will be analysed in the following chapter.

3. Technologies for identification in the network

Digital identities enable authentication (proof of a person) and identification (recognition) as a user in networks or services. Authentication or authentication is the verification process that an identity goes through in order to classify the login data entered during registration (authentication) as trustworthy. It is determined here whether identity features are congruent, i.e. whether they are authentic. Authentication is used in IT to determine whether claimed characteristics correspond to the profile characteristics of an identity.

Authorisation is the process by which authorised users are granted access to the network, applications or services as well as roles and rights after their identification (recognition).

In general, a distinction is made as to whether a user logs on directly to the service/server/system or whether a trustworthy third instance is involved.

Common to both methods is that there is a body that holds the data required for identification and authorization.

When using eIdentities, several areas must be considered:

1. How is the eIdentity created and what information is generated?
2. What data is stored where and how (provider server or third party)?
3. How is the data for identification transmitted (authentication protocol)?
4. Which technologies are combined, if necessary?

Various technologies exist for identification in computer networks. The most common are logins by user name and password, sometimes supplemented by PIN/TAN/mTAN.

Digital identities are managed by the providers in so-called Identity Management Systems (IAM). An IAM provides companies with a central administration of users (identities) and access rights to network, network areas, different systems and applications. Authentication and authorization of users are central functions of the IAM. These software solutions are operated on server systems and are used to secure access control, data security or to meet compliance requirements.

IAMs use different methods and technologies for user authentication.

In general, 3 areas can be distinguished for authentication:

1. *KNOWING* (knowing something)
   User name, password, PIN, code, secret, ...
2. *POSSESSION* (owning something)
   Key, chip card, token (with and without digital signature option)
3. *CHARACTERISTIC* (to be something)
   fingerprint, retina (eyes), appearance

Identity checks can be compiled from these areas as required. Currently common technologies and procedures that are combined are, for example:

- User name and password
- PIN, PUK, other personal identification numbers, ...
- Answer to a specific question (security question / secret)
- personal ID card
- Chip card, smart card, signature card, magnetic stripe card, SIM card
- Key codes, digital signature and certificate (cryptosystem and -algorithm)
- TAN list, iTAN list and mTAN (mobile TAN)
- PhotoTAN
- Fingerprint
- Face recognition, iris recognition, retinal features (background of the eye)
- Hand geometry (palm scanner)
- Typing behaviour
- Voice recognition

- Handwriting (signature)
- Code generators (e.g. Google Authenticator)

Some technologies require additional hardware (e.g. card readers) or recording devices (e.g. camera, scanner) for identification.

The use of several technologies for one authentication is called multi-factor authentication or multi-factor authentication (MFA). With the widely used two-factor authentication (BFA), identification is performed using two factors. The first factor is the combination of user name and password. The second factor is, for example, a random code sent to a telephone number, which must be entered by the user. Only if this entry also matches the data sent is the user credible and his identity is considered proven in the system. A code generator is often used to generate the code, which generates multi-digit combinations of numbers with short validity and sends them by SMS. Other solutions use a mobile app to generate the combination of numbers.

Authentication can be carried out via a "qualified trust service provider" (certification authority or trusted third party) or directly at the server or requested system (Direct Anonymous Attestation (DAA)). DAA is currently being tested and further developed mainly in the area of Industry 4.0 for machine identification in order to increase security. [Smyth, B.]

3.1. Username and Password

The most common authentication is logging on to corporate networks, so-called intranets, with login name and password (also known as basic and digest authentication according to RFC 2617).

The technologies for this are, for example, the Active Directory Service (AD from Microsoft), the Lightweight Directory Access Protocol (LDAP) and RADIUS (Definition Remote Authentication Dial-In User Service), which are described in the IEEE 802.1x standard "Authentication procedure for access control in local area networks (LAN)". These are hierarchically structured directory/user services. User passwords are stored encrypted as hash values and the password check is performed by comparing the hashed values.

Authentication procedures based solely on user name and password are no longer considered secure today and should be supplemented by other technologies.

3.2. Biometric methods

Biometric identification methods include, for example, fingerprint or iris scan, voice or face recognition, hand vein image, etc.

The individual, biometric characteristics of a user are usually stored in encrypted form in his or her profile and are used for verification. A distinction is made between static, anatomical features and dynamic features (behavioural characteristics).

These features are recorded either passively, for example by cameras, or actively, such as by laying hands on a scanner.

Disadvantages of these procedures are that additional technical recording devices are required to record the features - so-called biometric systems - and that features can change depending on external recording influences or with the age or condition of a person.

A low quality or too small a range of features in turn makes it easier to imitate and deceive the system, e.g. with photos.

The advantages of "biometric" identification are the availability of the features and the fact that no additional information (knowledge) is required from the user. Forgetting is thus almost impossible.

Interesting experiments are underway with electronic tattoos (MC10 Inc.), bracelets, electronic pills (Motorola) and implanted chips. These can contain encrypted data, record biometric features of the wearer and send the corresponding information on request. RFID (radio-frequency identification) is often used in combination with GPS (global positioning system) to transmit the information. RFID implants in the human body were classified as safe by health authorities years ago and are used in animals and humans. An implanted or glued transponder (e.g. chip or tattoo) consists of a microchip and an antenna (coupling element). It does not have its own energy source, but is activated by an RFID reader. In contrast, electronic pills obtain their power from gastric acid. Other technologies use body heat or draw their energy from the requesting device.

Many of these methods, which have also been tested for authentication, are used in medicine, e.g. to monitor athletes and children and to warn of dehydration, metabolic stress and various hyperfunctions.

3.3. Tokens and Cards

Tokens for authentication are also widely used. These are hardware in the form of smart cards or USB sticks, which contain the digital, encrypted user data for identification (personalization). They can thus be uniquely assigned to a user.

Both contactless (contactless) reading methods or technologies with contact readers (plugging in or hanging up) are used for authentication.

RFID tokens are frequently used, which, like biometric tattoos, are transponders (radio communication devices) that receive incoming signals and answer them automatically.

In addition to RFID, Bluetooth, NFC (near field communication) and smartphones are used for contactless data transmission between token and reader. USB tokens belong to the contact-based identification technologies which, in contrast to smart cards, can be used without a laying device. Here, even larger amounts of data can be stored and transferred for identification purposes. For some time now, so-called dongle have been used for license confirmation and thus for enabling software use.

The so-called token generators represent a special form. These are tokens that generate a random combination of numbers as a one-time password on request. The combination of numbers is determined by the server and the generator on the token simultaneously. It is only valid for a short time and must match for unique authentication.

Very well-known representatives are the security tokens of the company RSA. They are often part of an MFA.

Tokens permanently installed in devices (computer mainboard, smart meters, smartphone) or systems are called Trusted Platform Modules (TPM). This is a chip with security functions. The core of a TPM is a crypto-processor, which is used to generate user or device keys with different algorithms such as RSA (with 2048bit key length) and/or SHA-x. Further components are a random number generator and various memories.

TPM are permanently bound to a device, i.e. the identification of a user is done indirectly via the ownership of the device. The device binding is done by forming hash values from the hardware and software configuration data sets of the device.

3.4. Mobile ID

The widespread use of smartphones enables further applications in the field of security and proof of identity. Camera, fingerprint scanner and security applications can contribute to this.

Smartphone-based identities (mobile ID) are a promising technology for the future due to their widespread use and availability. Currently, many users refuse to store sensitive data on the phone memory. However, the fact that more and more transactions (payment processes via ePayment) and banking transactions are being carried out with the smartphone shows that user-friendliness and time savings are eliminating security concerns.

3.5. Signatures - Sign electronically

Signatures (digital signatures) also confirm authenticity - here the authenticity of a digital document. With a handwritten signature on a document, the signatory confirms that he or she has written the document or accepts its contents. With the help of a signature, it can be guaranteed that the sender is authentic and that the data has not been changed during transmission to the recipient. Electronic signatures thus enable sender authentication and the determination of data integrity.

Electronic signatures are data linked to electronic information which allow the signatory to be identified via certification authorities the "qualified trust service providers". Certification authorities vouch for the identity (validity) of the signature and thus for the integrity of the data. The signature is created by signature software and is based on cryptographic encryption algorithms. An electronic signature has the same function as a signature on paper. A document is considered to be electronically signed if it is linked to digital data in such a way that the signature can be uniquely assigned to the signatory. By means of an electronic signature, the originator can also be identified on electronically transmitted documents.

There are three levels of electronic signatures: the simple, the advanced and the qualified electronic signature. [A. Dumont, 2016]

For many procedures and transactions in the digital world, in addition to the link to an Accout (a digital originator), a legally compliant time specification is important.

A qualified time stamp service is provided, for example, by the Federal Chamber of Notaries or DFN-Verein within the framework of the DFN_PKI. [Foest, Pattloch 2005]

A timestamp service generates a hash value from the corresponding document or transaction log and signs it electronically with a timestamp key.

3.6. Mobile phone signature

Signatures are replaced by digital signatures. Three mobile signature technologies are currently in use: 1. solution with a cryptographic module on the SIM card or on a microSD card, 2. firmly implemented On Board Key Generation (based on the ETSI Mobile Signature Services, MSS standard), 3. SMS-based PIN-TAN solution. Austria, Estonia and Latvia use computer-readable ID cards in combination with mobile services, e.g. mobile phone signature, for authentication to eGovernment solutions. The mobile phone signature is used in Austria for legally valid electronic signatures with mobile phones (mobile signature/mobile ID) for eGovernment applications (citizen services). The mobile phone signature can be used in Austria in addition to the smart card-based citizen card. In addition to the mobile phone signature option, there is the signature card (e-Card) with activated citizen card and additional functions for which a card reader is required. Both technologies enable a legally valid signature in Austria. The mobile phone signature and the smart card-based citizen card with electronic identity are comparable to an electronic ID card in Austria. The technological basis of the mobile phone signature is an internal or external cryptology component in the mobile phone or an app.

To use a mobile phone signature, the mobile phone signature app provides various functions for triggering the signature. These can be used for signing when using various digital administration services and for managing personal user data.

In addition to user name (phone number), password, mTAN (one-time TAN via SMS usually 6 digits), face recognition (Facescan) or fingerprint comparison (TouchID) can be used for authentication.

All data required for authentication is stored and transmitted in encrypted form.

3.7. Storage of eIdentities, passwords, etc.

Security-relevant information must be stored and transmitted securely, using encryption and hashes. Storage as plain text should be excluded.

Hashes in the field of IT security are cryptographic functions that create a unique image of information. In the simplest case this is the checksum. When using cryptographic hash functions, it is possible that a unique hash value can be assigned to each input value.
Encryption is the conversion of information into a non-readable format on the basis of cryptographic procedures. The original can only be restored using keys that must be known to the addressee and the sender. [Buchmann, 2008] When comparing passwords, the password entered by the user at login is processed using the same key as used to create the eIdentity and a comparison of the encrypted passwords is performed.

Today many encryption algorithms are in use. What they all have in common is that they are based on cryptographic methods for key generation and encryption that can be cracked. Therefore, a combination of different technologies is required in this area to achieve a high level of security. Which cryptographic methods and key lengths are secure and appropriate depends on the protection requirements and environment as well as the "state of the art". In this context, reference is made to

the BSI publication and the Technical Guidelines TR-02102 "Cryptographic Methods and Key Lengths" and TR-03111 "Elliptic Curve Cryptography".

In addition to the procedure for effective encryption, data security must also be guaranteed during data transmission. For this purpose, various encryption procedures and data transmission technologies are combined to form cryptographic protocols (authentication protocols).

A further security feature is a secure database technology for transparent storage of encrypted identity data, which guarantees the traceability of transactions.

3.8. Certificates and authentication

Authentication by certificate is an authentication mechanism in which a unique user name is combined with encryption specific to that user to create a certificate that proves the identity of a user or device. Qualified trust service providers (certification authorities) are responsible for issuing and verifying identity. User certificates are strings of characters or verifiable small files containing proof of identity that the qualified trust service provider has verified. User certificates must be installed on the hardware or in the software used for login (e.g. browser) to ensure a fast and secure login. This hardware or software binding is both an advantage and a disadvantage in the event of device loss.

3.9. PKI

The basic building blocks for authentication via wide area networks are provided by the public key infrastructure (PKI). This includes services for registration, certificate management, directory service, encryption services and encrypted, integrity-encrypted communication.

4. Digital applications in the public sector

The Online Access Act OZG [20] is the basic framework for digital administrative services in Germany. In §2 point 4 the user account is defined as the central identification component. §Section 7 describes the registries and the scope of the data required for identification.

The technological infrastructure is provided by the federal administration portal and the portal network of the federal states. They contain search and payment components, user registration and user administration as well as mailboxes. Online gateways are used for user registration and service provision. The administration portal thus provides the functions of a German PKI. Currently the following means of identification can be considered: 1. user name/password combination, 2. online identification function of the identity card and the electronic residence permit, 3. software certificates or 4. hardware tokens.

By means of a one-time registration for all administrative services in the portal network, all digitally available administrative services should be available to the user.

On 17.09.2014 the "Regulation (EU) No. 910/2014 on electronic identification and trust services for electronic transactions in the internal market and repealing Directive 1999/93/EC" (eIDAS Regulation) came into force, which defines the uniform European framework for the cross-border recognition of electronic identification procedures. It regulates the characteristics and functions of electronic signatures, services related to electronic seals and time stamps, the delivery of registered

electronic mail and website certificates. Member States can notify their electronic means of identification to the EU Commission on a voluntary basis [16].

4.1. eIDAS- Authentication via online identification function in Germany

In Germany, the identity card with online identification function can be used to establish identity. This contains additional functions for electronic proof of the user's identity. To this end, data is stored in the electronic storage and processing medium of the identity card for the purpose of verifying the identity of the card holder or the authenticity of the document (signature) (see personalausweisportal.de). In order to identify oneself digitally, the first step is to connect the ID card to the reader (Note: The reader must be connected to the PC and the reader software must be installed) or the ID card is scanned with the installed mobile phone app (www.ausweisapp.bund.de) via mobile phone camera and the user data is sent to the requesting body/authority. Afterwards the personal secret number (PIN) is filed. If they match, the data is transmitted using end-to-end encryption.

The electronic proof of identity is based on 2-factor authentication. Users are identified by various features. 1. possession (identity card with online functions) 2. photograph and fingerprint (biometric) and PIN (knowledge). The possibility of reading the ePA data without PIN is questionable (see draft law 18/11279).

4.2. Technology and security level

COMMISSION IMPLEMENTING REGULATION (EU) 2015/1502 of 8 September 2015 lays down minimum requirements for technical specifications and procedures for the security levels of electronic means of identification referred to in Article 8(3) of Regulation (EU) No 910/2014 of the European Parliament and of the Council on electronic identification and trust services for electronic transactions in the internal market [IR (EU) 2015/1502].

The IR (EU) 2015/1502 distinguishes 3 levels of security for a notified electronic identification system: "low", "substantial" and/or "high". This serves to define minimum requirements for the technical specifications, standards and procedures for proof and verification of identity, which should take into account different systems and procedures, but at the same time provide a sufficiently high level of security. This includes secure data transmission, since for online authentication the communication channel is decisive for data security.

4.3. Use and acceptance

At present, only about one third of the new ID cards in Germany have the online function activated and usage is far below expectations. The government programme "Digital Administration 2020" aims to promote greater use of the eID function of the ID card and electronic residence permit.

While readers are not very widespread, more than half of all ID card holders own a smartphone that is suitable for using the ID card app, so that the necessary technical equipment is available. One can therefore assume a mix of problems: lack of acceptance, no confidence in security, too few eServices available nationwide, large regional differences in local citizen services and a lack of transparency in data use and data storage.

The portal infrastructure for which the state is responsible is supplemented by third-party providers and has outsourced functions that are performed by identification service providers (e.g., mail via

PostIdent), local service providers in the states and municipalities, and other service providers. These are just as unfamiliar to the user as the many local portal operators in the cities and districts.

Little clarity exists with regard to the authorized bodies that are allowed to read out the ID card data in two ways: 1. by entering the secret number and 2. without entering the secret number. Here the list goes from citizens' offices to police and intelligence services - in other words, anyone who has a reader. The scope of the stored data, the scope of the data read out and the use of the data read out is also non-transparent for the citizen.

4.4. Citizen Card in Austria

A citizen card is an eID that is stored on a chip card (token). It is used in Austria for authentication at administrative services. The framework for authentication is set by the "Certification Policy" in Austria [Certification Policy, 11.02.2019]. Authentication takes place via the certificate service operator. In Austria this is the company A-Trust. [eGovernment Monitor 2019].

4.5. Electronic health card

The eGK is used to authenticate the insured with their health insurance company using a smart card. In addition to identification, the health card is used to store important documents such as doctors' letters and findings in encrypted form. The communication of the service providers" (doctors and hospitals) is carried out via a system called "telematics infrastructure", which realizes the secure data exchange via a Virtual Private Network (VPN).

4.6. Initiatives and information sources

An overview of the eGovernment situation in Germany is provided by the annual eGovernment Monitor of the Initiative D21 and the DESI Index is published by the EU Commission.

In 2012 the FIDO (Fast Identity Online) Alliance was founded (based in California). Its goal: to replace passwords with a simple and secure online authentication method. 2015 the German Federal Office for Information Security joined the alliance. A German registration, identity and data platform, which is also to be used for eGovernment, launched an initiative in 2017 from Allianz, Axel Springer, Daimler, Deutsche Bank with Postbank, Core and Here. The VERIMI platform connects the online accesses of the VERIMI partners with the VERIMI accounts of the users and registers them centrally via VERIMI in the future. With only one access, services can then be used with all participating partners. VERIMI shares the stored data only with the partner companies. The usage is restrained currently. (see www.verimi.de)
Assessment

Common to the current solutions is the central data storage for identity data. This has the disadvantage that the data belongs to the system owner and the user has little influence on the use of his data. On the other hand, he has to register anew with each new institution or service and usually cannot access the verified data of the first institution. Often the registration is supplemented by paper-based processes (passport, signature, ...) (e.g. Post-Ident). These are outdated and documents are vulnerable to loss or falsification.

The challenges for identity management consist in the security of data storage and data exchange as well as in the design of the interfaces between user/data supplier and authority/institution and the

economical use of data. Only when handling and transparency are acceptable to the user will the solution become established independently. On the other hand, it could be implemented by law, especially in eGovernment.

Regardless of the technical solution, the user himself will be faced with tasks. Even today, they already bear the responsibility for their personal documents, from birth certificates to passports. A single digital identity including the storage of all documents could facilitate this task. Especially because we have to identify ourselves more and more often.

4.7. Dreams of the future - Once-Only Authorities Account

A Once-Only Authority Account could be the central repository for digital identity but also personal data, contracts and detailed information about the personal situation (certificates, diplomas, etc.) and could contain banking, tax and health information or employer data or income information.

Such an account could be used proactively by public authorities to collect fees, make registrations and re-registrations, pre-formulate tax returns, point out claims and fill in appropriate forms.

4.8. Challenges and opportunities

Some structural challenges in identity management could be solved with a distributed, decentralized database including cryptographic security functions. Blockchain as protocol and distributed database is an example, which has passed its practical test in the form of the Bitcoin implementation. The blockchain technology offers high manipulation security and good encryption for all contents. Data can be shared over the Internet and a report can be generated about all activities (accesses, changes). The created blocks each have a journal that shows the transaction history, which increases transparency. Users decide for themselves which data they transfer to the block chain and to whom they give which data to read. The block chain thus provides a technology for the safekeeping and administration of identities, personal data and documents up to contracts. The rules for identification and the characteristics must be defined and implemented in accordance with current regulations. [Swan,2015]

However, block chain security relies heavily on the secure storage of a personal digital key. This can be stored in the PC, smartphone, USB stick or other external data carrier. As soon as this key is compromised, lost or copied by criminals, the entire account must be deactivated or better yet deleted. The process is similar to that of a stolen credit card, but it may be more extensive.

The distributed authority structure offers the possibility to build a peer-to-peer authority network based on block chain technology. In this case, the authorities could act as so-called full nodes (network nodes with a complete copy of the database), which have access to the entire block chain at all times. Each citizen, as a lightweight node (network node with a partial copy of the database), is in possession of all his own blocks. Furthermore, new blocks must be created and validated in a block chain database. These tasks can be distributed per business model. All network nodes recognize the rules of the system and are able to actively participate in shaping them, e.g. by installing updates or even rejecting them. In this authority block chain it should be possible to electronically map personal data, contracts and transactions as metadata in addition to identity features. Distributed data storage does not specify how users in the network are to be authenticated and identified and which features are used for authentication. This decision regarding the technology (e.g. ePA or only name/password, etc.) must be made when designing new business models. The greatest potential for efficiency lies in

business transactions with a fixed procedure, where the process steps and their consequences can be comprehensively predefined. Such processes can be found in the everyday life of public authorities, especially in form-based application procedures or registrations and re-registrations based on user master data.

SmartCity services such as the application for parking permits for residents, school registration, childcare portal and eHealth offers could be mapped as business processes and, with an interface to the Bürgerblockchain as a data supply, could be used very efficiently for the application. These services can be implemented modularly. However, the interface to the block chain and user registration must be standardised. A uniform interface for logon, transactions or retrieval of histories throughout Germany increases user-friendliness. The acceptance increases with the number of eServices offered and the possibilities of using an authority block chain with personal data. This means that the possibility of using different authentication methods for eServices with different security requirements will shift in favour of one or fewer user accounts (ideally once-only accounts). This must be taken into account by opting for a future-proof and scalable technology.

5. Conclusion

The tasks of public administration are the efficient implementation of all administrative processes, whereby citizens and their data must be protected in accordance with the "state of the art". Digital services require, among other things, the introduction of secure authentication methods.

Regardless of the technology used for authentication and authorization, trust in the authorization authority is extremely important. In addition to IT security, user-friendly handling and verifiable transparency of access to personal data are decisive for the acceptance of eServices. Centralized storage and multiple use of data in particular requires a new attitude towards IT service providers in general. The highest standards of data protection and data control must be met.

In addition to trust in the entity holding the data, usability and benefits must be recognizable to the customer. Acceptance is based on reciprocity. If users provide their personal data, there must be a personal gain (time, quality, scope of services, multiple use).

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BUILDING AN EFFECTIVE INFORMATION SECURITY AWARENESS PROGRAM

Ildikó Legárd[1]

Abstract

Many researchers and experts in the field of information security agree that the user is the weakest link in an organization's chain of information security. Even if the system's and the stored data's physical and logical protection is well developed, the human factor exposes security to significant risk. The effective protection against the threats is to provide security awareness through implementing a well-developed and successful Information Security Awareness Program.

Although organizations are able to recognize the importance of information security awareness, the implementation of the awareness programs can be difficult. The aim of this study is to help organizations to develop an effective Information Security Awareness Program tailored to the characteristics of the organization. The paper presents how we can build a program that influences and improves the user's knowledge, attitude and behavior the most towards information security and makes positive changes in the security culture of an organization. To achieve that goal, the study identifies the key elements of the implementation, compares traditional awareness programs with modern trainings and highlights the importance of communication channels and methods. There is no single solution to improve information security, the essay summarizes and shows the most effective techniques that experts can use in order to seize the user's attention toward information security, to establish credibility and trust, and to motivate action.

1. Introduction

Technological advances in recent decades, the rapid increase in digitalization, the tremendous development of ICT tools and services, the widespread use of the Internet, and rapid access have irreversibly changed the lives of people, the way businesses operate and the organization of public administration. In parallel with the incessant development, the fight for obtaining data and information stored in information systems and for influencing the operation of the systems also started to become sophisticated, while the security awareness of the users of these systems did not keep track with the pace of technical development. Not surprisingly, cyber criminals have begun using a new and very popular form of attack, called social engineering that builds on influencing, manipulating and exploiting the vulnerability of the human factor.

„Social engineering uses influence and persuasion to deceive people by convincing them that the social engineer is someone he is not, or by manipulation."- said Kevin Mitnich, once known as "The World's Most Wanted Hacker".[2] According to Mitnich, as a result, the social engineer can use people to gain information with or without technology.

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[2] Kevin Mitnick, "The World's Most Famous Hacker," was born in Los Angeles, CA in 1963. In the late '80s and early '90s, Mitnick used social engineering to hack the computer systems of various companies.

Broadhurst and Chantler argued, that the employees become the primary target for social engineers and cyber criminals, as the first step is gaining access to information. „The secondary target, such as the organisation's computer system; which in turn may lead to a tertiary or main target such as a system control program, database, financial or telecommunication system. Cyber criminals will try to gain this 'access information' enabling them to bypass security. This can include usernames and passwords, PIN's (personal identification numbers), tokens and credit card information (Federal Communications Commission 2002). Once they have gained access to the system, they are then able to erase, modify or copy the information to suit the needs of their attack." [1, p. 1]

Social engineering attacks can be divided into two groups, depending on the methods used by the attacker: human-based and computer-based forms of attack. The most popular forms of the human-based attacks are: asking for aid or support, assistance (reverse social engineering), identity theft, thumbstone theft, shoulder surfing, dumpster diving and tailgating. The computer-based attacks are: phishing (for example scam, vishing, smishing, pharming, whaling), malicious programs (for example: viruses, trojans, scripts, keylogger, spyware, baiting, ransomware), attacks based on public Wi-Fi and attacks based on mobile apps. [2] [3] [4]

Effective protection against these threats can be ensured by the security awareness of the users, which can be achieved through a well-organized and successful security awareness program.

This paper is structured as follows. After an introduction, section 2 presents the methodology of this research. Section 3 reviews the conceptual framework including information security, information security awareness and information security awareness programs. Section 4 examines the main factors influencing the effectiveness of information security awareness programs, identifies the key elements of the programs' planning and implementation and summarize the most important components of a successful awareness program involving training material, methods, communication channels and scheduling. Finally, section 5 draws the main conclusions of the study.

2. Methodology

This study utilizes the qualitative method of research for an analysis of the factors and potential pitfalls for security awareness programs' success and introduces a set of tools that can help organizations choosing appropriate communication channels and methods to transfer basic knowledge of information security to the users. The qualitative research in this study is based on a secondary analysis of literature. That type of analysis reviews traditional as well as recent developments in the field of security awareness programs and allows an „in-depth analysis of findings of original primary studies" [5, p. 2].

The study used Scopus, ScienceDirect and Google Scholar databases in order to find literature that presents the key elements of effective information security awareness programs and identify the challenges of their implementation. The research utilized the use of keyword patterns – "information", "security", "awareness", "program"-, in order to search for relevant literature or articles. I searched

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According to his Wikipedia page, in 1999, Mitnick pleaded guilty to four counts of wire fraud, two counts of computer fraud and one count of illegally intercepting wire communication. He would go on to serve five years in prison followed by three years of supervised release during which time he was forbidden to use a computer.
Today Mitnick runs Mitnick Security Consulting LLC, a computer security consultancy and is part owner of KnowBe4, a provider of security awareness training, that also provides anti-phishing software like PhishProtection.com. He does computer security consulting and penetration testing for Fortune 500 companies as well as the FBI. https://www.phishprotection.com/heroes/kevin-mitnick/ [Accessed: January 14, 2020].

literature published between 2015-2019, and I got 279 relevant paper with these keywords based on Scopus. In order to filter out the most relevant studies I firstly identified the most cited authors (Aldawood, H.; Skinner, G.; Calic, D; Da Veiga, A.; McCormac, A.; Parsons, K; Pattinson, M.; Tsohou, A.), universities (University of South Africa, The University of Adelaide, North-West University, Korea University, Goethe Universität Frankfurt), and countries (United States, South Africa, United Kingdom, Australia, Germany). I reviewed the most cited authors' studies used ScienceDirect and Google Scholar and then from their references I could select the other important documents for my study.

3. Conceptual framework

3.1. Information Security

According to Kruger and Kearney „whilst information security generally focuses on protecting the confidentiality, integrity and availability of information, information security awareness deals with the use of security awareness programs to create and maintain security-positive behavior as a critical element in an effective information security environment". [6]

NATO's interpretation of Information Security (INFOSEC) by Allied Joint Doctrine For Information Operations: As part of OPSEC (Operations Security) the goal of Information Security (INFOSEC) is to protect information (stored, processed or transmitted), as well as the host systems, against a loss of confidentiality, integrity and availability through a variety of procedural, technical and administrative controls. INFOSEC includes a range of measures that are applied on a routine basis under the auspices of security policy to protect information. INFOSEC is an integral element of all military operations and encompasses Communications Security (COMSEC), Computer Security (COMPUSEC), Computer Network Defense (CND), an integral part of Computer Network Operations (CNO), and together with personnel, document, physical and procedural security, it must be considered at the earliest conceptual stages and throughout the planning of an operation. [7]

Information Security plays an important role in preventing and mitigating the impact of different security threats like social engineering attacks. There are various types of measures under Information Security (for example modern preventive tools and security systems in place) and one of them is Information Security Awareness. [8, p. 62.]

3.2. Information security awareness

Although security literature emphasizes the importance of developing security awareness and security awareness programs, but surprisingly, the commonly accepted definitions for security awareness and security awareness program are missing.

Shaw et al. [9] in the article "The impact of information richness on information security awareness training effectiveness" use the following definition: "Security awareness is the degree of understanding of users about the importance of information security and their responsibilities and acts to exercise sufficient levels of information security control to protect the organization's data and networks". [9, p. 63.] Aldawood and Skinner highlight the users' ability to recognize, flag, evade and disable malicious attempts of an attack. [5, p. 2]

Nemeslaki and Sasvári [10] emphasize the organizational aspects of the definition, such as information security awareness is part of an organization's culture, a way of thinking and behaving

that ensures that employees within organizations are aware of and are ideally committed to the security objectives of their organization and are enforcing security measures. [10, p. 169.] Bulgurcu et al. defined information security awareness as employees' general knowledge about information security and their understanding of the information security policy of their organization. General information security awareness is defined as employees' overall knowledge and understanding of potential issues related to information security and their ramifications. [11, p. 532.] In this context information security awareness consists of two main areas, firstly, general information security awareness and secondly, knowledge of information security policies and strategies. [12, p. 54.]

3.3. Information security awareness program

Many international IT security standards refer to the implementation of an awareness program as a requirement for getting certification, such as ISO 27001, COBIT, or ISO 9001: 2000.

Concerning information security awareness programs, previous studies -instead of the definition-, focused on the different aspects and purposes of the programs.

Wilson and Hash from NIST (National Institute of Standards and Technology) in their article define security awareness as follows: "Awareness is not training. The purpose of awareness presentations is simply to focus attention on security. Awareness presentations are intended to allow individuals to recognize IT security concerns and respond accordingly. In awareness activities, the learner is the recipient of information, whereas the learner in a training environment has a more active role. Awareness relies on reaching broad audiences with attractive packaging techniques. Training is more normal, having a goal of building knowledge and skills to facilitate the job performance." [13, pp. 8-9.]

Prah, Otchere and Opan –following Chen et al. [14]-, state that "security awareness programs provide users adequate knowledge to evaluate adverse consequences of security problems and take the appropriate actions to prevent and correct security breaches". Thus, information security awareness programs can be used by organizations to make their employees conscious of the security threats that could affect them and how those can be mitigated with security measures. The programs' most important goal is to positively affect the behavior and attitudes of employees towards information security. [8, p. 62.]

Based on the various approaches, security awareness can be described as a continuous effort of raising stakeholders' attention towards information security and its importance, stimulating security-oriented behaviors [15] [16] [17] [18], and ideally inducing stakeholders' compliance to security policies and guidelines. [19, p. 4.] [20]

4. Building an effective Information Security Awareness Program

4.1. Effectiveness

As we can see, numerous studies deal with information security awareness programs from different perspectives. Most of the studies agree that positive influences on users' knowledge, attitudes and behaviors mitigate the impact of security threats and risks the organizations face. Consequently, carefully designed security awareness programs can be effective and successful. [11, p. 523.] [8, p. 63.] [21, p. 2] [22, p. 3.] [23] [24, p. 19.] [25, p. 174.] [26] [27] [28] [29, p. 115.] The knowledge of employees and their willingness to use that knowledge (their attitude) will impact their behavior. As

employees become more security-conscious, the objectives of the information security program are realized, and security risks mitigated. Information security programs fulfilling these requirements can be considered as effective [8, p. 64.] leading to improved security culture of the organization.

Figure 1: Security awareness

Some researchers have maintained that educating users is futile mainly because it is believed to be difficult to teach users complex security issues and because security is seen as a low priority issue by users and will not pay enough attention to it. [26, p. 3.] The Ernst & Young security survey states that „Many current security trainings and awareness programs are not working as well as they could be". [30]

In fact, numerous studies confirm the difficulties of influencing (the human) behavior and changing (the human) attitude.

The above mentioned issues raise the question, how should an effective Information Security Awareness Program be designed to most effectively influence and improve the user's knowledge, attitude and behavior towards information security and make positive changes in the security culture of an organization?

4.2. Designing an effective Security Awareness Program

According to Wilson and Hash from NIST, there are three major steps in the development of an IT security awareness and training program: designing the program (including the development of the IT security awareness and training program plan), developing the awareness and training material, and implementing the program. „Awareness and training programs must be designed with the organization mission in mind. It is important that the awareness and training program supports the business needs of the organization and be relevant to the organization's culture and IT architecture. The most successful programs are those that users feel are relevant to the subject matter and issues presented." [13, p. 11.]

David Lacey also states that the first step of developing an effective security program is to identify the requirements and the key problem areas, analyze the root causes and develop the programs that indicate corrective actions. [31]

Regarding to relevant studies and best practices, I could set up a model of the key elements of the implementation and the most important five steps to ensure the success of security awareness programs and to help organizations to design their own specific program.
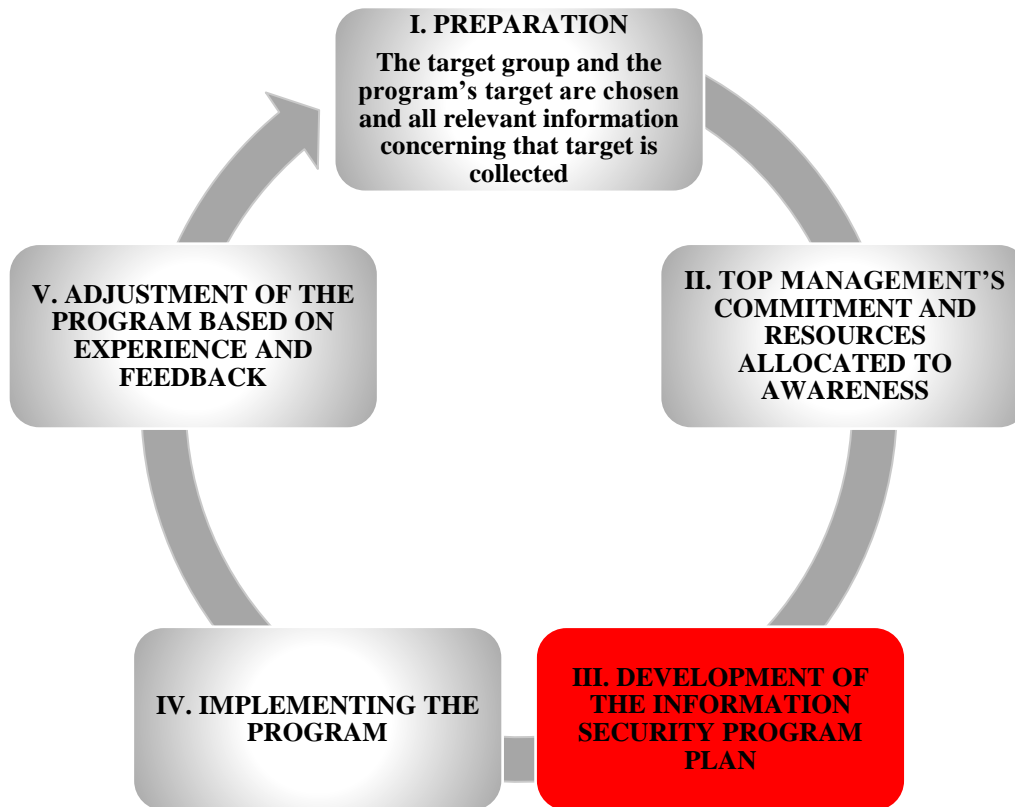
Figure 2: The key elements of the implementation of security awareness programs

I. First, the target group and the program's target are chosen and all relevant information concerning that target is collected [19, p. 6.] [22, p. 21.]
    a) about the organization: public or private sector, the main types of data in organization, the long-term and short-term goals of the organization's strategy;
    b) about the key development areas of information security: identifying the types of threats, vulnerabilities, risks and incidents and their roots;
    c) about the human factors of the organization: the number of employees, fluctuation; for which employee group the program is organized: their age, job descriptions and their level of security awareness.
II. Top management's commitment and resources allocated to awareness: support provided by top management throughout the security awareness initiative, including them acting as role models for all stakeholders; ensure the needed financial, human and other resources required for awareness implementation. [19] [27, p. 11.] [32]
III. Development of the Information Security Program plan:
    a) setting up an awareness project management: formal objectives, milestones and resources should be identified [19] [18] [17]; security policies and procedures that ultimately enhance security awareness implementation [19, p. 7.]; [11, p. 524.] [22, p. 34.] [26, p. 12.] [33, p. 10.] [27, p. 6.] [15] [16]
    b) developing the training material with respect to the target group;
    c) choosing methods and communication channels by focusing on the organizational and human characteristics;
    d) scheduling.
IV. Implementing the program
V. Adjustment of the program based on experience and feedback.

4.3. Development of the Information Security Program plan

In order to make the program able to enhance the knowledge, and change attitudes and behaviors of participants, it is necessary to give the right information to the right person in the right form at the right time.

4.3.1. Developing the training material with respect to the target group – The right information to the right person

Organizations have to highlight and emphasize to employees the interventions or precautions that are necessary to identify and verify an attack before it takes place. „Employees also need to be more aware of how to identify and verify if the person they are dealing with is a social engineer." The training material ensures that employees are updated on recent types of social engineering attacks. [27, p. 6.]

The message of the program needs to be clear, meaningful, personal, memorable and contextualized. The specific, real-life examples and evidence can leave a lasting impression. The programs are more likely to be successful if the users feel that the subject matters and issues presented are relevant to their own needs. [22, p. 32.] [26, p. 5.]

At the same time, if the program and the message are too difficult to use and there are many ambiguous warnings or complicated advice, the users will eventually make mistakes and avoid security altogether. [21, p. 3.] The language and the communication should be understandable, visible and should avoid jargon and technical terminology. The program must be easy to use for all users on each level. [22, p. 4.] [19]

It is very important to use marketing-oriented messages. The basic persuasion techniques include: fear, humor, expertise, repetition, intensity and scientific evidence to seize attention, to establish credibility and trust, and to motivate action. [21, p. 5.] [19] [15] [18] [17]

4.3.2. Choice of methods and communication channels by focusing on organizational and human characteristics – The right information in the right form

The information security message can be delivered with the use of different methods and communication channels.

Promoting information security often creates conflicts with the established work practices. „Information security procedures sometimes may be opposite to efficiency, usability and functionally making users unwilling to follow them and adopt awareness propositions." [19, p. 6.] Security awareness methods should pay attention to minimize difficulties caused to work functionality and efficiency and try to create a balance in the „Security, Functionality and Usability Triangle". [19, pp. 6,7.] [21, p. 4.]

Aldawood and Skinner state that the traditional training methods, including onsite trainings and awareness camps, screensavers, posters, manual reminders and online courses, are boring and tedious, leading to limited success. These methods tend to be very general and sometimes do not focus on the main objective of making staff remember the major manipulation techniques of hackers. [33, p. 7.] „These traditional methods alone do not create sufficient safe culture among staff." [34] Modern training methods, involving real-life simulation scenarios, interactive games, virtual labs, themed

awareness videos and modules, aim to provide awareness of social engineering and of how the social engineers actually perform an attack. [33, p. 6.] [29, pp. 113-115.] [25, p. 174.]

Szász and Kiss confirm the efficiency of modern methods: „It has been demonstrated that the educational method supported by decrypter programs that facilitate student activity had a significantly greater impact on the students' information security attitudes, practices, and awareness than those methods applying only video demonstrations." [35] Scholefield and Shepherd conclude that gamification and gamification techniques were useful methods of raising security awareness and participants enjoyed playing these types of applications and suggested that they increased their knowledge on password security. [36]

Besides these methods we can use many communication channels including formal and informal meetings with groups of employees, formal and informal one-to-one communications, official correspondence such as letters, office orders, e-mails, telephone conversations, communication through discussion groups or chatting with individuals via internet. According to Rehman et al. the face-to-face communication is the most effective medium. The richest of these forms of communication is the one-to-one interaction. [37, pp. 20.,21.] We can also use the corporate events (conferences, seminars, internal company meetings, road shows) as they can have a positive security influence to the persuasion process. We should attempt to use such methods as campaigns, newsletters, screensavers, DVDs, PR films or videos, trinkets, brochures and flyers to raise users' awareness. [8, p. 63.] [22, pp. 32.,33.]

In a nutshell, more categorized trainings, methods and communicational channels are needed to develop the knowledge base, the adequate attitude and the expected behavior against threats. The choice of method depends on each organization, their objective and target audience. [8, p. 63.]

4.3.3. Scheduling - The right information at the right time

Information security needs to be focused on the goal of becoming effortless. Whenever possible, detailed aspects of day-to-day operational computer security should not be difficult or greatly time-consuming for the end user, meaning that the awareness program and its methods should be made easier for users. [22, p. 4.]

It is important for employees to be periodically educated. Many scholars confirm that it is critical to keep staff prepared to practice their duties and behave safely in the workplace. [27, p. 6.] [38, p. 5.] [24, p. 26.] Organizations need to educate staff about common manipulative methods used by hackers and dangerous actions, regardless of their job. It is necessary to constantly remind staff of how their vulnerability can cause harm to the organization. [39, p. 6.] Training or other awareness methods should be used regularly in order to prevent information security awareness from decreasing among employees.

5. Conclusion

It is important to keep in mind the human factor, as the employee is the first line of defense against security threats and risks. Since users are the first targets of social engineering attacks, security awareness programs are one of the greatest defenses.

This study has expanded the understanding of information security and security awareness from various perspectives. In order to enable organizations to implement a successful security awareness

program, the main factors of effectiveness have been analyzed as a starting point. The conclusion is that there is a positive relationship between users' knowledge, attitude and their self-reported behavior, so awareness programs should positively affect these three components towards information security.

This paper also presents an overview on how to develop and build an effective information security awareness program. To achieve that goal, the most important concepts have been analyzed and then the five key elements of the implementation have been identified. To explore implementation challenges, the main areas of challenges have been collected and analyzed. The importance of clear, understandable, marketing-oriented message, adequate communication without jargon and technical terminology and application of persuasion techniques have also been examined as essential elements of a successful program.

One of the aims of this research was to provide practical help for practitioners developing their awareness program with a collection and evaluation of different methods and communication channels and a comparison of traditional trainings with modern programs.

The conclusion is that each organization should develop and implement an awareness program tailored to its own specificities and needs, using a variety of communication channels and tools to raise employees' awareness and build an adequate cyber security culture.

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Economic and Social Impact of eGovernment I

HOW IS ICT SHAPING THE REFUGEE GOVERNANCE LANDSCAPE IN TRANSITIONAL BANGLADESH?

A. N. M. Zakir Hossain[1]

Abstract

The information communication technology (ICT) has a great impact in shaping life and responses. The current century is running with the rampage of cutting edge technologies that compose our everyday life while the expansion of ICT allows us to make our life meaningful. The most significant challenges in transition are to coping with the changes that even happen all of a sudden i.e., about one million refugee influx in Bangladesh in 2018. Nowadays people recognized ICT as a decisive and inseparable part of them that constructs a new fashion of modern democratic governance. Though ICT is crucial in representative governance but now it inflates both the magnitude and persuade. The study tries to treat them embedded in the governance nexus and connected to each other. The present study focuses on the nexus between ICT and refugee management which shaped the refugee governance landscape in transitional Bangladesh. The endeavor of the study is to answer the questions on how ICT and administration act and react with each other on the refugee governance issues and how it indicates the future role of administration in refugee management and resettlement. The study followed the content analysis method and primarily based on secondary sources of data to reach the inferences. The results found ICT as a comprehensive platform that includes the different stakeholders and emphasized the trade-off between them which in our case Rohingya refugees governance. It provides geo-localized support for them and specific aid during the adverse situation. It is also found that it helps the administration to identify the synchronized ideas of people that coordinate their actions to produce services for the people. The study concludes by arguing for the management and wrapping of multidimensional data through the observatory mechanism that could likely develop their life and incentives required for the administration to act in support of the governance and resettlement of refugees in the future.

1. Introduction

"In the world, we live in today, internet connectivity and smartphones can become a lifeline for refugees. -Filippo Grandi"

The refugee explosion all over the world has become a tough challenge for the world community. The number of refugees has amplified significantly because of armed conflicts in several parts of the world. The recent refugee phenomenon has become a global problem, and the resettlement of these refugees has become a central topic among world leaders. According to the current report of the United Nations High Commissioner for Refugee (UNHCR), the amount of forcibly displaced persons is 70.8 million, where 25.9 million refugees, 41.3 internally displaced people, 3.5 asylum seekers as a result of persecution, conflict, violence, or human rights violations at end-2018. Among them, only

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20.4 million refugees under UNHCR's mandate (UNHCR, 2019). As in 2018, more than two-thirds of the world's refugees are from just five countries: Syria, Afghanistan, South Sudan, Myanmar, and Somalia. According to the UNHCR (2018), Turkey hosts the largest number of refugees 3.7 million, Pakistan 1.4 million, 1.2 Uganda, Germany 1.06 million while the fourth-largest number of refugees by country of origin persisted steadily at 1.1 million from Myanmar and Bangladesh continued to host a large population of 906,600 refugees at the end of 2018, almost entirely from Myanmar.

It is pertinent that they are protected and treated humanely, where they take refuge. The refugee issue has been a sensitive subject for states because states that cause refugee problems perceived as those that are intolerant of racial, religious, or linguistic minorities. Rohingya refugees faced an uncertain future with a lot of violations and vulnerabilities that ultimately made them stateless and fallen them in an identity crisis. Refugees who are in camps, not allowed for "legal protections enshrined in international, regional, and domestic laws" (Holzer, 2013) as they are waiting for relocating.

International and local (recognized) humanitarian organizations and NGOs are intervening ICT based services in the refugee camps all over the world (Mason and Buchmann, 2016). The present study focuses on the nexus between ICT and refugee management, which shaped the refugee settlement landscape in Bangladesh. The study tries to treat them embedded in the governance nexus and connected to each other, especially the refugee tragedy. There's a widespread consensus that there is a lack of policy in the countries that make up the resettlement of Rohingya refugees. The endeavor of the study is to answer the questions on how ICT and refugees are responding with each other in this crisis and create an impact in this context. In our present study, we tried to figure out how Information and Communication Technology (ICT) is complementing the refugees in their distressing trip to safety from their homeland to the host country, the transitory settlement at the camps, and post-inclusion at the host country.

2. ICT, Refugee Status, and Livelihoods

Information and Communication Technology (ICT) is one of the major driving forces of the current world economy, polity, and governance. This is factual for human mobility; services, identification, and status are given for rights and opportunities all over the world. The present world has witnessed an ocean of displaced people after World War II. Refugees are more and more connected, accessible to people from outside, and more and more IT services by the agencies. ICT is helping several ways in refugee management all over the world. The formal human mobility depends on their nationality and status, which comprise their economic viability and choices and the acceptability of the host country. But it does not even work for the people who are forced to flee from the place of origin where they born, grown, and lived. These people are going to lose the formal identity that helped them to prove their national identity to move a formal and legal way.

Refugee status is not a simple one and not given to a person without any formal procedures. Once a person would like to get the status, it requires a formal appeal or application, then the host authority investigates that issue and the contemporary situations for providing him/her the refugee status. In this process, the host country or authorized body can use the ICT from investigation to the decision level to make a formal decision about the refugee status.

ICT enabled biometric helps the procedure to define a status about a person as he/she requires and demands. When any person has given the refugee status or not given before/after the process, a simple biometric registration helps the hosting authority to secure and smoothen the procedures. Through this biometric registration, it is easy to use and manage the data of a respective person for further

utilization. The process of biometric registration is a simple way to collect the necessary information of a person through a computer and biometric machine and easy to provide him a service-based registration number, based on these data, and getting the benefits for them. Most of the cases the service is food, basic medical service, and some house-holds products that are daily needed for their livelihoods at the camps. The refugee data are fragmented, and there are two different ways that information is flowing and being captured; i. refugees themselves create data sets and ii. sack the data. Refugees themselves create a database by using different social media, i.e., Facebook, whatsapp, twitter, phone call, Instagram, snap chat, etc. They create their media data. Now the question is why we all do need this because of a beautiful marriage between control and it.

These people have given a mobile phone and SIM (subscriber identification module) card that grants access to the internet for available information that required for their livelihoods in the camp also for health service through SMS or phone call. Also, potentially some control over the connectivity, people who are connected, funding cards, etc. In Jordan for refugees, they initiated eye scanning instead of the card, which made it easy to manage them in every sphere of the movements of the refugees, including service providing. World Food Program (WFP) and Jordan shared this biometric data to the World Health Organization (WHO) benefits. These data also help to improve the accountability of the organizations that are deployed in refugee camps for programs. The digital refugee is jointly constructed persona, each refugee has their own story that they are putting into cyberspace, not all, but many and control the narratives of this part of the story, not always, not largely order their control. But the implication and threat to the security of the data and refugees are how are you going to manage the data, where the data is going, what has the rights of the cloud, who takes ownership of that data, refugee policies significantly vary from country to country.

3. Rohingya: When and How Come into Bangladesh as Refugee

The refugees have become helpless victims, not of their own making. It is pertinent that they are protected and treated humanely in countries where they take refuge. As armed conflict caused a massive flow of refugees, the issue of refugees, in turn, may lead to tensions and conflicts between states. The issue of the refugee has been a sensitive subject for states because states that cause refugee problems perceived as those that are intolerant of racial, religious, or linguistic minorities. For instance, Bangladesh intakes a large number of Rohingya Muslim refugees during the crisis periods, but when the ethnic cleansing started at Rakhine last year, the figure amounted to total of 918,936. In recent times, one can hardly find a government that has been so dreadful, so brutal, and so barbarous in its refutation of fundamental human rights to a people that trace their origin to the land for nearly a millennium.

The Rohingya Muslims are the victims, living in the Arakan (now Rakhine) state, and become the forgotten people of our time (Siddiqui, 2018, Ahsan Ullah, 2016, Leider, 2018). About 40 percent of the Rakhine population is Muslims who fled to Bangladesh from Myanmar when the ethnic cleansing started decades ago. That considered as "*a semi-organized social movement with clear political goals*" (Klinken & Aung, 2017). However Rohingya people were in a realm of statelessness for over six generations (Milton and Rahman, et al., 2017).

The political landscape in Myanmar was founded through the British colonial period; (Kipgen, 2016). It is necessary to know why the alienation of Rohingya started (Knuters, 2018) because of the
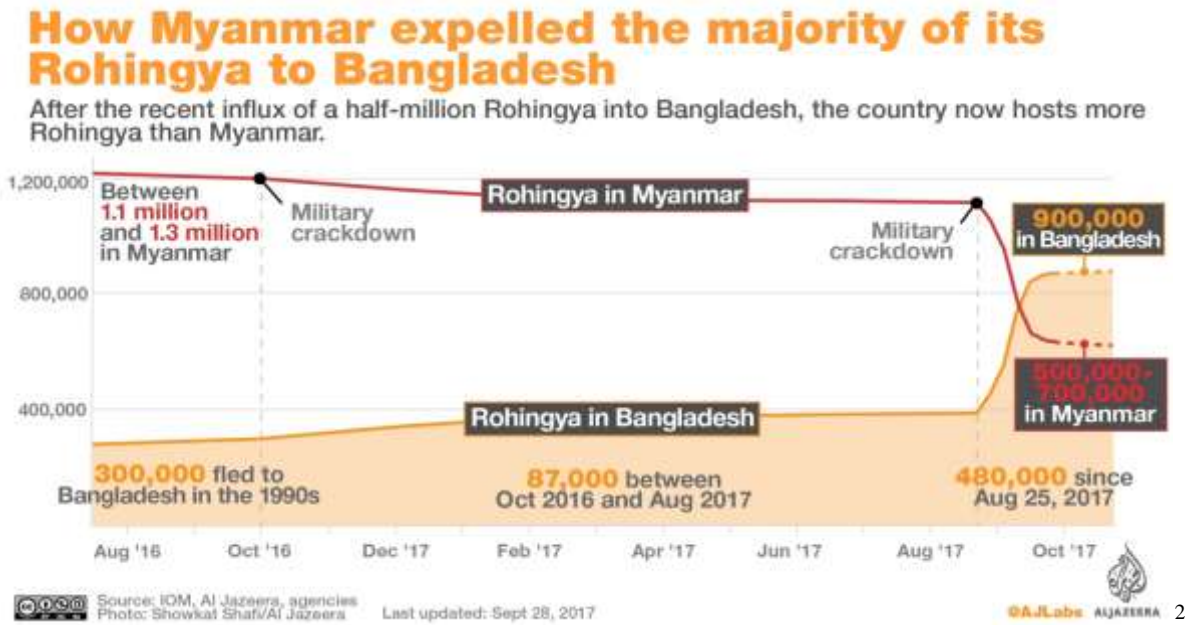
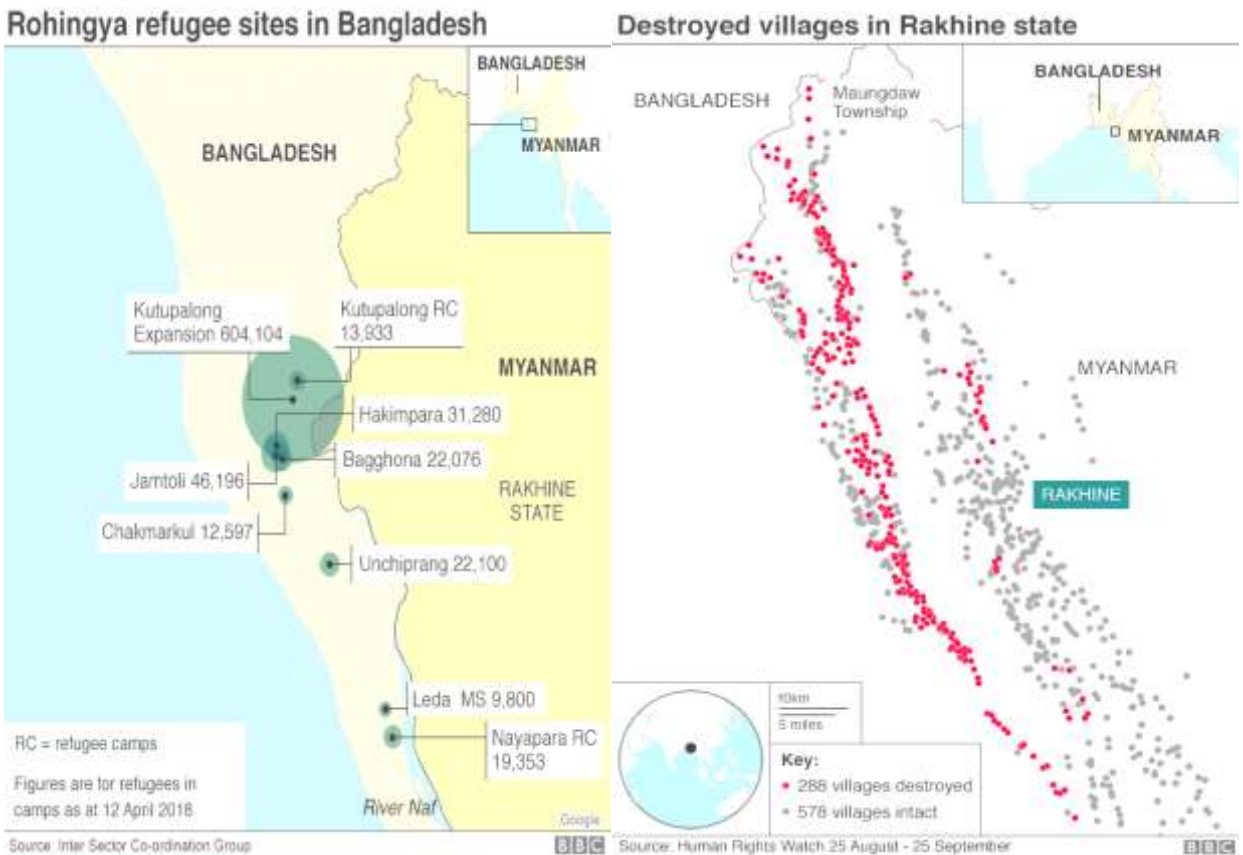**Figure 1: Rohingya Refugee from Myanmar to Bangladesh**

Figure 2: Destroyed Villages in Rakhine and Refugee sites in Bangladesh

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[2] https://www.statista.com/chart/16109/who-are-the-rohingya-refugees-in-bangladesh/

trust of authority towards a rebellious minority was low and vice versa due to the role of British in the colonial period as they used different minor groups against ethnic Burmans. Each and every state has a historical background of its own and has had an influence of colonizing nations, which combines both general ideology and particular policies to format general and economic ideology (Johnson, 1967). Counter-modernization movement's results–religious, linguistic groups rebel and demand a return to fundamentalism (Hoselitz, 1961). However, secularization is a process, transition from prescriptive to principle society and does not mean that religion disappears.

The oppression towards *Rohingya* was brutal and turned into genocide and this brutality amount to a vulgar violation of their human rights (Knuters, 2018) in Myanmar. As Myanmar governments have estranged *Rohingya* through nationalistic and religious policies, the study is to uncover the role of ICT in the governance of refugees.

4. Refugee and ICT- Global Depiction

The world has witnessed an enormous number of people than ever after World War II. About 250 million of migrants all over the world 60 million are refugees. According to the reports that has been published by different research and human rights organizations around the world put pressure on the issue that "refugee crisis" is only the problem of middle eastern and European countries are facing enormous challenges due to refugee influx however the numbers of refugees are hosted by many developing countries of the world. The refugee crisis is well known due to the scale of human tragedy and public awareness with massive media coverage. Overall, more than 134 million people across the world need humanitarian assistance and protection – and more funding than ever before (Human Rights Watch, 2019). According to the report of the Financial Tracking system, about 135.3 million people need humanitarian support while in 2009, the fund required USD 9 billion for assistance but received only the USD 7 billion. When we are talking about the year 2018, the fund required USD 25.2 billion and received only USD 14.6 billion (OCHA, 2019), and this gap widens gradually and creating risk and anxiety to the leaders of the world in the coming future.

Global and local actors, including GOs, NGOs, and other humanitarian organizations are working together as a team to respond to the issue of refugees to support them from different stripes. Information and communication technology are working a significant role in this digital era of technology during their journey from citizens to become a refugee. A smart mobile phone is an integral piece of kit for millions of refugees as they are moving one to another place. ICT provides compliance to refugees for social inclusion that favorable to empowerment "to fully participate in society and control their own destinies" (Warschauer, 2003).

The global mobile phone is sort changing the landscape of technology and development, so, the phrasing of mobile having to reproduce the technological reproduction of the 21st century is pretty popular and by common and definitely applies to serve like refugee camps where people have to settle down, communities have sort developed their infrastructure needed for like LAN line, computer laboratory, mobile phone, etc. In 2016 United Nations High Commissioner for Refugees (UNHCR), connecting refugees, how the internet and mobile call connectivity can improve refugee well-being and transform humanitarian action, and they reported 93 percent refugees to have access to some level of digital and mobile access.

Filippo Grandi, the United Nations High Commissioner for Refugees said "Most importantly, connectivity can help broaden the opportunities for refugees to improve their own lives and pursue a vision of a future that would otherwise be denied to them" and "Most importantly, connectivity can

help broaden the opportunities for refugees to improve their own lives and pursue a vision of a future that would otherwise be denied to them".
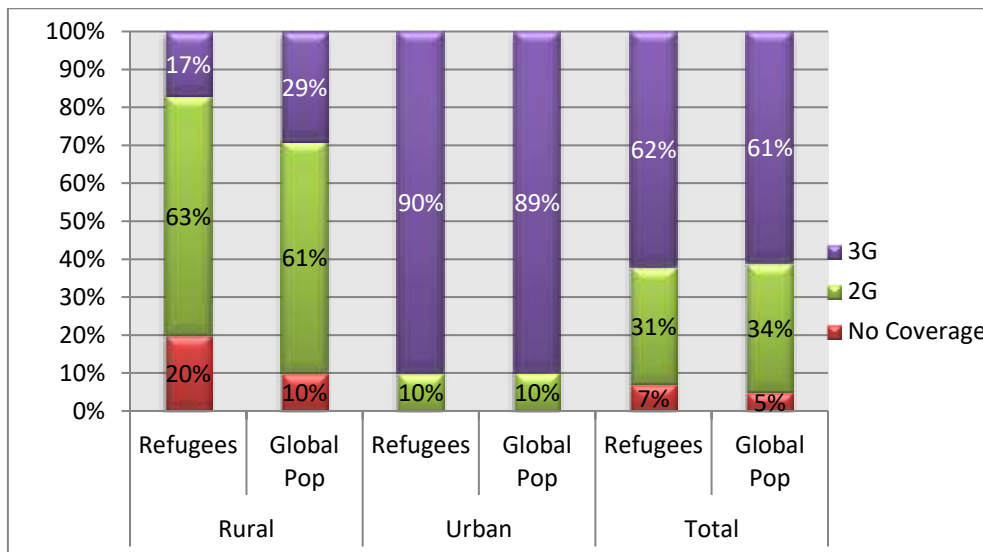

Figure 3: Refugees vs. Global Population: Mobile Network Coverage (UNHCR, 2016)

"Refugees deem connectivity to be a critical survival tool in their daily lives and are willing to make large sacrifices to get and stay connected" (UNHCR, 2016, p-15).

According to the report published by UNHCR in 2016 revealed that mobile phone and internet access is worth, not only to connect with loved ones, but also for their safety and security like food, shelter, and water. The study also found that access to mobile phone depends on the affordability while refugees are in urban parts tend to have parallel access to mobile like other urban peoples. But for them who are in the rural region, the scenario is very unlike. Where only one has mobile in five and one has 3G access in six that is considerably lower for them at large. The findings originated at a moment while the world witnessed an enormous number of people who are driven by war and persecution than any time of world history. At the end of 2018, 70.8 million people were globally displaced, of whom 2-9 million were a refugee. Confronted by the persistent need, the results of the study suggested further investments in three key areas, which composed the basis of a new UNHCR Global Strategy for Connectivity for Refugees. These comprise i. increasing the accessibility of mobile networks, ii. improving affordability and iii. providing access to training, digital content, and services (UNHCR, 2016).

People are rural settings also have some access to internet connectivity to some degree, and costs and barriers surprising. UNHCR identifies a significant portion (two-third) of financial resources available to many refugees are being spent to call and the call stays connected. So that sort of helps the landscape what is happening many of these communities. So, all these represent a landscape portion possibility and an opportunity for development cross-different sector. This relevant to help the education to security and also opens to the door to the conservation about the changing fabric of these place's communities to the society that performing across the migratory journeys and the cultural norms and practices that are emerging and intend them within an across the technological landscape. However, there are still a few challenges that still exist among the refugees, i.e., literacy on technology, access, and usages (Mason and Buchmann, 2016).

5. Refugee and ICT- Bangladesh Depiction

5.1. Refugee and Food Security: Role of ICT

The refugee influx in 2017 generates a perilous situation for both the refugee and the government of Bangladesh. Bangladesh is facing several challenges to uplift the economy from developing one to middle income with steady economic growth. With the development of a multi-dimensional aspect, we have to move forward concerning many aspects to ensure the well-being of the citizen of Bangladesh. Though Bangladesh is now self-sufficient in food production still there is a limitation to equal distributions of income and foods. The refuge fled from Myanmar is in a hazardous and unsafe condition even in Bangladesh at that time due to food, shelter, and security. Refugees are found vulnerable and exclusively dependent on humanitarian assistance (REVA-2). Influx reduces the scope of income generation for unskilled labors in a highly competitive labor market that leads them for external aid for main income.

World Food Program (WFP) and Food and Agriculture Organization (FAO) are leading, along with about 30, other national and international organizations to ensure the food security for the refugees. More than 880000 people are directly connected within the general food service that is provided in 34 refugee camps. However, the unregistered refugees are found most vulnerable who came before influx (WFP, REVA-2, 2018). The food service is providing by in-kind or e-voucher and complementary food items. About 65% of refuges at the end of March 2019 are now under e-voucher service. Though in-kind foods are life-saving, for diversified diets, an e-voucher is programmed to be implemented within December 2019 while they also need fuel, health, light/electricity, and access to safe drinking water, which are also crucial (NPM 13, 2018).

The following baskets of in-kind food items are distributed two cycle per-month from 19 scattered points of distribution through 32 camps.

Family Size and Persons	Number of Basket* Receive
Small Size (1-3) Persons	One Basket
Medium Size (4-7) Persons	Two Baskets
Large Size (8-11) Persons	Three Baskets
Very large Size (11+ Persons)	Four Baskets

Table 1: Different Family size and received items
* One Basket=Rice 30Kg, Pluses 9 Kg, Fortified Vegetable Oil 3 Litre

WFP is, with the cooperation of a range of food security partners, trying to enhance the dietary diversity for most vulnerable people like children up to 5, elderly, disabled people, pregnant, people with chronic illness and lactating mothers who are getting in-kind blanket food assistance complemented by vouchers for fresh food items i.e., fish, egg, vegetables, and spice. WFP has planned, through a biometric debit card, to transform all the refugees from in-kind food assistance to e-voucher. A refugee can use the debit card (SCOPE) to have a range of food items from private shops contracted by WFP while the debit cards are monthly credited.

There are 10 e-voucher outlets, which will be increased to 21 at the end of 2019, and 24 shops while one is for 5000 to 20000 households for seven camps. To ensure the diversity of food and nutritional security, they have been offered twenty food items, among them twelve compulsory items are given at a fixed price, set before by negotiation, and eight flexible items traders sold by choice.
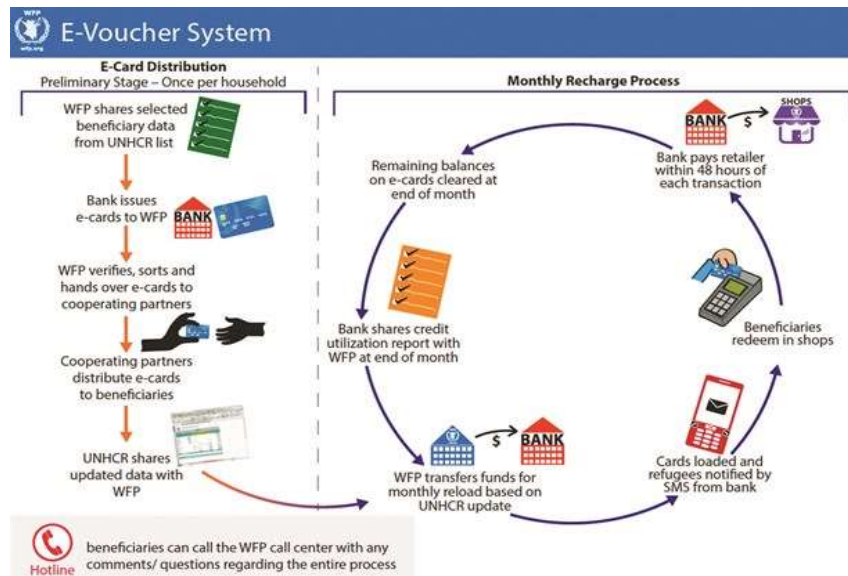
Figure 4: E-Voucher System

5.2. Technology in Gender and Development:

ICTs in development in refugee camps and thinking about gender has a pretty sort of the top level in these structures. We are aware of the role of mobile phones and sort of changing the landscape of technology and development so the phrasing of mobile phones having leapfrogged being the technological leapfrog of the 21st century pretty popular and quite common. ICT also contributes to greater refugee empowerment of mobile-based technology, especially using social media (Andrade and Doolin, 2015), and other purposes also help the governaning process on the refugee camps. A senior woman of a family was given the SCOPE card issued by the WFP, but the control and use of the card implemented by the male person and entire decision are made by the male, still, women are struggling to be empowered within the house-hold decision making(UNHCR-WFP, 2019). The REVA-2 reveals the prevailing precarious circumstances surrounding the refugees: the absence of resources and inadequate income generating opportunities degrades their situation further. Overall, food related coping has improved during 2018 and –is found to be more dominant among newly arrived refugees as compared to the registered refugees (WFP:REVA-2, 2018). "Offline constraints and incentives still appear to frame the nature of online interaction much more than generally acknowledged and it is, therefore, important to see and understand the realities of marginalization in which internet use is embedded and complex tapestry of a socio-economic crisis that frames it (Iwilade, 2015)."

5.3. Migration Integration Governance and Justice in Refugee Camp

The Government of Bangladesh (GoB) is always respectful of international human rights law and treaties all along. They also showed their generosity in every aspect of national and international human rights issues. Bangladesh is not familiar with the refugee issue; however, it had started to receive Rohingya after its independence, but this turn into a dramatic one in 2017 when the persecution and ethnic cleansing started at Rakhine state by the Myanmar government.

The latest beckon of aggression was termed as "*ethnic cleansing*" (OHCHR, 2017), however, triggered the massive Rohingya refugees influx in Bangladesh and many of them are biometrically redistricted and given identity cards by the Immigration and Passport Department of Bangladesh (Oh, 2017) and providing-shelter, relief and medical service (Khatun and Kamruzzaman, 2018). However,

with the cooperation of local and global agencies government respond to the crisis, but it is evident that contemporary life-saving funding is not sustainable and sufficient for programming and humanitarian actions. It is crucial to initiate a more development-oriented approach; to build the national resilience and sustain the degree and value of service delivered (Mason and Buchmann, 2016).

It was the largest human displacement in the 21st century in that region. Bangladesh has done a tremendous success in immediate scale-up, and partnership with other humanitarian organization and community, to deliver support and shield for saving the life of the refugees (UNHCR-WFP, 2019). Refugees are governed, including habitation and movement by the Foreigners Act of 1946 (Article 3) because Bangladesh neither a countersigned of the 1951 Refugee Convention nor the 1967 Protocol concerning the Status of Refugees and does not have a refugee law. Foreigners Act empowered the Government to retain them in prescribed place and execute movement restrictions on them until they obtain permission to travel, mentioning the valid reason. Refugees are allowed to go outside of the cams to doctors and courts with prior approval by camp administrators (CICs).

Bangladesh sang in different global human rights treaties that indirectly support the Rohingya refugees in humanitarian aspects; however, there is a limitation that they are not enforceable in a local court by domestic law for their misconduct that made questions in the issue of local security (Khatun and Kamruzzaman, 2018).

5.4. ICT and Refugee Family Unification

The Ministry of Home Affairs of the GoB conducted a biometric registration of the refugees who had been here and were undocumented before the incursion and the new arrival who came in 2017. The process ended in June 2018 and registered 1.2 million refugees have been given an individual MOHA card. The primary challenge was the missing link between the individuals and his/her family members that were crucial for assistance at the household level.

UNHCR has started to complement MOHA's registration, in association with Refugee, Relief & Repatriation Commissioner (RRRC), for support and shield purposes and to tie every individual to a family. In March 2018, 876000 persons and/or 203407 households had been calculated and connected to a family and was given a Family Card with a Family Counting Number (FCN) when their housings were geotagged (UNHCR-WFP, 2019). However, later these cards (MOHA and FCN) has been replaced by a Smart Card with a household ID number when MoHA and UNHCR started a combined registration in June 2018 at five registration sites, where previous registration took place, for updating biodata and biometrics for the next three years including iris scan to amalgamate and modify some of the adequacies of earlier registration. Already 43 percent refugee people are registered under these by the end of June 2019, which is equal to 374,000 persons and 82,000 refugee households.

Once officially registered, refugees receive a Smart Card with a household identification to replace both, the MOHA and FCN card. As of 30 June 2019, about 43 percent of the refugee population had been officially registered, the equivalent of about 374,000 individual refugees and 82,000 refugee households (UNHCR-WFP, 2019). It is also evident that the use of social media like Whatsapp, and/or Facebook messenger, in a new society mostly used by refugees, as an efficient, cost effective and favorite due to easy access to communicate with their family members, relatives and get back home (Vernon, Deriche, and Eisenhauer, 2016, and AbuJarour & Krasnova, 2017).

5.5. Refugee, Terrorism and Homeland Security Governance of Bangladesh

The concept of terrorism identified that the terrorist has had a clear goal for every attack that they performed. It is also found that they believed in violence to coerce the polity to change as do not like the current institutional structure of the existing society. However, they claimed they do not have any alternative choice. Techfugees is an umbrella organization that works on refugee-related issues, Mike Butcher in September 2015 developed this. It has created a novel media landscape and became a central site for those working in networking and exchange in the site.

There is a focus on the ICT that conducive for receiving and supporting refugees who are fled from their homeland and living in a camp in the host country. ICT refers to a digital device and systems which are accessible to everyone. The main technology that used, for information and communication technology, by the refugee is the internet because it is cheap and easy to access. ICT is crucial for them during their distress journey from home to the host country. It also enables them to maintain contact with their relatives and stabilize a degree of their insecure and uncertain situation (Mason and Buchmann, 2016).

The most serious issue is that as the refugees are not supposed to have any job in the law of the land of the host country but they have given free food and many basic items that even not available to the host community. In this process, their consume habit was changed without any income generating behaviors; however, its humanitarian issue after all. Through this way, the lifestyle that they are enjoying it will be heartened that they don't want to lose and try to maintain at any means that crate threat to host country due to the funding crisis can create an unstable situation where we need to take several initiatives for integration resettlement and repatriation. However, ICT based identification is a strong mechanism to trace and track anybody if he/she create any threat to the host community and country as well as refugees.

5.6. ICT for Sensitization or Understanding the Education and Languages

Information and Communication Technology (ICT) for Development is a new avenue and creates a new eco-system that combines ICT and development theory to expedited the speed, intensity, and diversity of this arena that wasn't ever before. ICT plays a decisive role in educating refugees and access to the various resources of languages. Education on (local) languages is a key to communicate with the local groups, officials, and others to people during the journey of a refugee. It also helps them to maintain their daily life in a hosting country. Education through ICT also helps them to participate in further educational programs that help them in their daily life to be asylum seeks or to resettle elsewhere. To overcome the challenges of accessibility on education and other basic services has alleviated by the intervention of ICT for refugees in different parts of the world (AbuJarour & Krasnova, 2018). However, it is valuable to provide electronic educational materials but inadequate without inclusive teaching support (Dahya, 2016) to achieve the ultimate goal of the refuge.

5.7. ICT for Consolidation System and the Work of NGOs

Refugee camps are the places where the situations are changing in every moment for several reasons. ICT can be helpful for a place where the situations are changing rapidly and to capture the needs of the targeted people that easily shape the governance landscape. NGOs are using different software that helping them to organize their work more effectively and promoting accountability in service delivery. They use many devices, i.e., mobile, tablets to conduct their assessment survey, evaluating and processing the responses, and sharing with other humanitarian local and international

organizations that can be helpful for refugees and for them to arrange and deliver the services. It is also helpful for the bodies who are working in that area to respond to the needs and demands of the refugees. Whatsapp, imo, viber, and/or facebook messenger also useful tools for the volunteers, workers to track them to each other during the process of any new service of product delivery in the refugee camps.

6. Conclusion

The government of developing countries still has several challenges that they are facing during their transition concerning social, economic, and political. Bangladesh is running smoothly, from the last decade, with steady economic growth in the way to middle-income country albeit crisis is there. Rohingya refugee has appeared a serious crisis while Bangladesh itself a high densely populated country of the world. Due to the global and regional refugee crisis, we discuss the role of ICT in refugee governance as most of the refugee is hosted by the developing countries. Research on the governance of refugees can help to develop a way to find the management and solution of the crisis that the refugee and host countries are facing. Governance of refugees can also be complemented by researchers to work on the different contexts and perspectives to identify the characteristics that can inter-play between technology and refugee to advise a solution to the existing social problems. ICT based service management equipped the regional and global humanitarian organization to become effective and efficient in their service delivery with transparency and accountability. However, there are a lot of challenges in ICT- education, training, outreach, trust, and data protection but working with an existing structure, increase tech access; responsible data practice and collaboration with the different stakeholders and groups can overcome the crisis and complement effective governance of refugees in a country that has no such previous experience.

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SOCIAL MEDIA AS A CHANNEL FOR PUBLIC SECTOR TRANSFORMATION VIA ONLINE MENTORING

Nadine Baumann[1] and Christian Schachtner[2]

Abstract
The mediatisation of communication leads to different and innovative ways of interaction, even in the public sector. Moreover, internal communication in cross-functional teams is part of projects in public management, so communication via social media not only has to work outwards, but also inwards.

Online mentoring is regarded as a part of social media communication. This study focusses on how mentors and mentees experience online mentoring, as working with online media makes the process of mentoring special. The concept follows working methods of agile teams, which use asynchronous handling processes and retrospectives as added values to achieve objectives.

Counselling concepts such as mentoring continually influence working methods of the public sector. Thus, social media elements open new paths to change strategies concerning working tasks.

1. Unbounded Work and Mediatisation of Communication

The mediatisation of communication leads to different and innovative ways of interaction, even in the public sector [1]. New work environments require cooperation and collaboration between public organisations as well as between the public and the private sector [3]. Moreover, internal communication in cross-functional teams is part of projects in public management, so communication via social media not only has to work outwards, but also inwards. Social media also plays a part in management trainee programmes of public services when it comes to virtual and therefore unbounded counseling and concepts of support and guidance. Counseling concepts such as mentoring continually influence working methods of the public sector. Thus, social media elements open up new paths to change strategies concerning working tasks.

1.1. New Work, Agile Work and the Public Sector

Cause for the necessity of new working methods, even in the public sector, is the dynamisation of the world of work, which is exposed to changing priorities of individual customer concerns in an interlinked, increasingly digitised world of service by competing service providers. The change in the public sector has been perceptible for several years. It is internationally more advanced than in Germany, particularly concerning general internal administration. The focus is on municipality, due to the fact that they carry out tasks delegated from the federal government or the federal states as well

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as tasks within the own sphere of activity in the local area of cities or counties with direct contact to the citizens.

Yet, many towns, counties and communities are less 'smart' than it is common practice regarding technical possibilities in everyday life concerning financial transactions, errands or counselling. In 2018, about 30 per cent of all communities declared in the study 'Smart City Readiness Check' by the Innovators Club of the German Association of Cities, Towns and Communities in cooperation with TÜV Rheinland [4], that they provide little or no online e-government services for citizens. Moreover, concerning internal administrative processes there was no effort to automatise processes or services. Suitable support programmes or support instruments to push the financing of such measures were widely unknown.

Symptomatic for this lack of interest seems to be, that only one quarter of the communities queried follow training offerings concerning digitisation only sporadically or not at all. Corresponding counselling to implement and strategically align current administrative, financial, and technical resources the study advises to complement theses with training opportunities for employees to trigger a nationwide dissemination of the Digital Agenda.

The joint study of Bitkom and McKinsey [5] 'Smart Government – Wie die öffentliche Verwaltung Daten intelligent nutzen kann' also concludes that there is a need for catching up. 'Digitisation of public services bears the chance to regain the lost trust of citizens', comments the president of Bitkom, Achim Berg, the relevance of modernisation along ten international case studies of successful Smart Government initiatives.

Success factors and recommendations for action for the German public service derive from the analysis of this evaluation. Thus, strategic partnerships with the private sector, start-ups, science, and civil society can enable Smart Government, together with methodical profound agile cooperation in interdisciplinary teams and an openness for structural change with help of technology, supported by incentives.

External as well as internal requirements of digitisation are a first field of application of social media. Due to the necessity of regular agreements about not yet familiar paths of task completion also gives access to mentoring.

Digitised process design is not the only future challenge. Also, concerning the variety and width of tasks of public organisations, an increase in dynamics and complexity of requirements becomes visible, such as the amount and speed of legislative initiatives and political agendas. Parallelly, there is an increasing amount of authorities, which allow a comfortable virtual or local visit with help of key points and design-oriented service standards [6].

This is one of the strengths of Customer Relationships of private economy. Due to the high acceptance of change and development within an interlinked society, branches such as the financial sector with fintech start-ups, the establishment of tech-businesses with digitised business models as Global Players, have recognised the necessity of agile work for innovative alterations in several business segments. The Future Institute defines this megatrend as 'antifragile'. Nassim Taleb, financial mathematician, statistician, researcher on randomness, and author of 'The Black Swan', defines viable systems not necessarily as resistant, but equipped with the ability to develop evolutionarily from state of shock [7].

The economic sector in Germany tried to establish the importance of disruptive changes with the help of the internet of things, the internet of services, artificial intelligence in production, and service delivery to maintain competitiveness of the site and therefore ensure economic prosperity through political flagship initiatives such as industry 4.0, services 4.0, handcraft 4.0, or administration 4.0 of politics, industry, economy, handcraft, and administration [8]. To this extent, decision-makers decided to tackle the challenge of disruptive modernisation of state and public administration with 'targeted deployment of smart objects, cyber physical systems, and artificial intelligence', this reflecting reasonable fields of action [9]. In this respect, another field is defined on which a lively exchange in internal networks is worthwhile to create a tangible change in the culture of management of innovations. Digital economies follow the idea of platform economy and interlinked services for an optimised use of data – internally and externally – as technological basis of all social media services, internally implemented with a profile ID, providing tools such as chat, video- and data-analysis to allow immediate interaction for identification processes, establishing trust and permanent responsiveness via profiles.

The engagement is not only internal. Also, the development of external networks with collaboration partners with a general similarity in values, intentions, and extent of intention of cooperation in partnerships lead to approximation. The form of collaboration in so-called cross-functional teams with representants of various branches and disciplines requires working methods with agile components to cope with dynamically developing strategy approaches concerning complex issues with innovation character target-oriented.

Simultaneously, there is a need to classify such innovation hubs and think tanks in relation to routine tasks in organisations to prevent irritations, fears, or a two-class society among the workforce. Particularly credibility in a coherent masterplan is essential to convey on the part of managers to prevent negative effects on employee satisfaction among the staff [10].

The depicted restructuring means a deep cut into a stable system of public administration, as have meant the reform efforts of the public sector concerning strategy, structure, and culture, too, and therefore often lead to the development of insecurities and resistance [11]. The different kinds of resistance, the resistance against active players, or the innovation itself (as a system barrier), need different reactions. Thus, a comprehensible, continuous, and hierarchy-adequate communication is key, which, flanked by a resource development strategy, is connected to preceding changes in routine tasks of the organisation to establish integrally organisational learning [12].

Assumingly, the success of the implementation of transformational staff development is mainly visible in transformed places. There must be room for exchange of the various experiences of all the people concerned to finally re-transfer the discussed consensus back into their organisational unit [13].

This is still valid, as the actual figures of the sixth HR Leadership Panel by Rochus Mummert, which asked 180 companies of different branches about leadership satisfaction, show. Only one percent of the interviewees rated their manager as 'exceptional'. 53 per cent explain this with the poor capacity of managers (57 per cent) and of employees (44 per cent) to adapt quickly to changes. Vision, personality, and strategy are, according to the interviewees, the top competencies necessary to tackle change. Particularly the staffing of management needs a dual chairmanship of leadership and management. The study shows an understanding of leadership as charismatic, visionary characters as well as analytic, organising managers to support change processes. Additionally, 71 per cent of the

interviewees predict that employees with such managers on top are optimistic concerning change processes, since motivation can happen credibly and immediately [14].

This might succeed in social organisations of public administration as well, together with a mentoring approach via different means of communication.

Literature also discusses approaches of viable leadership, which are based on the differentiation between creators of change and managers of change.

One of these approaches sees a successful transformation in responsible leadership, which means a manager who acts reasonable based on a positive idea of man. He or she can communicate actively and listen in the same respect, possesses a distinct ability to perceive and reflect. Gerhard Lippe describes four perspectives of responsible leaders [15]:

- understanding the past: provenance, historical experience, impacts of conviction for the present
- foresight: looking for and understanding what is about to form and develop, gains shape, and takes on leadership
- consciousness of the meaning of the organisation: understanding of work as an accepted part of life, not as a counterpart in life
- own interpretation of the social role in an organisation and its legitimisation as well as the self, guiding rules

A transparent vision needs to be formulated, strategic guard rails need to be put into concrete terms, distinction of conflicts of objectives need to be communicated in a practical design of leadership principles. Based on different disciplines, various instruments need to be deployed in a model together with managers in charge, increasingly with conscious use of new work elements.

To equip tasks of management positions with creative, autonomous projects, the present 'intellectual capital' as key resource needs to be identified with measurable tools. Responsible leadership also provides the formation of a code of conduct and value (e.g. team integration, availability, flexibility, and integrity) as a basis to interact with all stakeholders (also with external partners). This is only a small part of the necessary framework for a culture of trust, which expresses individual strength and intentions of groups of employees, particularly through leadership and specialist career perspectives. The manager takes on the role of a coordinator concerning the needs of the organisation, but also the needs of the employees, whose engagement is the greatest factor for the success of the overall strategy.

This expresses the degree of maturity of an organisation with simultaneous support of a value-based way to employee retention to master the requirements of disruptive influences of alignment on stable units.

The transparency of identified competency profiles is the counterpart of technical and artificial intelligence and means an added value, when an open-minded intention concerning the objectives of the organisation, together with creative skills of the workforce, supports the fulfillment of challenges sustainably [7].

In this respect, these approaches pave the way for contemporary mentoring approaches for various groups of employees.

1.2. Online Mentoring via Social Media as a Promoter of Agility in Public Sector Management Trainee Programmes

Therefore, the social media aspect of this article includes employee portals and organisational platforms with role-based access, which originally served human resources and talent management. It excludes social media as means of communication between public service and citizen as well as e-government measures. These internal social media with a personal profile, access to administrative features such as travel expanses management, requests for vacation, working time management, and recruiting, but also organisational information such as corporate blogs, wikis, learning facilities, and chat features to connect employees, are also used to support employee qualification [16]. This is, perspectively, independent from bought software, hosted software, or organisation owned software. The aspect of employee qualification also takes up the support of management trainees. In this case, mentoring is considered as one of the most successful concepts [17].

Agility as the result of integration alertness to internal and environmental changes needs the capability to use resources responding to these changes. This is in a timely, flexible, affordable, and relevant manner [18]. As a relatively unpracticed method in public administration, the establishment of agile work needs to be supported. Compared to a coach, who has good questions to answers, a mentor has good answers to questions. Coaching is a short-term counseling situation, in which coach and coachee work on the personal development of the coachee in business situations. Mentoring, by contrast, is construed as a long-term relationship, over six or twelve months or even longer, which focusses on career and personal development of the mentee. Agile coaches facilitate organisations and teams to work flexible and self-learning. Agile mentors, as members of the agile community, support employees, particularly management trainees, with actual practice of agile work [19].

Generally, management trainees are matched with successful managers settled in the organisation. Online mentoring as the virtual and therefore unbounded concept of support and guidance allows to have a mentor of another organisation, a partner organisation, a superordinate organisation, a department of the organisation in a different country, etc. [1].

The following study focusses on the virtualisation of mentoring as a concept of counselling and support. Conceptional discourse depicts independence from location, time, and hierarchy as main advantages of online mentoring [2]; [16]; [17]. 'People are no longer dependant on where they live and whom they happen to know.' [20] It intends to show how mentors and mentees experience online mentoring set up on an organisational platform. As stated before, working with online media makes the process of mentoring special: From building up an online tandem-relationship over continuity in conduct to resonance in online conversations. One of the advantages of video chat is the technical opportunity to record counseling content to use it for the deepening of content. This follows working methods of agile teams, which use asynchronous handling processes and retrospectives as an added value to achieve objectives [2].

2. A Qualitative Study on Online Mentoring

2.1. Study Design and Data Collection

🔒	Interviewee's Profession	Cohort
A	Chief Executive Officer	1965-1969
B	Spokesman	1970-1979
C	Consultant	1970-1979
D	Professor	1970-1979
E	Professor	1965-1969
F	Chief Operating Officer	1980-1990
G	Psychologist	1980-1990
H	Business Programme Director	1970-1979
I	Organisational Developer	1980-1990
J	Computer Scientist	1955-1964
K	Chief Executive Officer	1955-1964
L	Economist	1955-1964
M	Consultant	1970-1979
N	Media Scientist	1980-1990
O	Chief Executive Officer	1970-1979

Figure 1: Sample 1

Following the desideratum on how online mentors and online mentees perceive virtuality in online mentoring, three aspects were highlighted: the (self-)understanding mentors and mentees have concerning their role in online-mentoring, the impact of meeting online on the relationship of the tandem, and the challenges virtuality means concerning themes and topics worked on during mentoring.

To approach these questions, a qualitative research design was chosen. The subjective views of online mentors and online mentees were evaluated with guided interviews. The guideline based on an open narrative impulse[3] to trigger the interviewee's

narration on their experience with online mentoring. Guideline questions, based on the state of research, included questions concerning the online mentoring relationship, handling

virtuality, topics in tandem meetings, and the role of mentors and mentees in online mentoring.
The first round of interviews includes 13 female and 2 male mentors. 14 of them were mentees before.

Qualitative Text Analysis is used to evaluate recorded and transcribed interview data [21]; [22]. Following this qualitative method, the guideline question leads to deductive categories, whereas working through the texts generates inductive categories [21]. Narrow text work promotes a specification of main categories, categories and sub-categories.
Currently, the category system is discussed in several interpretation groups with other researchers, to fulfil the quality criteria of intersubjective traceability of qualitative research. After a last validation of the category system, scientific findings will be consolidated, e.g. as types of mentors (the convinced, platform conductors, those preferring blended mentoring, sceptics).

3. First Results

The following paragraphs give an overview over the first empirical results of the described study.

3.1. Overview

Mentors and mentees consider the process of online mentoring as follows:

More than half of the interviewees were matched via an organisational mentoring platform, the smaller part of the respondents asked their future mentors themselves whether they could imagine to be their mentor.

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[3] 'As you know, I am interested in online mentoring. Please tell me about your experiences with online mentoring!'

Five of the mentoring tandems met body to body before an online meeting was appointed. All other tandems used e-mail or the chat feature on the mentoring platform, occasionally telephone, to arrange the first tandem meeting.

All the tandems, except one, met personally at least once during the mentoring period, mostly at the end of the mentoring process.

Regarding the depicted sample, mentoring is rather blended than completely virtual. Besides the means of communication offered on organisational platforms, mainly video chat, asynchronous channels of communication such as e-mail, or synchronous channels such as telephone or even meetings in person, are conducted.

The examination process of the evaluated data shows the perception and the experience of the used form of virtual mentoring. The current category system consists of four main categories, which differentiate themselves hierarchically into further sub-categories:

-   The main category 'roles in online mentoring' includes subjective views of the interviewees concerning the perception of their own role and the role of their interaction partner.
-   'Online mentoring relationship' summarises specific characteristics of the experienced virtual communication process and their impact on the organisation and the experience of the relationship.
-   In the main category called 'conversation perspective', statements on the content of conversations and on particularities of digitally supported conversation were coded.
-   The category 'future perspectives and visions' shows subjective views on future developments of online mentoring.

3.2. Deeper Analysis: Online-Mentoring Relationships – Dimensions

The main category 'online mentoring relationship' is suitable to give an insight into the subjective views on virtual mentoring. This main category bases on the categories 'supportive conditions', which barely differ from offline mentoring relationships, and 'digital forms of encounter and digital forms of communication', which emphasizes particularities of online means of communication in mentoring. Again, this category is subdivided into three sub-categories. Whereas 'flexible meeting rooms' discusses independence of time and location, the sub-category 'limited response' indicates deficits of virtual communication due to physical absence of the conversation partners.

The sub-category 'different dimensions' depicts the phenomenon that the interviewees define virtual communication metaphorically as a dimension. This choice of terminology is surprising. Moreover, it conveys a specific understanding of digital communication presented along empirical material in the following. Interestingly, the interviewees use the term 'dimension' not classically as a definition of a scale or magnitude, as a category of a physical quantity, or the measurement of a mathematical object, but, to an extent, create an own definition concerning online mentoring. Different dimensions describe whether mentor and mentee meet up body to body in the same room, or if they see and hear each other face to face via video chat.

Various paragraphs of the evaluated interviews show that three dimensions describe the encounter of bodies in a physical room, which make it easier for mentors to react to gestures and the facial expression of the counterpart. This also seems to be possible with two-dimensional mentoring, but technical challenges may complicate communication, e.g. a 'juddering skype connection' (translation by author, A, 32). In contrast to this, some mentors experience mobility, meaning the opportunity to walk around while talking, which is not possible in a virtual, two-dimensional conversation. 'I take the opportunity to walk around a bit while speaking on the telephone.' (translation by author, A, 55) Interestingly, these mentors do not evaluate virtual forms of communication as deficient, despite hints on technical complications, but as clearly positive.
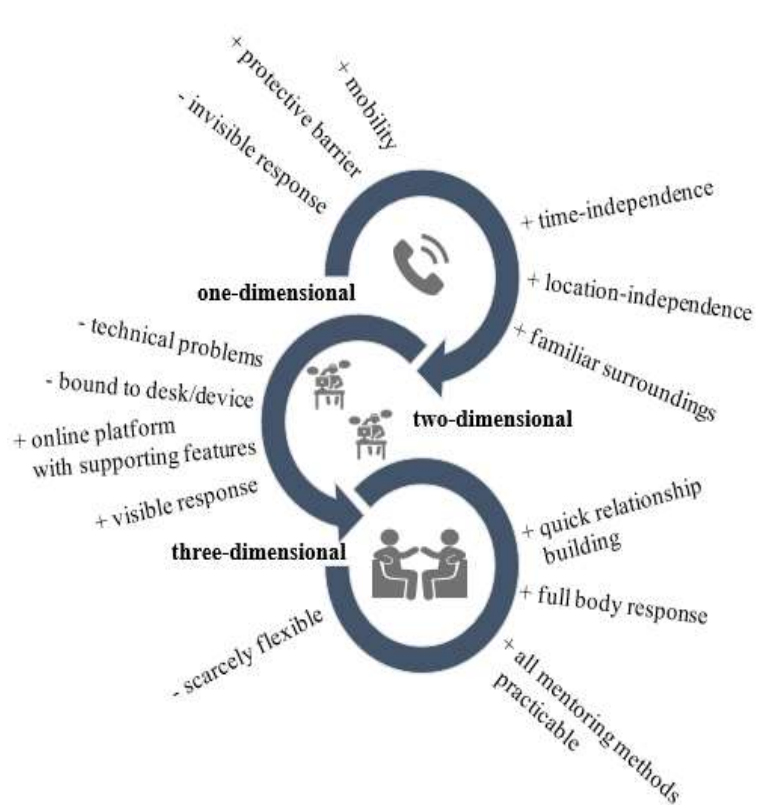
Figure 2: Mentoring Dimensions

Other actors describe the two-dimensionality as obstructive. They miss the resonance in communication. Therefore, they experience online tandem meetings as deficient. 'Sometimes, I literally need to touch my mentor.' (translation by author, H, 45) This hints on an ambivalent perception of virtual communication modes via video chat, because two-dimensionality can hardly replace a meeting body to body. Many mentors stress the importance of meeting at least one time in person during the mentoring period. Ideally right at the beginning and/or at the end of the mentoring path, 'because this promotes mentoring.' Online communication is organised with image and sound, 'because you, er, find out what is going on, er, with the other person.' (translation by author, B, 15-26)

3.3. Summary

The descriptions of the three different dimensions of communication in the interviewees' statements indicate that online mentoring conversations tend to be evaluated as a pragmatic compensation for face to face meetings, because the empathic estimation of the counterpart in virtual reality is harder to do, which may influence building up a relationship. Again, online mentoring is evaluated as thoroughly positive.

4. Discussion and Perspective

4.1. Discussion of First Results

Even though a systematic consolidation of the mentioned results needs to be done in a next step, and even if the depicted exemplary interpretations only refer to a small extract of the category system, these are perspectives worth discussing.

The preliminary results may lead to the following thesis:

Virtual mentoring, which bases on video chat communication, is, compared to body to body encounters, perceived as susceptible to faults and as deficient. Nevertheless, online mentoring is mostly evaluated as positive.

This thesis seems to fit to empirical results, which give evidence that technical problems or lack of competence lead to dissatisfaction on the part of the persons involved [23]; [24]; [25]. Against the background of these first results of the study, it is possible to interpret that these disruptions impede particularly the necessary empathic capacity and the opportunity to build up a trusting relationship. The virtual room seems to create, as the category system depicts, a lack of resonance between conversation partners. Empirical studies support this thesis. They describe online mentoring as an alternative, when a meeting body to body is not possible concerning location and time [26]; [27]; [28].

Despite these deficient perspectives on online mentoring, the interviewees thoroughly evaluate it as positive. This refers to the understanding represented in conceptional literature on online mentoring, that this form of mentoring offers advantages concerning independence of location and time [16]. Therefore, it is connective with current conditions of today's work in organisations.

Furthermore, the estimation of future developments of online mentoring shows that virtual forms of communication have potential due to their high flexibility, also in supporting the processes of participation and emancipation.

Whether and how these indicated ambivalent views on virtual communication influence the perception of online mentoring processes in general needs to be proven with further interviews, analysis, and consolidation.

4.2. Perspectives of the Use of Social Media in Public Sector Management Trainee Programmes

To establish an online mentoring programme for management trainees, guidelines are essential. From transparent platforms to support mentoring tandems over a platform management to rules of commitment.

As the study depicts, tandem relationships benefit from body to body meetings. These trust-building meetings are conducive for a long-term relationship. Therefore, online mentoring programmes should at least be blended, so that mentee and mentor will have the opportunity to meet in person, if they consider this as helpful. Thinking about further development in artificial intelligence, i.e. chat bots, commitment becomes more important. Moreover, data protection needs to be considered. Tandem conversations are not recorded. In this case it has to be distinguished between functional

conversations on business matters and tandem meetings. The latter have to take place in a protected framework, no matter if they are conducted via video chat or body to body.

It is important to install programme managers who flank the establishment of an online mentoring programme for future managers as change agents. This concerning management decisions as well as pedagogical aspects to support mentors and mentees with their roles, if necessary. Only with change agents who also act as facilitators the benefit and the value of online mentoring is conveyed.

Online mentoring might also be an approach for cultural change in an organisation and in public administration. At first, this might be a rather difficult process with different phases, which must be persevered for about two to five years. This also applies for social media elements in general to find acceptance in an authority. Therefore, counselling formats need broad acceptance, readiness to adapt, and change personal attitudes and values to transition into a new age.

Online mentoring can also be used to analyse the distance of the workforce to changes, to find out whether the structure of workforce is ready to establish new concepts.

Nevertheless, there cannot be something like a generalised recommendation. In any case, the present organisational culture needs to be taken into consideration. Basically, online mentoring is a chance to pave the way for the change from a structure of hierarchy and power to a culture of support and learning.

5. Summary

Dynamic changes of the present working world require working methods which base on participative fundamental values to transform these potentials into innovation. Regarding civic trends, this also affects public organisations. Collaborations between the public sector and private companies are also a component of increasing importance to create new services for the population.

The described combination of strategic guideline conception, agile methods in priorisation, discussion, and coordination as well as integration of a systematic competency management are means to enrich the sustainability of organisations of different branches. Investment in a theoretically profound resources instrument to use human potential application-oriented in everyday professional life is the most important decision considering sustainability of employees in the public sector. A profound tool to use the advantages of social media in the process to find and create new public service, even to improve existing service, is online mentoring via the background of platform economy. It gives room for ideas and creativity as well as support to functional and personal challenges of the workforce. This implies the main goals in initiating a change in the organisational culture as well. Trust, support, methodological professionality, and connected topics with a cross-functional background are good starting grids for a change to reach the requirements of our modern, disruptive world.

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IMPACTS OF COMPUTERIZATION AND DIGITIZATION: SOME HEALTH ISSUES

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Abstract

Computerization and digitization are effects and the engines of development at the same time. Computers surround both work activities and beyond. There are several benefits available, including the faster, easier, and cheaper way of managing our tasks. However, there are undesirable health impacts to consider, but these are less pronounced. Exploring these impacts and preventing the occurrence is essential for improving the efficiency of computerization.

The study focuses on the effects of computer work by analyzing its exhausting characteristics and the tiredness or pain in different body parts. The research method uses a survey of full-time and part-time higher education students. The sample consists of 200 randomly selected responses collected between 2018 and 2019. It allows analyzing the differences of perceptions between respondents with and without job experience. Beyond descriptive statistics, ANOVA and correlation analysis was conducted for exploring the relations. Data analysis was supported by IBM SPSS version 25.

The results show that the perceived undesirable health impacts are timeless and ageless. Eye-related problems, as well as back and shoulder, are considered the most critical by the respondents. The main implication of the study is that more attention must be paid to the field, appearing in regulations and developing training programs for computer users. The results presented in this paper aim to highlight the importance of the prevention of harmful symptoms of computer work, which are not in the mainstream right now.

1. Introduction

Digitization surrounds everyday life, including public administration. Both the diffusion of on-line services and mobile access to them has spread explosively. A detailed analysis of the development goes far beyond the scope of this study. The goal of the study is to draw attention to a seemingly less critical impact of the field, the health impact of exposure to computer work, especially the right sitting posture.

Jakob and Krcmar [13] mention digitization as a buzzword that intertwines with both the business and the public sector. However, there hinder factors of digitization due to its complexity. The maturity models in the field [12] takes several factors into account, focusing on technological, organizational, leadership issues, as well as the capability to the required changes in the systems [12], [13].

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The historical review of governmental transformation by Paulin [21] evidently pointed out that (public) administration and management are already unimaginable without computer work. Efficiency has been an essential factor for years, like capability improvement and cost savings [9]. The development and the recent spread of the technology redraw the content of these factors (e.g., big data, mobile devices, prompt administration), but the fundamental challenge remains.

According to the scope of this study, the availability of the technological background is not a limitation of effective computer activities. This presumption is confirmed by the data of the Hungarian Central Statistical Office (Table 1). The spread of computers and related services is remarkable in the previous ten years. There were 223 514 computers used in public administration, defense, and compulsory social security in 2005; it was increased to 305 928 in 2013. The number of servers increased by 45% during this period.

Item	2009	2011	2013	2015	2017
Computer	99.7	99.3	100.0	99.6	100.0
Internet	98.9	98.3	99.6	99.6	99.4
E-mail	98.1	98.1	98.3	98.6	99.2
Web page	..	58.0	80.9	84.3	87.9
Intranet	17.3	16.7	21.8	27.5	27.9
Social media tools	..	..	..	36.5	43.0

Table 1: Use of information and communication tools in public administration, defense and compulsory social security (%) [16]

On the other side, the utilization of internet-based administration of businesses has been increasing (Table 2). Of course, it should not be ignored that a considerable effort and several years of coordinated work were required by IT experts, policymakers, public administration experts, teachers, and other participants of the development projects. The progress is explained in [5] and [6] in detail.

Item	2009	2010	2011	2012	2014	2015	2016	2017
Obtaining information	77.3	93.0	93.8	94.9	91.3	93.2	92.9	91.6
Download forms	76.8	88.8	89.9	93.1	89.4	90.9	91.4	90.1
Submitting completed forms	69.5	82.9	84.5	91.4	87.9	89.3	90.1	89.2
Fully electronic management of administrative procedures (including payments)	44.0	50.9	77.5	86.3	83.7	84.8	86.1	84.9

Table 2: Use of the Internet to handle administrative matters in proportion to businesses using the Internet [16]

Literature in the field focuses on the tasks and processes managed by the computers but gives less attention to the physical factors of the work environment. Of course, the man is involved in the factors, but ergonomic aspects, especially the long-term impacts, have a lower emphasis. While the benefits of computerization and digitization seem greatly exceeding the risks both on macro and micro levels, including but not limited to the labor market [23], education [20], or digital inequality [7], [8], the physical impacts on the human body must be considered. Unfavorable health impacts, which are the results of doing the activities sitting in front of a computer, lead to a reduction in the working capacity.

A relevant difficulty in analyzing the phenomena is that both working and free time activities are increasingly dependent on computers, and the health impacts are independent of the purpose of the activities. All these seem to be marginal issues of digitization until disruptions due to illness do not endanger work processes.

Intensified computer work leads to increased load in the musculoskeletal system, in the eyes, and mental well-being also can be influenced [19]. These can be considered as risks of computerization. Managing human-computer interactions requires a comprehensive approach, including ergonomic issues. Computer vision syndrome (CVS) covers the most symptoms, but it focuses mainly on ocular-related problems [2], [10], [29], [30]. According to the workplace design for computer activities (see [14], [31], [32]), other factors may be included. Moreover, developing healthy workplaces requires a more sophisticated approach [26], [28].

The proper sitting posture, selection of tools, schedule lead together to both desirable and undesirable impacts. Feeling discomfort and declining performance are the first signs, health problems, workplace leaving can be the outcome, moreover, missed opportunities of the development can be the impact.

2. Research design

2.1. Research goal and method

Understanding the impacts of computer work is a critical personal issue with relevant social and economic effects [17], [22]. According to health impact, the related problems are general because computer usage is not limited to working. Especially the mobilization and smartphones show spectacular implications of addiction in everyday activities [11]. The spread of use foreshadows the appreciation of the unfavorable impacts as well.

Among others, public servants perform most of their tasks. In their case, the government and society must bear the responsibility for maintaining their health. That is not just an altruist obsession; public servants are employees who contribute to organizational performance. It is to note that the same relationship can be described in the competitive sector between employees and companies. Problems lead to reduced work performance [18], [26].

The development of the diseases caused by computer work comes over time [14]. Early identification is critical to successful corrective or preventive actions. That is the reason why the students are the focus if the investigations. There is an excellent opportunity to intervene in a timely manner for preventing the harms and disorders through education and training. Moreover, it is getting used to the right working environment for earlier than higher education studies [1], [24].

The study uses a voluntary survey that asks about exhausting feeling or hurts related to computer work (evaluated on a 6-point scale):

- in the eyes,
- in the hands and arms,
- in the fingers,
- in the back and shoulders,
- in the neck,
- in the waist,
- general evaluation of feeling computer work exhausting.

The EvaSys Survey automation system supports data collection, and the data analysis is conducted with the IBM SPSS version 25.

Age, gender, and job experience are used as grouping factors. Nowadays, having a job experience is typical among full-time students, in the form of an internship, or even being part-time employed. These students meet computer work and the workplace in different ways.

This study is a contribution to this knowledge base by asking business and public administration higher education students about their experience in the health impacts of computer work. According to the survey presented in this paper, the research question can be formulated whether any unfavorable health impacts of computer work can be detected among the students. However, students cannot represent the public administration staff; this survey is an initial but essential step of a preventive program. Of course, a comprehensive solution cannot ignore the staff who have been working for a long time in the public administration since it can give an extensive situation report.

2.2. Research sample and limitations

The research sample of the study consists of 200 randomly selected higher education students from the 2018-2019 data collection period of a survey designed for a comprehensive analysis of the competencies and attitudes of higher education students to information technology. There are students of business, public administration, and law studying at various Hungarian higher education institutions who may be future public servants. Since a representative sample structure cannot be assured, a random selection was used for avoiding the overrepresentation of any universities or specialties.

Due to the data collection method and the voluntary nature of the survey, the interpretation of the results is limited; however, the results may be progressive. A relevant limitation of the results is that the results are based on the self-evaluation of the respondents by a voluntary survey, and not on a professional medical examination. The research can be considered as an awareness-raising pilot study in the field.

3. Results and discussion

3.1. Sample consistency

The survey and the responses are statistically tested by the usual methods used in social sciences [3], [25]. These tests have an important role in the interpretation of the results due to the convenient sampling. The reliability of the survey is passed based on the Cronbach Alpha test (value=.825, n=6) for the questions about health impacts. The Kolmogorov-Smirnov test failed for the normal distribution of the answers, and the two-tailed significance is .000 for each item. Therefore, the ANOVA analysis was conducted by the Kruskal-Wallis test.

The unfavorable effect of computer work is influenced by several factors, including the level and time of exposure. Gender and work experience (with or without job experience) as grouping factors are related to this nature. Since the sample size and composition do not allow a detailed analysis by gender, a convenient splitting was applied in 1995 as the year of born.

Comparing the respondents who were born earlier than 1995 (marked as old in the indexes) and in that year or later (marked as young in the indexes), a significant difference was found in the questions

about tiredness or pain of eyes (x_{old}=4.11, x_{young}=3.60, χ^2=4.608, sig.=.032) and general evaluation (x_{old}=3.55, x_{young}=3.10, χ^2=4.690, sig.=.030). Differences by gender are significant in the case of back and shoulder (x_{female}=4.14, x_{male}=3.53, χ^2=6.586, sig.=0.010). Job experience is a significant grouping factor in the case of back and shoulder (x_{nojob}=3.68, x_{job}=4.15, χ^2=4.111, sig=.043).

The correlations between the items of the survey, there are moderate but significant interrelations found. Correlation between finger-hands and arms (Spearman corr=.604, sig.=.000) and neck-back and shoulders (Spearman corr.=.721, sig.=.000) can be highlighted.

3.2. Survey results

Since there are few significant differences found by the grouping factors, the survey results are presented for the total sample and by job experience. Responses are measured on a 6-point scale (1: not at all, 6: often). The distribution of the responses is characterized by rather no (1 and 2 answers), moderate (3 and 4 replies), and rater yes (5 and 6 replies) labels.

20.5% of the respondents feel computer work exhausting, and 34.5% do not think it so (Figure 1). Figure 2 shows the differences between the existence of the job experience of the respondents.
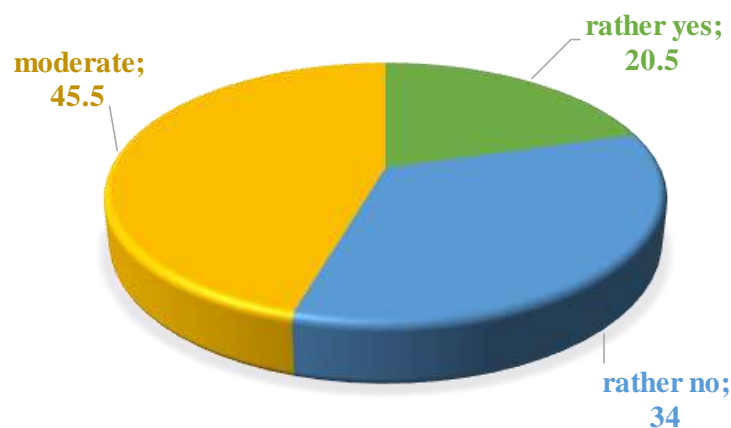
Figure 1: Do you generally feel tired when or after doing computer activities?
(total sample, % of respondents)
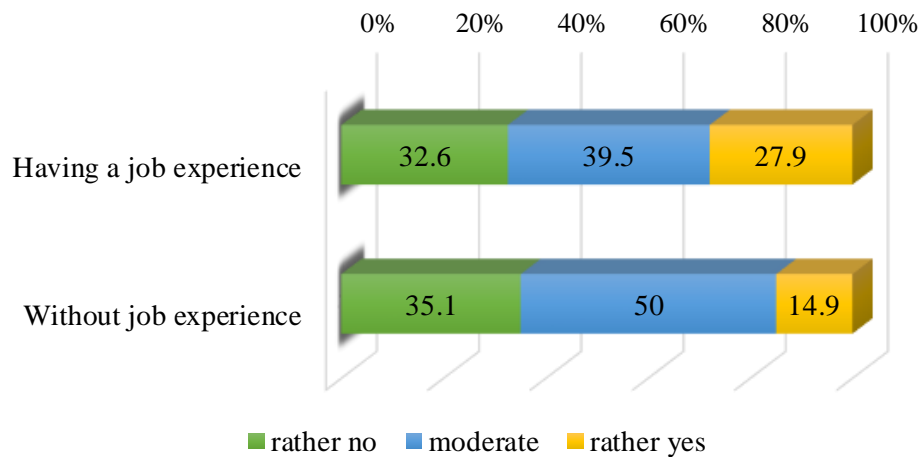
Figure 2: Do you generally feel tired when or after doing computer activities?
(by job experience, % of respondents)

Figure 3 represents the average values of the respondents' evaluations of feeling tiredness or harm in one or more body parts. The higher average value in the graph suggests that the affected body part is more critical to the health or well-being of the respondent. The differences in the values point out that there are two critical areas where the respondents feel computer work exhausting or harmful: eyes as well as back and shoulder. Both are consistent with the literature of computer vision syndrome, and there are special warning signs of ergonomics literature in this respect. The distribution of the responses confirms the results (Figure 4, Table 3).
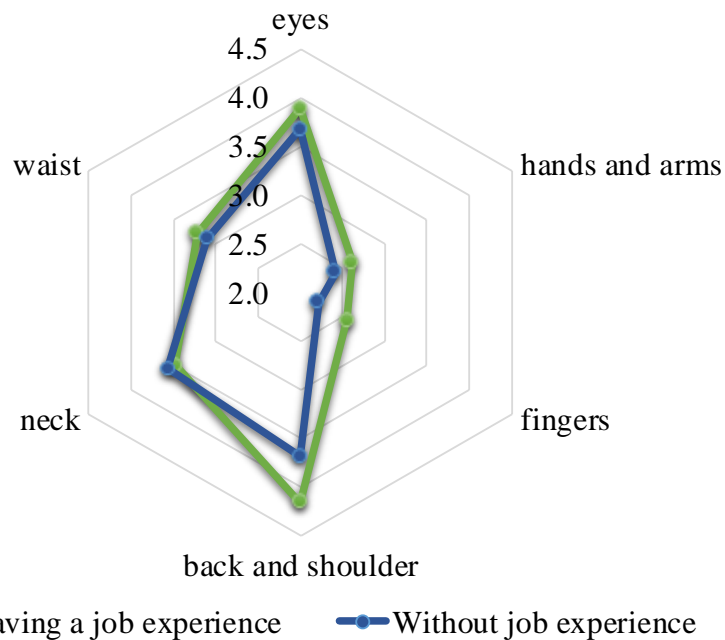
Figure 3: Feeling tired or harm in some body parts related to computer work
(average values, 6-point scale)

	job experience	rather no	moderate	rather yes
eyes	no	27.2	40.4	32.5
	yes	25.0	41.0	34.0
hands and arms	no	57.9	35.1	7.0
	yes	56.5	32.5	11.0
fingers	no	61.4	35.1	3.5
	yes	60.0	31.5	8.5
back and shoulders	no	25.4	38.6	36.0
	yes	21.5	38.5	40.0
neck	no	34.2	28.9	36.8
	yes	34.5	30.5	35.0
waist	no	43.9	33.3	22.8
	yes	41.0	35.5	23.5

Table 3: Feeling tired or harm in some body parts related to computer work (% of respondents by job experience)
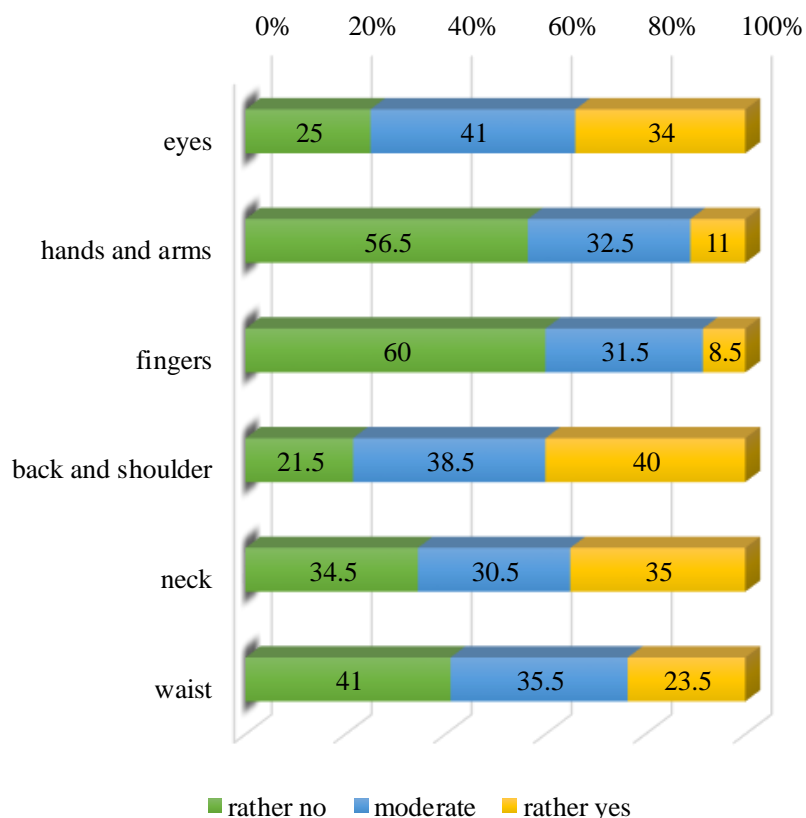
Figure 4: Feeling tired or harm in some body parts related to computer work (% of respondents, total sample)

Fighting against the harmful effects of computer work resulted from the special sitting posture is inserting regular breaks, stretching activities, and some move. The survey included a question about

this practice. 6% of the respondents marked that this is not common for him or her. 56 % of them make a break sometimes, and 38% of them regularly. Cross-tabulation shows a significant difference (χ^2=20.653, d_f=2, sig.=.000) by the job experience (Figure 5). There is no significant difference by the age categories used in the study (χ^2=17.456, d_f =14, sig.=.233).
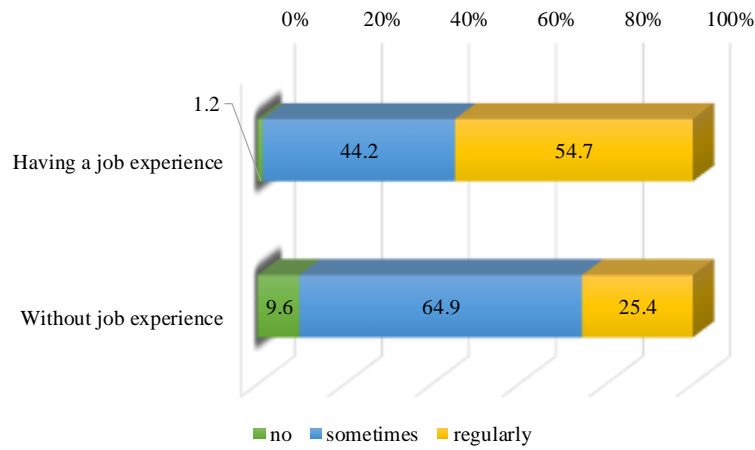
Figure 5: Having a break during computer work
(% of the respondents)

3.3. Discussion

The effectiveness of working with computer shall be evaluated in a comprehensive approach (Figure 6). Even there is a high-end computer available as well as an excellent IT background provided; organizational issues influence the performance. Defining the task and establishing the working environment regarding the task requirements are also conditions of the performance. Due to the flexibility of the human body to the environmental impacts, unfavorable health impacts may remain hidden for a long time. Moreover, short-term and temporary actions are against healthy solutions. Developing the working environment can be successful if task properties and the evaluation of the working environment is available. Exploring the perception of health impacts is a relevant component of the evaluation.
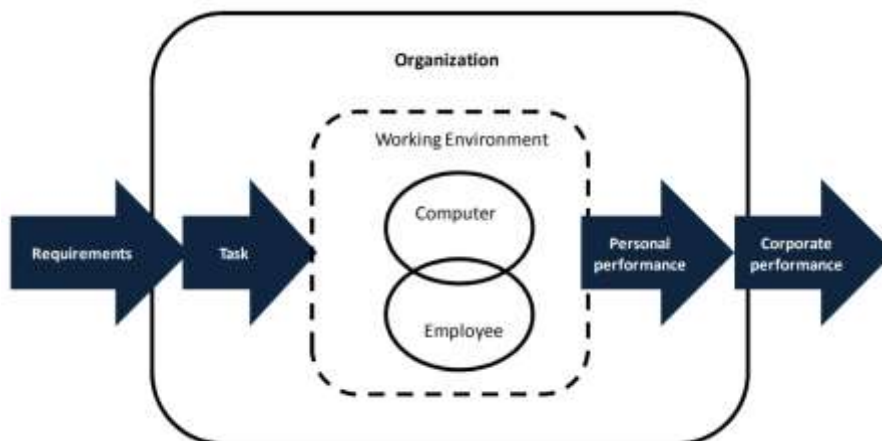
Figure 6: The role of the working environment in achieving organizational performance [4]

The survey results confirm the importance of healthcare and ergonomics professional warnings about computer work. The fact that the grouping factor shows few significant differences suggests that

health problems of computer work are general, ageless, and timeless. Of course, this statement is valid for the sample; an extensive data collection must have the hypothesis whether it is generalizable or not. Nonetheless, the effect of job experience is perceptible based on the sample.

However, computer work is evaluated not exhausting by one-third of the total sample, the proportion of moderate and rather exhausting ratings is remarkably higher among respondents with job experience (Figure 2), and this is a warning sign. The health impacts do not depend on the purpose of the activity, and it is related to the sitting posture and exposure. Assuming that leisure and other non-job-related activities are present in the life of the respondents regardless of work, work gives extra load and stress that may lead to increased tiredness.

According to the questions about feeling tired or pain in one or more body parts, two issues stand out from the other based on both the average values and the distribution of the responses: eye, back and shoulder. A correlation analysis was conducted whether the felt tiredness or harm is limited to the gives body part of the person, or there are multiplied problems. The results confirm that the issues do not come alone. Eye problems are related to the general evaluation of feeling computer work exhausting (Spearman corr.=.577 sig.=.000). Furthermore, back and shoulders correlate with the neck (Spearman corr.=.721 sig.=.000) and waist (Spearman corr.=.530 sig.=.000) problems. Paying attention to the proper sitting posture is a key issue in the related literature (see [15]); however, the design of portable computers and other devices just work against it. Making a break during the computer work is essential for reducing static strain on muscles and refreshing the skeletal system. Systematic training activities promote both preventing problems and reducing their impact [27]. Beyond the favorable physiological impacts, mental relaxation is available. Considering that the labor safety law obligates a break, the results show an unsatisfactory picture.

4. Conclusions

Computer work is a complex challenge. Continuous improvement of equipment, systems, and procedures allows faster and widespread access to services for work or entertainment increasingly. People spend even more time on different computers. Due to the high adaptability of the human body and mind to different environmental conditions, the negative impacts of the activities remain hidden for a long time. The prevention of the undesirable effects can be forced by the designers, but user attention is also important.

The results of the survey point out that strain on the musculoskeletal system and eyes is remarkable, regardless the age or gender in the sample. The difference in outcomes between respondents who have or do not have a job experience suggests that computer activities are considered less exhausting when it is not related to work. At the same time, negative effects perceived are not significantly smaller.

The main policy implication of the study is that more serious attention should be paid to the health impacts of computer work. The knowledge base of ergonomics must be implemented in related regulation both on local (organization) level and the legal regulation. However, the regulation of occupational health includes screen work issues, its scope is limited. Training programs may be efficient in the field. Several open questions in the field go beyond the limits of the present survey and the paper. E.g., workplace and process design require a targeted analysis among the affected people.

It is to note that the sampling method cannot be considered representative; it is suitable for highlighting the most critical problems and designating further focus of the investigation.

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Economic and Social Impact of eGovernment II

SOCIAL IMPACT OF E-GOVERNMENT IN URBAN MARKETING

Stefany Cevallos[1]

Abstract

The New Technologies of the Information and Communication (ICT) bet by a new model of city in function of the new social needs and the construction of an image for their own countries and the international arena. This research questions and describe the social impact of eGovernment in the construction of the cities to attract Foreign Direct Investment (FDI). Public management plays a fundamental role in the development of different programs in the field of the digitalization of services to generate viable solutions to improve the quality of life of its inhabitants. Urban marketing and the ICT are a fundamental support for these. Citizens, businesses, governments and employees are a policy priority because cities are key factors for the new industrial scenario to converge all segments of society for ICT deployment and use. In addition, the paper presents the progress on e-government service development to understand that social impacts on social groups within a community in advance of the decision making process such as quality of housing, local services, living environment, cultural and political inclination, transportation condition, etc.

Keywords: eGovernment, urban marketing, ICT, FDI, society

1. The e-government for good governance

The United Nation specialized agency for ICTs, International Telecommunication Union (ITU) estimates that 4.1 billion people have used the Internet at the end of 2019 [11]. As ICT has become pervasive it is more inseparable from social structures. It involves social, cultural, economic and political factors.

Those State capacities necessary to provide services and public goods under the new logic of State-citizen interaction that configure ICT are in continuous development. In this context, e-government policies offer excellent opportunities to transform public administrations into instruments of sustainable development. Even if the adoption of e-government responds to a multiplicity of variables that exceed the issue of technological infrastructure.

E-government is seen as the most important accountability for citizens in the construction of business scenario. Besides, ICT implementation contributes positively to effectiveness and efficiency in the public sector. Nowadays, public institutions saving huge amount of money in their budgets by reducing the expenses in materials and human resources destined to the collection of taxes when citizens can make their payment online at any time.

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In this framework, governance connotes a sense of direction in the capacity of action of the government by means of steering. Nevertheless, its difficulty to assign a sole definition to governance, since this term changed from being descriptive to being analytical. "Governance is itself the object of a theoretical debate in which the diversity of traditions and currents in the social sciences is reflected" [8].

What makes the conceptualization of "good" governance doubtful is not so much its normative character as its propensity to reiterate practices around a small number of criteria such as effectiveness, profitability, accountability, participation and transparency. However, these criteria have no value outside the socio-political context in which they are observed [8].

If we were taking about the benefits associated with ICT implementation within the structures of government administrations. There are three types of results can be identified: (a) improvements in government administrative processes and circuits; (b) cost reduction and efficiency increase in the transactional services provided by the government to its citizens; (c) increased democratic legitimacy and transparency of governments.

In part, this is due to that new technologies contribute to generating a more direct relationship between citizens and the government and allow them an increase in trust towards the rulers: citizens participate more than them because there is more information and public debate on what is enriched and enhanced.

When e-government reach a high degree of maturity or sophistication and allows a multilateral exchange of information and services, generates high rates of participation, transparency, citizenship and promotion of democratic values. There are vital tools to empower and expand civil society as it allows the construction of a more active, informed and involved citizenship as well as an increase in the effectiveness in the provision of services and in government processes [15]. In this regard, closer interaction between government and citizenship contributes to the quality of Governance. Of course, there are pessimism and distrust with which politics is looked at today and which tend to limit the normal development of social life [9].

2. Urban marketing

Urban marketing research is a young field of study. The are several new dimensions and theoretical contributions to this concept. Since the late 1980s when Ashworth (1989) first analysed the urban tourist phenomenon to begin to understand tourism in the city and embrace urban studies and its theoretical critiques [4].

Urban marketing and city branding, both concepts are intrinsically linked, but on this research urban marketing is the reason we must focus attention on citizens and their willingness to adopt ICT through different e-government strategies. Efforts to increase citizens' confidence in these mechanisms so that they not only request information from governments but also participate in transactional activities with state bureaucracies.

For urban marketing approaches to promote social, supportive and inclusive development in rural, urban marginal sectors, communities and priority groups, through intensive use of ICT would become the configuration of branding to convert to ICT in one of the axes of productive transformation and economic development.

Governments of all levels, whether national, provincial or municipal, face multiple and interdependent challenges in managing scarce assets with the objective of creating opportunities for all citizens, reducing poverty and improving the living conditions of the population.

To attract investors, cities compete to be smart cities. The digitalization is an advantages for a competitiveness country: Big data, cloud computing technology and increased departmental communication; have been described as recent development trends in E-Government [17].

FDI is defined as the establishment of a lasting interest in and significant degree of influence over the operations of an enterprise in one economy by an investor in another economy [14]. With such decision, it may be possible to achieve enhanced levels of sustainability and governance. Some of the benefits include the following: 1.- Efficient resource utilization, 2.- better quality of life: with better services, efficient living models and the availability of enough information to make informed decision. And the most important, higher levels of transparency and openness. Big data is one example will drive the interoperability and openness to higher levels.

Enabling businesses and entrepreneurs to thrive is of enormous value to citizens, national governments and countries. When the entrepreneurial spirit is supported, economic value will increase, jobs will be created, and personal lives will be enriched. Governments and the countries have their role to play supporting their operations, creating and enforcing the framework in which businesses can operate fairly. Governments and businesses need to communicate in the form of governmental services. These services form the two business related life events that are part of the eGovernment Benchmark; and Regular business operations [7].

In fact, practicing good governance is not enough in this highly competitive marketplace because politicians need to market their good governance practices in order to make the country more attractive to investors [5].

3. Preliminary balance

When we are studying the social impact and decision making in housing local services, living environment, cultural inclination and transportation condition. The art of governing implies the way in which they occur or not government capabilities [12]. We should begin by understanding the responsibilities were divided by the administrative decentralization of 1982. This reorganization of political forces offer to territorial authorities more performance capability, as well as greater autonomy, including developing planning. The development issue becomes more "local".

After 30 years of territorial planning centralized, we are currently in a moment of competition between cities and territories, both nationally and internationally. The competition is open to attract public and private investments of multinational companies and is also the main objective of numerous municipalities.

By way of a few examples, operations that prestige the city are pursued, such as development of technopolos, train stations or international airports, multi-modal platforms, the construction of standing buildings in the heart of the city or the execution of sports or cultural events whose scope exceeds national borders. On the other hand, original communication strategies are developed, and tax advantages are proposed to create a good economic climate.

The local economic spaces are different from each other and various strategies for valuing their resources place them in a competitive situation. This spatial competition constitutes one of the most important elements of contemporary economic dynamics in urban marketing. Centralization of government power accompanies advances in information and communications technology, as political elites use branding strategy to impose discipline on their messengers and on media coverage [13].

In any case, it is also necessary to reflect on the role played by national governments and the interference functions they display in terms of the promotion of electronic government at the local government level. On some occasions providing basic infrastructure, in others transferring knowledge and management skills, but mainly as regional articulators and coordinators, providing resources to local governments, and implementing strategies for their development.

However, when analysing some cases about national organizations, such as the Tax Collection Entities [6], a better performance in electronic government matters is observed than at the subnational level. When public administrations, at their different levels, implement ICT in the provision of services, they radically modify the form of interaction with citizens. From this perspective, the government is available 24 hours a day, 365 days a year as a result of a dynamic and permanent exchange between the different actors and institutions of the State, the market and civil society. The implementation of ICT contributes positively to the effectiveness and efficiency of the public sector while allowing a significant cost reduction [2].

Government agencies save significant percentages of the budget by reducing expenditures on materials and human resources for collecting taxes when citizens can make their payment online at any time. Government presence is seen in the enhancement of the quality of life for a segment–city citizens–through utilizing information technology hardware, software, networks, and data on different city areas and services [2]. The increase in efficiency occurs in two planes. On one hand, citizens timing is reduced to carry out transactions; both of those who access virtually and of those who approach the physical headquarters of the government. On the other hand, governments centralize and systematize the collection of contributions and fees in virtual agencies. However, the availability of e-administration in the absence of administrative physical presence does not guarantee its use [10].

There are many social impact in developing countries but in essence just to mention different types of obstacles to the development of e-government policies: speed in technological innovation, lack of continuity in political decisions regarding the development of electronic government policies, and the absence of a macro-level public policy that promotes the coordination of this type of initiatives at a general and homogeneous level [16].

In addition, the increase in internet access has benefited from the rapid spread of smartphones, facilitating access to populations that were in places where the land connection was poor or non-existent [3].

4. Conclusions

Political participation and the relationship between citizens and the government has been affected because of social inequalities, migration and the use of ICT. There are positive and negative effects in urban marketing. On the other hand, there is still a lack in studies on why the relationship between

e-government and FDI should exist and why some of these factors can relate to ICT and specially e-government.

The dissemination of ICTs has also been given thanks to more adaptive cultural habits and customs, and even a much younger demographic profile than in developed countries. Furthermore, the digitalization of the public sector has been a process with good results when replacing certain physical administration is something relative and limited. Relative, because it was better than having no presence; limited, because the services and procedures offered have been mostly nationals, since many are in the hands of decentralized entities.

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SYSTEM DYNAMICS MODELLING
OF PUBLIC ICT PLATFORMS[1]

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Abstract

The objective of this paper is to show how system dynamics modelling can be applied to simulate the behavior of information communication technology based platforms to formulate and validate strategies or development policies of these platforms in the public sector. Typical platforms in the domain of public sector for instance are mobile apps connecting the sides of users and developers, or horizontal or vertical government portals connecting different authorities on one side and users or corporations on the other side. We show in our contribution how system dynamics provides new insights for modelling two-sided markets in general and public ICT platforms in particular. Conclusions and results of our work are mainly theoretical: as an initial step we extended the classic microeconomic equilibrium models mainly concerned with how to determine pricing of the opposing sides into more general parameters of platform quality, externalities and causality analysis of different variables. Based on these theoretical models we suggest simple inference to policy making and some pragmatic decisions in connections with public ICT platforms.

Keywords: public platforms, two-sided markets, system dynamics

1. Introduction

Platforms, or, two-sided markets as they call them in microeconomics, have become essential business models in digital transformation. We argue, that this is a surprisingly neglected logic in the case of public administration platforms, or portals where governments want to achieve a critical mass of citizen and business participants on one side, and a wide variety of administrative services on the other side. By applying the microeconomic theory of two-sided markets and then modeling the dynamics of same-side and cross-side network effects we show how effective government portal strategies can be created. We base our arguments on conceptually using the experience from the business sector where exploiting the capabilities of information communication technologies (ICT) by generating an ecosystem which enables to connect different economic actors and generates network effects and externalities results in staggering economic performance. Amongst the top 100 corporations in the world 60 generate most of their revenues from the operation of platform networks, and the market capital of platforms in recent years has been estimated around 4000 Billion USD globally [1].

Firstly, we introduce summarize the concept of the classic monopoly two-sided market model using microeconomic theory and explain how it is interpreted to public platforms. Secondly, we extend the model to a dynamic space, and show how the behavior of participants can be modeled using system

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dynamic simulation, and illustrate typical patterns of platform dynamics. Finally, we present some suggestion how the dynamic platform models may enhance platform strategies in general and specifically in the public sector.

2. A microeconomic model of monopoly platforms based on Armstrong [2]

Following the seminal contributions of Caillaud and Jullien [3], Rochet and Tirole [4], [5], and Armstrong [2], such models have become widely used as building blocks in the microeconomic theory literature. Note that this literature uses the terms two-sided market/ two-sided platform/ multi-sided market and multi-sided platform interchangeably to describe the same type of markets. Various extensions of these models are used to investigate intermediary platforms that connect two distinct sets of agents where the number of agents on the one side affects the utility of agents on the other side (for the most recent survey, see [6]). As explained above, in this paper, we propose a novel use of such models; therefore it is worth describing a simple model of two-sided platforms in detail.

The most tractable model of a monopolistic two-sided platform that still captures the essential trade-offs is arguably a simplified version of [2]. Thus we proceed by further simplifying the model in [7, p. 630], which itself builds on the former, very general model.

There are three types of agents in the two-sided market we model: an intermediary platform, buyers and sellers. In this example the platform is a price-comparison website like Amazon, Google Flights, booking.com, Airbnb, etc. Similarly, in the public settings these could be the horizontal portals collecting services such as ordering documents, reporting tax, applying for passports and personal IDs, or organizing public procurement. Importantly, we only refer to the two groups as buyers and sellers for expositional purposes, the model is general enough to encompass situations when the two groups are e.g. smartphone users and app developers (the market for operating systems); heterosexual men and women (the market for dating websites or nightclubs); drivers and passengers (the market for ride-hailing services); or in our public domain citizens and government agencies.

The key assumption which defines a two-sided market is that the utility a buyer derives from joining the platform depends on the number of sellers on the other side of the market, and vice versa, the profit of a seller depends on the number of buyers connected to the platform. Indeed, in the price-comparison website example (and all the other examples above) it is natural to think that the more sellers there are, the more choices a buyer has and in addition competition is fiercer, thus buyers' utility in increasing in the number of sellers on the platform. Similarly, everything else equal, the more buyers there are on the platform, the higher sellers' expected sales are, thus the higher their profit. Following a large part of the economics literature, we call this effect a *cross-group externality*. Note that it is common to refer to it as an *indirect externality*.

In all of the motivating examples above, the cross-group externalities are positive on both sides: the more agents are connected to the platform on the one side, the higher the utility of the agents on the other side. In the rest of this paper, we will focus on this case as we believe this is the relevant assumption for public platforms. However, it is worth noting that in some important two-sided markets one group exerts a negative cross-group externality on the other. The most prominent of such markets are advertising: for both traditional newspapers and websites, more advertisement tends to alienate readers, whereas the advertisers clearly benefit from a high number of readers. Therefore, one of the cross-group externalities are negative, and the other one is positive. Clearly, a market where both sides dislike the presence of the others (i.e. both cross-group externalities are negative) is unlikely to arise.

Having defined the three groups of agents in the model, we can now turn our attention to the pricing structure. Intermediary platforms typically have the opportunity to charge two types of prices to both buyers and sellers connecting to them: (i) usage fees that buyers and/or sellers have to pay for each transaction, or (ii) membership fees that buyers and/or sellers have to pay only once to connect to the platform and is independent on the number of transactions they make afterwards. In reality, many platforms charge a combination of the two, see e.g. the fee structure of Amazon Marketplace or eBay for sellers. Importantly, [2] demonstrated that in the case of monopolistic platforms, which is the focus of this study since public portals are either in this status or intend to achieve this, the two pricing structures lead to the same market outcomes and welfare results. Therefore, in the following we will assume that the platform only charges membership fees, which is arguably the simpler case to analyze. Therefore, we assume that the monopoly platform has two tools to maximize its profits: it charges membership fees M_B and M_S for buyers and sellers, respectively. The main question is how the platform determines these membership fees optimally, and what are the managerial implications and welfare effects of such strategies.

For simplicity, assume that on the platform each buyer has a unit demand for each seller's product and sellers are willing to transact with each buyer. Moreover, let the terms of these transactions be independent of membership fees (e.g. because membership fees are already sunk costs at the time of transactions). Then each seller will derive the same profit π per transaction and each buyer will derive the same utility u per transaction. Therefore, the total surplus of a seller joining the platform can be written as

$$v_S = n_B \pi - M_S + k \dots (1)$$

where n_B denotes the number of buyers and k their so called stand-alone benefits, i.e. their utility when there are no agents on the other side of the platform. For example, even if there are no sellers of a product, buyers can benefit from the product description or previous ratings on price-comparison websites. Similarly, in public platforms news, or general information is valuable to both sides. Indeed, given our assumptions, the sellers derive profit π exactly n_B times, and has to pay M_S to the platform plus they get their stand-alone benefits. Similarly, the total surplus of a buyer joining the platform can be written as

$$v_B = n_S u - M_B + k \dots (2)$$

where n_S denotes the number of sellers on the platform and k is again their called stand-alone benefit. Clearly, the total surpluses are increasing in u and π which capture the cross-group externalities in this model. As they are both assumed to be positive, each side benefits from an increased presence of agents on the other side. We make the technical assumption $u + \pi < 2$ which we will motivate after solving for the demands on the platform.

To determine how many buyers and sellers join the platform for a given pair of membership fees, one has to define their outside option (i.e. their utility when not joining the platform). Let these outside options be uniformly distributed on $[0, o]$, where o denotes the total mess of buyers and sellers, respectively. Then the equilibrium number of buyers and sellers on the platform will be simply given by the functions $v_S = n_S$ and $v_B = n_B$. Replacing these values to the equations above and solving the resulting system of equations leads to demands

$$n_S(M_S, M_B) = \frac{k(1+\pi) - M_S - \pi M_B}{2 - \pi - u} \dots (3)$$

and

$$n_B(M_S, M_B) = \frac{k(1+u)-M_B-uM_S}{2-\pi-u} \dots (4)$$

One of the key features of these demands is that buyers' demand decreases in M_B, but also in the price of sellers M_S. This reflects the cross-group externality of sellers on buyers. In particular, a larger M_S reduces the number of sellers, which makes the platform less attractive for buyers as well. To see this, if buyers do not benefit from the presence of sellers (i.e. if $u = 0$), buyers' demand is independent of M_S.

Notice that without assumption $u + \pi < 2$, the optimal demands show that infinitely high membership fees would be optimal: as the denominator is negative, decreasing the numerator by higher membership fees would increase demand and therefore the total profit. This is clearly unrealistic, which is why the entire economics literature on two-sided markets makes this assumption.

Now we can write the maximization problem of the monopoly platform as follows:

$$\max_{M_S, M_B} n_S(M_S, M_B)(M_S - C) + n_B(M_S, M_B)(M_B - C) \dots (5)$$

where C is the marginal cost for the platform of serving an extra buyer or seller (we assume $C < k$ to avoid the trivial case of an empty platform). Replacing the demand functions derived above into the profit function, deriving it according to M_S and M_B and solving the system of first order conditions gives us the optimal membership fees as a function of the parameters of the model. It is straightforward to see that the profit function is concave quadratic in the membership fees so the first order conditions indeed define a maximum. We have

$$M_S^* = \frac{k(1-u)+C(1-\pi)}{2-\pi-u} \dots (6)$$

and

$$M_B^* = \frac{C(1-u)+k(1-\pi)}{2-\pi-u} \dots (7)$$

A first key result is that the side that exerts a larger cross-group effect on the other side will be subsidised in optimum, i.e. that side will have a lower membership fee. Indeed, consider the case when buyers exert a larger cross-group external effect on sellers than vica versa, i.e. $u > \pi$. This directly leads to the optimal membership fees $M_B^* < M_S^*$. We often observe such discounts in real-word two-sided markets, for example many nightclubs offer reduces or even free entry to women, buyers can typically use price-comparison websites for free, etc.

Regarding public portals, this demonstrates clearly why the citizen side should be subsidized in order to achieve optimum profit – or public benefit in this setting. This recognition is even more important and pragmatic, if we also interpret price in this case as the transaction cost for citizens using the platform. The easier to access and use, the lower this price is.

Another key observation is that the platform benefits from creating a "virtuous cycle" of more sellers attracting more buyers, more buyers attracting more sellers, and so on. The platform can then partially extract the increased utility of buyers and sellers in the form of increased membership fees. This result hinges having positive cross-group externalities on both sides, as one can see from the optimal profit value:

$$\pi^* = \frac{(k-C)^2}{2-u-\pi} \dots (8)$$

In other words, the profit of the platform is increasing in both externalities because the happier sellers are to have buyers, the easier to attract them, and the larger transaction fees the platform can charge to them. As a result, the monopoly's profit will increase.

As the above results demonstrate, one way of creating such a virtuous cycle is subsidizing one side of the market. In the past decade, this lesson has become widespread in business circles as well. Indeed, there is anecdotal evidence that when creating a startup, many companies start by asking themselves which side of the market to subsidize, not whether they should subsidize one at all[3]. In the case of public platforms the chicken-egg problem is usually cracked by starting to build up supply on the seller side (government services) and subsidies the buyer side (citizens and corporations).

3. Some dynamic models of monopoly platforms

The model based on [2] described in Section 2 is a static model, by assumption all interactions take place simultaneously. As usual in the industrial organization literature, the model assumes perfectly rational agents on both sides of the platform, who form correct believes about the action of others. Based on these beliefs they maximize their utility simultaneously which leads to the Nash equilibrium of the game as described above.

In reality, the dynamics of acquiring new customers can be crucial for a platform. Although it is present in the above model in a simplified way through beliefs, it can certainly be fruitful to open the black box of platform dynamics and investigate more directly its effect on customers and platform profit. In this Section, we describe two models that attempt this; [8, 9].

The main contribution of [9], which is essential in the case of public platforms, is documenting that the customer base can be viewed as a critical factor in the case of two-sided markets. More precisely, the article argues that the size of the two markets a platform connects (e.g. the number of citizens and government services) constitutes resource heterogeneity. Resource heterogeneity, in turn, acts as an isolating mechanism for platforms. Identifying isolating mechanisms is key in the resource-based view of competitive advantage [10] and the literature had not discovered the installed customer base on the two sided as an isolating mechanism before. Therefore, the main goal in [9] is to build a model that demonstrates that the size of its customer base can lead to lasting competitive advantage for a firm.

In more technical terms, the article argues that it is thanks to the presence of positive cross-group externalities that the platform can turn their customer bases into critical resources which then brings about sustainable competitive advantage. They focus on monopoly platforms and competition with two-sided single-homing, i.e. a situation in which agents on both sides join exactly one of the two competing platforms. As argued above, the monopoly platform is more relevant in the public platform context, so in what follows we describe their dynamic monopoly model.

To demonstrate the main point, we put a simplified version of the standard monopoly platform model (as described in Section 2.) in a dynamic context. This allows then to study the growth of a monopoly platform in a stylized way. For tractability, we sacrifice one of the key elements of the static models, namely, prices are no longer endogenously determined, instead, prices are given, which is very

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[3] https://www.applicoinc.com/blog/7-strategies-solving-chicken-egg-problem-startup/

plausible in public platforms. With these simplifications, the main question can be focused to the evolution of the sizes of the two customer bases on the two sides of the market.

3.1. Basic setting

Using the above notation, let n_B denote the number of buyers and n_S the number of sellers on the platform. As in [2], this model also makes the simplifying assumption that all agents interact with all agents on the other side of the platform, thus the number of transactions are also given by, n_B and n_S.

Slightly more general than the model in the previous section, [9] allows for two types of fees that the platform can charge: in addition to membership fees M_S and M_B, they also allow for per-transaction fees r_S and r_B for sellers and buyers, respectively. However, they normalize the stand-alone benefit to zero, i.e. $k = 0$.

Now one can write the net benefit of sellers and buyers, NB_S and NB_B, respectively, as follows:

$$NB_S = (\pi - r_S)n_B - M_S \dots (9)$$

and

$$NB_B = (u - r_B)n_S - M_B \dots (10)$$

Clearly, these net benefits are increasing in u and π which capture the cross-group externalities in this model, as before. Moreover, it makes sense to assume $u > r_B$ and $\pi > r_S$ otherwise no transaction would take place in this market. This is assumption is not easy to maintain in a public platform, where buyers often experience high transactions costs (ie. difficulties to use the portals) compared to the value of services they receive, often resulting in abandoning government e-services for other e.g. off-line options.

3.2. Growth dynamics

Next, the main contribution of this [9] assumes an explicit dynamic process for the platform to acquire new customers or to lose existing ones. The model assumes that each participant is the same from the platform's point of view, therefore on the micro level the order of joining the platform is random. However, importantly, the authors assume that on the macro level the net benefits drive the diffusion process. In other words, they formalize the intuitive idea that the higher the net benefit of a buyer is in a given period, the more buyers will join the platform. The same assumption is made for sellers. This is a typical approach in the system dynamics literature applied to two-sided platforms.

Formally, the authors assume that on each side of the market, the rate of adaption of the platform is proportional to the net benefit the platform provides. As a direct consequence, the two-dimensional dynamic system describing this market writes as

$$\dot{n}_B(t) = \alpha[(u - r_B)n_S(t) - M_B] \dots (11)$$

and

$$\dot{n}_S(t) = \beta[(\pi - r_S)n_B(t) - M_S] \dots (12)$$

where

t denotes time, $n_B(t)$ denotes the number of buyers and $n_S(t)$ the number of sellers at time t. Moreover, $\dot{n}_B(t)$ and $\dot{n}_S(t)$ denote the rate change (increase or decrease) in buyers and sellers at time t, respectively. The parameters α and β denote the speed of diffusion and they are assumed to be strictly positive.

Notice that according to the above formulation, if the net benefit for a group is positive then there are more agents of this group joining the platform. Conversely, when the net benefit is negative, customers are quitting the platform.

3.3. The unique equilibrium and its interpretation

The main mathematical result of [9] is the identification of the unique equilibrium of this dynamic system. It is a saddle point described by

$$\overline{n_B} = M_B/(u - r_B) \ldots (13)$$

and

$$\overline{n_S} = M_S/(\pi - r_S) \ldots (14)$$

This means that the system can have three different types of long-term behaviour depending on the initial number of agents connected to it. First, if the initial demand is below the saddle path then the platform dies out, i.e. loses all buyers and sellers. Second, if the system starts above the saddle path then it will grow towards infinity. Third, if the system starts on the saddle path then it will converge to the equilibrium point $(\overline{n_B}, \overline{n_S})$.

Based on the authors of [9] we can give the following interpretation. It is the membership that makes potential participants into platform customers, therefore it is the membership that converts external factors into critical resources of the firm. Sun and Tse in [8] and [9] explained their results rooted in the resource based view of the firm. We recommend the use of these terminologies and theoretical foundations to explore the dynamics of public platform behaviour and examine how sustainable growth or equilibrium can be established. For this we show in the next section how system dynamics can be applied.

4. System Dynamics

System Dynamics (SD) is a method for studying, designing, and managing complex feedback systems by modelling their macroscopic structure through causal loop diagrams and simulating their behaviour through stock-flow models in a top-down manner [11]. SD models are deterministic continuous compartment models, working with differential equations. The great strength of the SD methodology is its high abstraction, educational clarity, and computational robustness [12].

In Figure 1. we depicted a causal loop illustration of a general platform model using system dynamics [13]. We can identify reinforcing causal loops (R1, R2, R3) which generate growth of the variables such as revenues, number of users and providers or development efforts; and we can also spot balancing loops (B1) referring to [9] where variables change in opposite directions – the growth of end users for instance reduces the competitive effort, which directs the platform towards equilibrium.
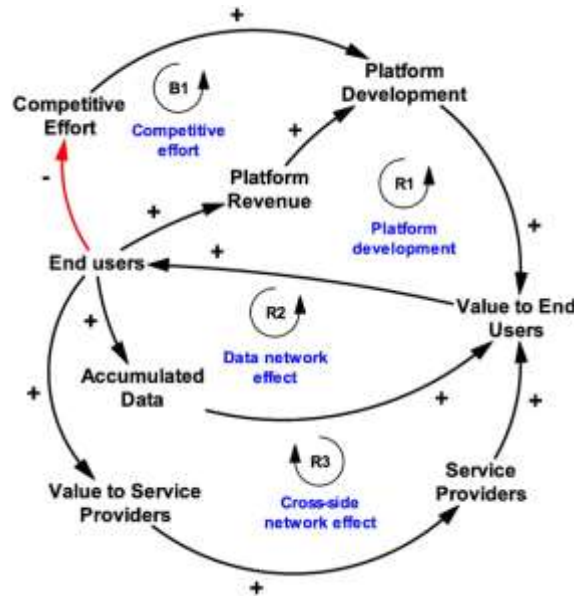
Figure 1: Causal Diagram of Platform Development by Ruutu, Casey and Kotovirta [13]

Another system dynamics model is shown in Figure 2. taken from [14] using stock and flow technique [12].
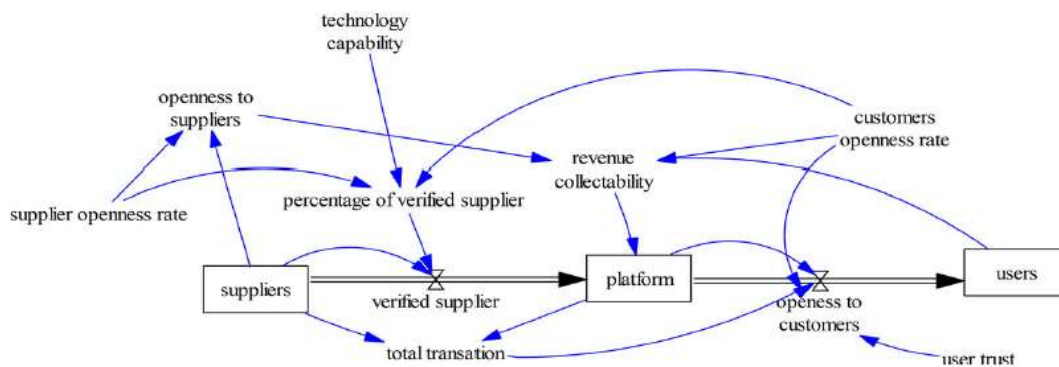

Figure 2: Stock and Flow Diagram of a general platform by Yun, Won, Park, Yang, and Zhao [14]

In Figure 2. we are able to study the three key stock (or state) variables – number of suppliers, the platform value, and the number of users. Their values increase directly by the flow (or derivative) variables – in this case these are the openness and the number of "verified" suppliers together with other modifiers such as technology capabilities or users´ trust.

Stock and flow models serve the visual representation of the differential equations such as we have seen in Section 3. describing the rate of change in our dynamic systems. Figure 3. shows a predator-prey dynamics with two state variables (similar to platform buyer and seller side) and Figure 4. the behaviour of this system over time as predators or preys overshoot periodically.
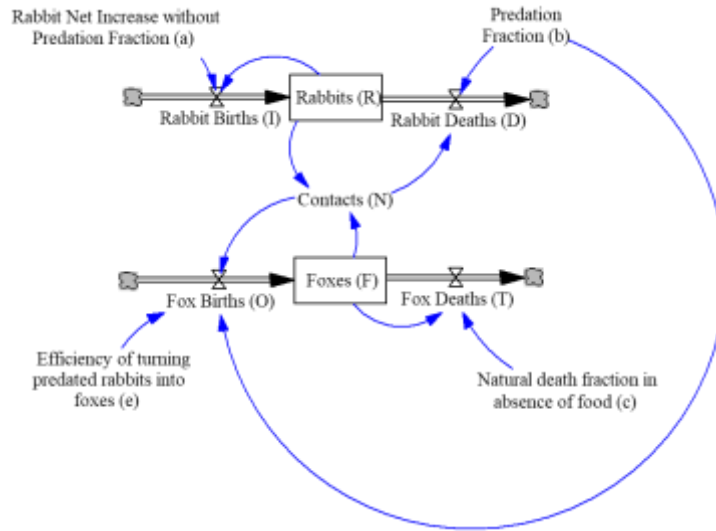
Figure 3: The archetype of a prey-predator model to illustrate simulation and behaviour
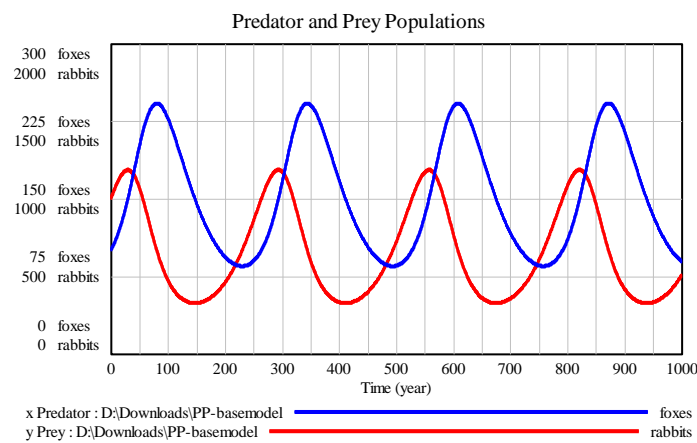
Figure 4: The results of running the prey-predator system dynamics model

Results of platform simulations show similar patterns using Figure 5. as an illustration. Casey and Töyli [15] were simulating platforms with vendors and users – lines 2 and 4 representing vendors; 1 and 3 representing users – at the two sides. The flat curves at the lower part – when 1 and 2 runs together – represent the scenario when there is no subsidization in the platform and in this case we do not see a high level of adoption and platform penetration. When there is subsidization, however, shown in the upper part with the growing curves of 3 and 4, we witness a quick upscale in both numbers of vendors and users. Vendors appear quicker, given that the model has a higher subsidy for the users given that vendors have a higher interest in generating the saturation in the platform, Similar strategy applies for public portals where there is higher interest for the government to generate user participation – so we can accept similar patterns of behaviour in that setting.
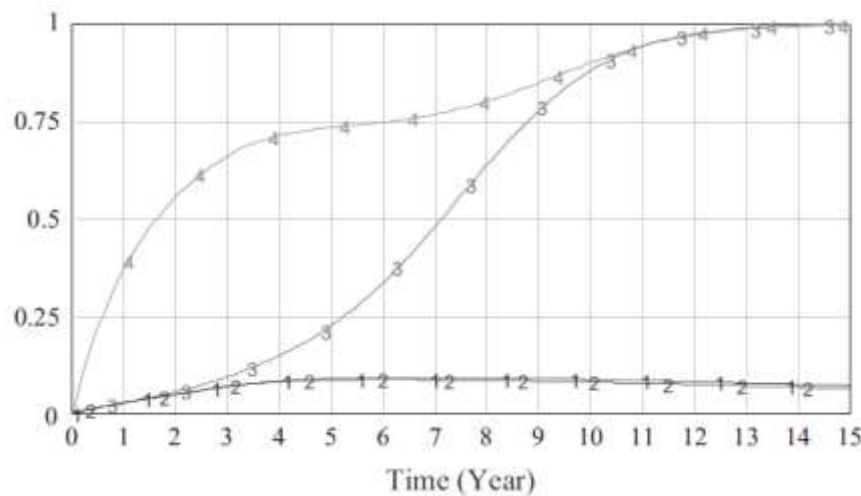
Figure 5: System dynamics simulation on a two-sided market in Casey and Töyli [15]

5. Conclusion and Summary

The microeconomic theory of two-sided markets or platforms might be successfully used to model public or government portals which intend to generate a critical mass of citizens on one side, and a large number of services and agencies on the other. The concept of single-homing monopoly platforms describe the problem of how cross-group externality occurs, and how maximum value of the platform can be achieved.

By using the dynamic model of platforms and combining it with system dynamic simulation, we have also shown that different scenarios and strategies might be tested, how to generate network effects for generating participation. This concept can improve and support government portals´ deployment as well by using the terminologies and concepts of platform economics.

6. Acknowledgement

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eGovernment and the EU

DIGITAL SINGLE MARKET –
A NEW IMPETUS ON EU SOCIAL POLICY?

Daniel Zimmermann[1]

Abstract

In July 2019 the new president of the European Commission, Ursula von der Leyen, presented her guidelines for the period of presidency 2019-2024. While most proposals perpetuate the current reform agenda, the focus on the social dimension of the single market is remarkable. Von der Leyen has not only announced the full implementation of the European Pillar on Social Rights, but also highlighted new investment in digital competences seen as a key to competitiveness and innovation of the European economy. This paper will discuss whether the dynamics of the digital single market could lead to a new impetus on EU social policy and on European funding of training programmes. Therefore, an overview of significant funding programmes promoting digital skills is given.

1. Introduction

In July 2019, the candidate for the presidency of the European Commission *Ursula von der Leyen* presented her guidelines for the period 2019-2024 mainly focusing on environment and climate, the social dimension within the single market, trade, digitalization and new technologies, migration and defence policy [23]. Apart from the announcement of a European Green Deal the social dimension by fully implementing the European Pillar of Social Rights (EPSR) will be a major goal for the new European Commission. Focusing on these social issues one should bear in mind that the EU-treaties lack strong social competences, and so the EU is only able to support the member states in intergovernmental ways vitalizing the efforts of their national social policy or setting common social standards to enable the free movement of people within the single market. Thus, instruments are provided financing social projects, investing in competences of labour forces or supporting the unemployed persons. Consequently, the European Social Fund plus (ESF+) will concentrate on implementing the EPSR within the post 2020 period. On a globalized digital market, investment in digital competences will be urgently required to prepare the labour forces for new jobs in digital areas. Erasmus+ will concentrate on digital competences and could so enable a European education policy as a vital element of strengthening national social policy.

This paper will discuss whether the dynamics of the digital single market could lead to a new impetus on EU social policy and on European funding of training programmes to close the digital skills gap. If so, public and private actors within the member states have to adapt their own projects to EU strategic goals. For this reason, this paper will give a summary of significant funding programmes promoting digital skills. Challenges and difficulties in case of implementing European funding on a regional and local level are examined with special regard to the German federal state Baden-Württemberg. In addition, an outlook will be given on how public administrations could support the EU objectives in a more effective way. Based on the proposals of regulations which were published

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by the European Commission in May 2018 this paper will scrutinize whether and to what extent a promotion of digital skills could achieve a more social Europe. The proposals will be adopted by the European Parliament and the Council probably by the end of 2020. In all likelihood, no crucial changes are expected regarding the funding priorities.

2. Lack of digitally skilled persons

The impact of digitalization on labour markets within the member states of the EU is undeniable. Studies by economists predict a massive loss of jobs [21]. For instance, drones or robots could replace jobs in the transport or service sector. But the public as well as the manufacturing sector are affected as well. Therefore, pessimists predict the increase of unemployment among European countries [21] having the potential for social conflicts within European regions.

Nonetheless, EU officials expect a brighter future regarding digitalization as an opportunity for innovation, growth and jobs [11]. Due to the digital single market strategy of the European Commission, digitalization is also considered to be a major factor for European business. Consequently, a better access for consumers and businesses to online goods, the creation of the right conditions for digital networks and services and investment in information and communications technologies (ICT) is needed in connection with better public services, inclusiveness and skills [11]. Whereas digital skills might be required by 90 % of the jobs in future, the European Commission acknowledges a gap of digital skills in Europe stating that 44 % of the European workforce do not have basic digital skills [9].

In order to keep the negative effects on labour markets of the EU member states on a low level, adaptions of education and training systems are required to prepare labour forces for new jobs in the areas of digitalization. The European Commission estimates a lack of nearly 1 million digitally skilled employees by 2020 acknowledging digital skills and expertise as key components of future initiatives [11]. An initial report of the European Parliament aims to the same direction demanding a European strategy for digital education at schools and further training for employed persons [12]. In order to face the challenges of digitalization an active employment policy is needed to keep the EU competitive coming along with efforts in education and training. From the EU's point of view a high employment rate seems to be the best way to prevent social imbalance and crisis.

3. Social dimension of EU employment policy

Article 3 of the Treaty on the Functioning of the European Union (TFEU) aims at the development of a highly competitive social market economy with full employment and social progress within the European single market. When we look at Article 9 TFEU the social dimension is even more substantial as it confirms that European policies and activities should be linked to the promotion of a high level of employment, the guarantee of adequate social protection, the fight against social exclusion and a high level of education, training and protection of human health.

In contrast to these goals, the EU-treaties lack strong social competences remaining within the competences of the member states. As a result, the deployment of EU regulatory measures in the fields of social and educational policy are contested by the member states [22]. Up to now, EU competences in the areas of social policy are rather limited. Article 152 TFEU assigns the EU only supporting and complementing competences vitalizing the efforts of the national social policy or setting common social standards to enable the free movement of people within the single market.

3.1. Areas of EU social policy

Instruments and priorities of EU social policy differ from national social policy shaped by different welfare state systems [16]. While national social policy mainly addresses social security systems and measures to ensure social justice, the social dimension of the common market is basically related to labour [2]. Foremost, EU social policy is based on the free movement and mobility of employees. Thus, it mainly aims at protecting the relevant persons from social risks, at harmonizing working conditions, approving of qualification within the EU member states, creating common rules on pension entitlements and much more. Furthermore, European funding supports the employability of the labour forces basically investing in education and training. Last but not least, there are several instruments to coordinate national social policy in fields of social protection, employment, health and the reduction of poverty [16]. For this purpose, the Open Method of Coordination (OMC) which was introduced by the Lisbon Strategy in 2000 provides a nonbinding mechanism for comparing improvements to achieve European benchmarks by the member states. As a result of the monitoring of the European Semester to implement the goals of the Strategy Europe 2020, social policy goals have recently been integrated into economic policy [3]. Acknowledging the importance of the social dimension of the digital single market, the European Commission launched the EPSR setting out several principles which will be clarified in the next section.

In a nutshell, EU social policy is mostly linked to employment policy keeping the labour forces prepared for new challenges and jobs demanding new competences such as digital skills. That is why education and training have been turned into key factors to promote the employability of labour which leads to benefits in the single market.

3.2. European Pillar of Social Rights (EPSR)

The EPSR is a nonbinding political declaration of the former European Commission. Nonetheless, *Ursula von der Leyen* emphasized its importance by announcing an action plan to support the implementation [23]. Critics rank the term 'social rights' as misleading because the EPSR does not content genuine social rights [15]. In fact, its function is to create common principles. When we have a closer look at these principles, the ESPR perpetuates the labour-based social policy focusing precisely on three chapters which are equal opportunities and access to labour markets, fair working conditions and social protection and inclusion [13]. Several of totally 20 principles are related to each chapter. With special regard to the subject of this paper, principle 1 outlines education, training and life-long learning in order to acquire skills to manage transitions on the labour market successfully. In accordance with the 'European Skills Agenda' the promotion of digital competences is directly linked to this principle [10]. Hence, despite its nonbinding character, the ESPR turns training into a solid political objective.

By focusing on social aspects, the ESPR has the potential to close the social gap of the Europe 2020 strategy [15]. The announcement of its full implementation by *Ursula von der Leyen* can be assessed as a step in this direction. Looking at the future period 2021-2027 of the European cohesion policy, the social dimension will be considered by precisely aligning the ESF+ to the principles of the EPSR [6].

4. Instruments to promote digital skills

As the previous chapter has already shown, the fundamental idea of the recent development of EU social policy is strengthening the skills and capacities of labour forces, rather than providing social protection detached from the single market [16]. The following section introduces the existing steering instruments at EU-level allowing interventions by the EU to close the digital skills gap. Primarily, we have to differ between instruments of distribution and of coordination. While distributive instruments such as the European structural funds or the European action programmes offer funding in favour of public and private actors for projects contributing to European objectives, policy coordination aims at the change of national social and employment policy. As already stated above, the OMC and the European semester have recently become the most vital instruments.

4.1. Funding by ESF

The ESF is the most significant structural fund together with the European Regional Development Fund (ERDF) to strengthen the economic, social and territorial cohesion of the European regions. According to Article 174 TFEU, the EU shall aim at reducing disparities between the level of development of the various regions and the backwardness of the least favoured regions. Whereas ERDF funding is mainly directed to infrastructure, environment and innovation, the ESF is the most important instrument to financially support employment measures, better education and social inclusion. Due to Article 162 TFEU, the fund aims to make the employment of workers easier and to increase their geographical and occupational mobility within the EU. Further goals are the adaptation to industrial changes and to alterations in production systems, particularly by vocational training and retraining. It is evident that ESF funding is based on the activation and labour market participation comprehending both as the best measures to prevent social exclusion [6].

Starting from the period 2014-2020 the European Commission has launched a new approach on outcome orientation. Thus, the priorities of the structural funds ESF and ERDF were closely linked to the Europe 2020 Strategy from 2010 to support intelligent, integrative and sustainable growth and create new jobs [24]. As a result, EU funding should also contribute to the EU digital agenda by promoting digital skills. Critics state that the cohesion goal of Article 174 TFEU has been displaced by the focus on growth [1]. Nonetheless, the European Commission is going to maintain its strategic approach within the post 2020 period even though a sequel of the Europe 2020 Strategy has been missing so far. In accordance with the Commission's proposal, the following policy objectives will be applied from 2021 to 2027 [7]:

(a)   a smarter Europe by promoting innovative and smart economic transformation;
(b)   a greener, low-carbon Europe by promoting clean and fair energy transition, green investment, the circular economy, climate adaptation and risk prevention and management;
(c)   a more connected Europe by enhancing mobility and regional ICT connectivity;
(d)   a more social Europe implementing the EPSR;
(e)   a Europe closer to citizens by fostering the sustainable and integrated development of urban, rural and coastal areas and local initiatives.

Policy objective d) is part of the ESF which shall be transformed into an ESF+ in the period 2021-2027. The 'plus' takes into consideration that besides the ESF the Youth Employment Initiative (YEI), the Fund for European Aid to the Most Deprived (FEAD), the Employment and Social Innovation programme (EaSI) and the European health programme will be in the scope of the ESF+ regulation [6]. Due to Article 3 of the applicable proposal by the European Commission, the ESF+

shall support member states to achieve high levels of employment, fair social protection and a skilled and resilient workforce ready for the future world of work. In Article 4, digital skills are identified as key competences for future labour markets. Consequently, the funding by ESF+ should focus on the alignment of education, training systems and lifelong learning concerning digital needs. Due to the proposal for a multiannual financial framework 2021-2027 by the European Commission, the ESF+ shall be stocked with 101 billion Euro for the period of seven years [7].

Additionally, the Council announced the programme 'Digital Europe' in June 2019. Even though the financial background of the programme has not been set out yet due to the ongoing negotiations on the multiannual financial framework of the EU for the post 2020 period, EU funding should be provided for the fields of artificial intelligence, cyber security, advanced digital skills and the distribution of digital technologies [4].

4.2. Funding by Erasmus+

Whereas the ESF+ focusses on employability of the work forces, the EU Erasmus programme is a vital instrument of the European education policy. With the start of the period 2014-2020 several educational programmes where integrated into the Erasmus+ regulation including Comenius (school education), Erasmus (higher education), Erasmus Mundus (international higher education), Leonardo da Vinci (vocational education and training) Grundtvig (adult learning), Youth in Action (youth) and sports. The budget for Erasmus+ is more limited compared to the EU structural funds. The proposal for the multiannual financial framework of the EU by the European Commission suggests a total amount of 30 billion Euro for the future period [8].

Erasmus+ funding is based on individual scholarships for student exchange, traineeships and staff mobility programmes or financial support for organizations such as universities [19]. In the fields of vocational training, Erasmus+ can be used for occupational traineeships in educational institutions or enterprises and for staff mobility to acquire learning and training in organizations abroad. In addition, the European Commission introduced a training initiative to promote the employability of recent graduates which was integrated into the scope of Erasmus+ in 2018. So-called 'digital opportunity traineeships' are provided for 6.000 students and graduates at the most [5]. Helping companies to fill job vacancies with digitally skilled candidates is the programme's main objective.

The following chart gives an overview of the total amount of funding due to the proposals by the European Commission [8]. It shows that the budget for social and educational projects is more limited in comparison to economic development which is funded by the ERDF and the European cohesion.
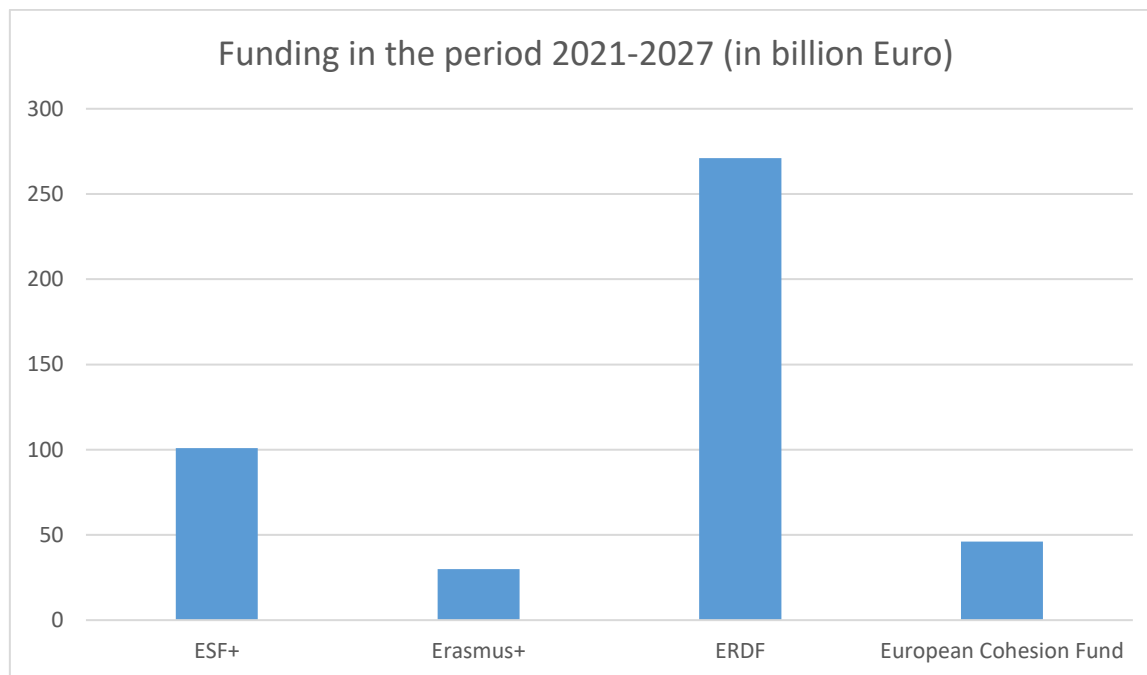
Table 1: Funding in the period 2021-2027 (in billion Euro)

4.3. Soft instruments by best practice

Apart from financial instruments, soft instruments concern common objectives, guidelines or benchmarks adopted at the EU-level mainly by the European Commission. The OMC is the most common instrument for nonbinding decision making. So, the member states decide voluntarily how to achieve such objectives or whether they shall be achieved at all. Information is the driving force of the national adaption of policy concepts to European benchmarks being exchanged among the member states. Soft instruments are expected to favour cross national convergence without coercion and lead to policy practice by identifying the 'best' concept within European member states [22]. Therefore, other states are able to adapt their national policies to keep up with advanced countries. To this point, the OMC has been implemented in policies such as employment, social policy, health and education having the lack of European competences in common. In a more general way, the European semester was introduced in 2010 together with the Europe 2020 strategy. It allows member states to coordinate and discuss their economic and budget plans. Significant country reports are frequently monitored by the European Commission throughout the whole year.

Crucial initiatives of the European Commission such as its 'Skills agenda for Europe' are following this approach demanding member states to invest more in digital skills across the whole spectrum of education and training [10]. The European Commission invites member states to develop comprehensive digital skills strategies and monitor pertinent progresses annually [10]. Soft instruments play a major role in constructing a European education policy as well. Therefore, the founded European Qualification Framework (EQR) is an instrument to measure the output of national education systems in view of making qualifications more transparent [22]. Based on the EQR, the EU member states have to submit reports to the European Commission.

5. Consequences for administrative actors

The previous chapters proved that the competences of the EU are very limited in the fields of social policy. Whether the objectives of the EPSR will be achieved depends on the will and the measures of the member states. Likewise, the weaknesses of policy coordination can be found in its nonbinding character leading to voluntarily induced efforts by the member states.

EU funding seems to be a more effective method to achieve European social objectives. In order to adapt regional and local projects to those objectives, EU structural funds and comparable funding programmes must find their way to the regional and local level [24]. Unlike the Erasmus+ programme which is directly managed by the European Commission, the Education, Audiovisual and Culture Executive Agency (EACEA) and national agencies in programme countries, the management of ESF+ implies a multilevel approach. For a seven-year period, several regulations are adopted at the EU-level including the common provisions regulation and the relevant fund-based regulations. In May 2018, the European Commission published its draft for a common provisions regulation which defines general goals and management principles for all structural funds. In addition, particular regulations include special requirements for the structural funds such as ESF+ and ERDF.

5.1. Challenges for regional authorities

On the ground of the goals and requirements of the regulations and the partnership agreement between the EU and the member states, so-called 'Operational Programmes (OP)' have to be adopted on a regional level to implement cohesion policy [24]. By introducing a code of conduct on partnership during the period 2014-2020, partnership has been considered as an elemental principle of the implementation of cohesion policy [20]. That is why the cohesion policy plainly exemplifies multilevel-governance. Referring to the OP, potential beneficiaries such as local authorities, educational, social or cultural facilities or even private companies are able to apply for the European structural funds. In this section, we have to differ between the regional and the local level while dealing with the consequences for administrative actors.

In a federal state like Germany, the German 'Länder' are obliged to frame the OP, mainly the ministry of economic or social affairs. During the whole implementation process, the European Commission works closely together with national, regional and local authorities and intensely controls the match making between its policy objectives and the regional needs. Our studies concerning the implementation of cohesion policy during the period 2014-2020 in the German Länder showed clearly that the strategic objectives of the EU were not fully respected, coming along with allegations that the EU funding system was too complex and complicated [20]. Especially when we take a look at the future period with its focus on 'a more social Europe', signs for misinterpretations can be found in the fact that the EU social policy is fundamentally different from the national understanding being more related to social security. The responsible authorities should free themselves from the national social policy while programming the future funding period bearing in mind that funding by ESF+ should mainly be used to support the employability of workers. Particularly in member states with a low employment rate and a high demand on qualified workers, the priority should be put on qualification and training programmes to promote digital skills.

5.2. Challenges for local authorities

On the basis of the OP, regional authorities announce calls giving potential beneficiaries the possibility to submit applications for support. In the case of Erasmus+, applications have to be directly

addressed to the European Commission or the EACEA. What the financial instruments have in common is that they have been criticized by local actors for being far too complex and will induce a high administrative workload [25]. However, a high motivation of individuals, incentives (e. g. economic decline, high unemployment in a particular area) and a detailed knowledge of the European funding system in order to link own requirements with the goals of the structural funds are required to be competitive [25]. Consequently, local actors must have an understanding what the priorities of ESF+ are and how to apply for funds successfully. But when we take a look at the results of studies concerning Baden-Württemberg, we see that most of the 260 billion Euro of the ESF funding has been called up by private institutions [18] until August 2018:

Beneficiaries of EU funding in Baden-Württemberg (in %)

- Private sector - Local authorities - Public institutions
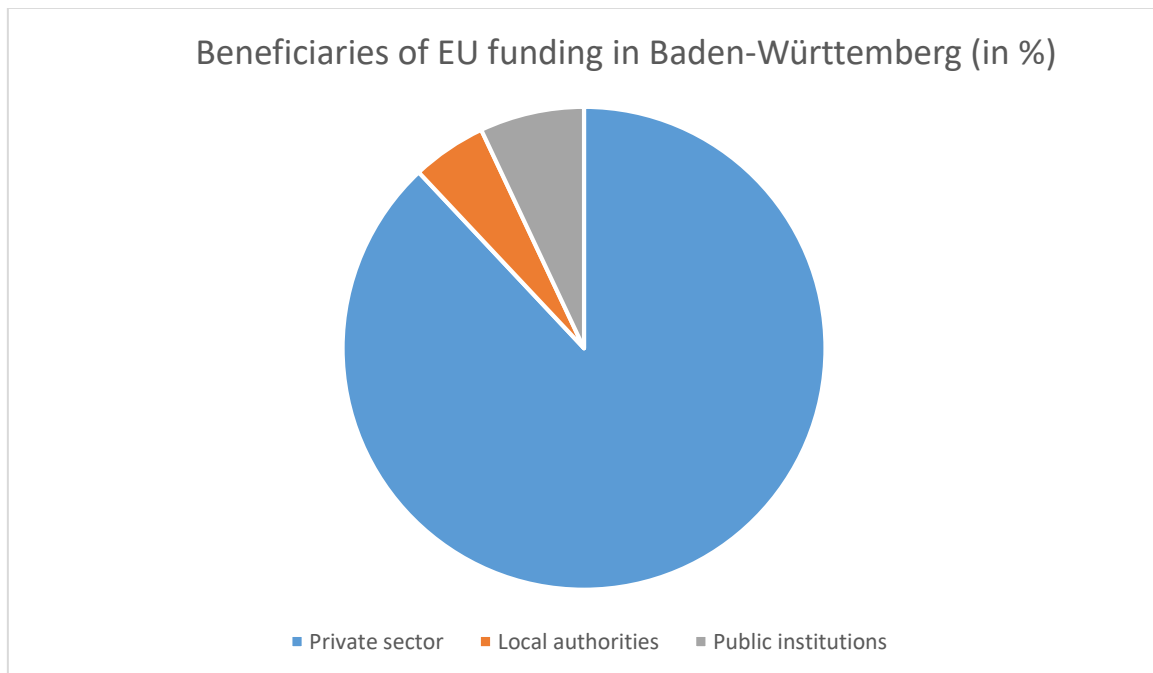
Table 2: Beneficiaries of EU funding in Baden-Württemberg (in %)

On the local level, the cities with over 100.000 inhabitants and the rural districts, the so-called 'Landkreise', accumulated over 90 % of funding making them much more successful than smaller municipalities. However, in order to promote digital skills in the future period, especially in prosperous regions like Baden-Württemberg which are heavily affected by skills shortage it should be guaranteed that ESF+ funding reaches rural regions with smaller local municipalities.

5.3. Possible solutions

On the one hand, a rise of the total amount of funding by the EU structural funds might be achieved by shaping the calls to fit the local needs by the state ministries. On the other hand, smaller municipalities have to gain experiences and competences to collect EU funding. In order to increase effective building networks with other local authorities and private actors could be appropriate. Networking might also stick to the request of the European Parliament of a closer cooperation between companies, regional and local authorities in fields of digital education and competences [10]. In Baden-Württemberg the contest 'RegioWin' was established within the period 2014-2020 giving ERDF funding to regional innovative strategies including the cooperation of several actors. The federal state of Baden-Württemberg has already announced a renewed call for the next period.

For a closer connection, existing contacts between local authorities and business companies could be used and upgraded as well. For instance, the single points of contact being established by the European Services Directive by the end of 2009 mainly on a regional and local level could be transformed into service centres. *David Fenner* and *Volkmar Kese* introduced a chain model to connect the single points of contact in different member states [14]. Such an interconnection might not only help to identify possible projects, but could also bring local authorities and business companies together in order to exchange staff in the fields of digitalization. In case of Erasmus+, companies in a municipality in Baden-Württemberg e. g. were able to benefit from workers that had been conveyed by the local authority by using its networks in other member states. Moreover, vocational training in institutions in other member states could also be an attractive way for municipalities with a private sector demanding digitally skilled workers.

6. Conclusion

The paper stated clearly that EU social policy is closely related to labour. Therefore, the European Commission recognizes in its digital single market strategy that efforts have to be made to prepare employees for advanced jobs in the areas of digitalization. In order to meet business requirements for digital skills education and training have been turned into key factors to promote the employability of labour. With the programming of the new funding period starting from 2021, investment in digitally skilled persons will be a key aspect of funding by the ESF+ whereas educational and vocational training is more in the scope of Erasmus+. While European funding has the potential to achieve its objectives effectively, soft instruments such as the skills agenda for Europe rely on the will of the member states to adapt their educational policy to the European objectives. The answer to the question of this paper is: Yes, the digital single market does lead to a new impetus on EU social policy when taking the EU perspective ranking it as an element of employment policy.

However, one should keep in mind that the EU member states have not yet been willing to transfer social competences to the EU-level. But when we take a look at European funding instruments on a local and regional level, this paper has shown that misunderstandings of the funding priorities, a lack of competence and the funding system itself criticized for being too complex, hinder the implementation even in prosperous regions. Building up networks between local authorities and the private sector on a local level might improve the acquirement of European funding.

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EINVOICING:
THE INFLUENCE OF THE EU ON THE EXPANSION OF ELECTRONIC ADMINISTRATIVE SERVICES

Katja Posselt[1]

Abstract
The digital transformation poses major challenges for local authorities. In order to keep pace with modern development, various basic administrative procedures need to be digitized. The status of digitization in German municipalities demonstrates that they are reaching their limits. As administrative units are to be considered as an interface between society and state, the following paper will focus on this topic.

This paper reflects on the necessary expansion of eGovernment services in local authorities against a European background, with the aim of bringing together the European and municipal levels. The European Union (EU) has set itself the goal of contributing to the modernisation of digital public services and serving as a catalyst through various programs. This paper discusses to what extent the EU achieves its stated goal and whether its actions generate added value in local authorities by using eInvoicing as an example. With the Directive 2014/55/EU the EU set a standard, henceforth all European public administrations must be able to accept invoices in electronic format from their suppliers. The paper aims to demonstrate the significance of the above stated directive, with a specific focus on local authorities.

1. Introduction

The digital transformation particularly affects local authorities which are providing basic citizen services for the general public. They are strongly influenced by the change in the way tasks are performed, communication is held, and information is provided.

In the Federal Republic of Germany, local authorities are the lowest hierarchy level of government and represent the direct interface to the citizens. Within the framework of obligatory tasks, they execute laws and offer direct services to citizens, for example issuing passports, approving building permits or the registration of motor vehicles.

Through a successful digital transformation, administrative services can be offered independent of time and place. On the one hand, this fulfils the expectations of the population, on the other hand, it also has positive effects for the local authorities themselves, for example leading to reduction of administrative expenses and increasing efficiency. However, before the introduction of technological innovations can generate added value, local authorities face major challenges. High investment costs, a lack of expertise and isolated solutions make the transformation process more difficult for local authorities.

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In an EU-wide comparison, Germany comes off badly in terms of the dissemination and use of digital public services. [12] The major challenge for local authorities is therefore to overcome these and to push ahead with the digital transformation. A European background is rarely taken into consideration in the expansion of electronic administrative services by municipalities, but the European Union plays a significant role in promoting eGovernment. For example, the EU has set itself the goal of making electronic invoicing the standard in the public sector and fulfil a broad-scale adoption of eInvoicing by 2020. [13]

2. Influence of the European Union

The European Union exerts an undeniable influence on its Member States and their populations. European guidelines influence life and action on the ground, and it is local authorities whom are tasked with implementing European guidelines.

By means of primary Union law, which enjoys primacy of application and direct applicability, the European Union can exert a significant influence on its Member States. [16] The European secondary legislation can also be ascribed great importance. In the field of administration, directives and regulations dominate which by their nature have an impact on national legal systems and promote the Europeanisation of administrative action. [23]

Under Article 197 Treaty on the Functioning of the European Union (TFEU) [25] and Article 291 TFEU, the implementation of Union law is the responsibility of the Member States. The Member States can implement Union law directly (directly applicable Union law) or indirect. Indirect meaning, if a Union legal act first requires specification by the national legislator. [15] During the implementation phase Member States must adhere to certain normative requirements, which are intended to ensure the uniform application of Union law. [1] The principles of equivalence and effectiveness serve as a double barrier and ensure equal treatment and uniformity of Union law. [15]

The 'Soweit-Formel', developed by the European Court of Justice, states that: "In so far as Community law, including its general principles, does not include common rules to this effect, the national authorities when implementing community regulations act in accordance with the procedural and substantive rules of their own national law, … ." [ECJ, 21.09.1983 - 205/82] On the basis of this institutional and procedural autonomy, the Member States have the right and the obligation to implement Union law with their own administrative organisation and their applicable administrative procedural law. [2] However, the 'effet utile' (principle of effectiveness), also developed by the European Court of Justice, must be observed, meaning that a standard should be interpreted and applied in a certain way that optimum effectiveness in terms of the objectives of the Treaty can be achieved. [20]

The limit of the EU's legal influence lies in the exclusive areas of competence of the Member States in which the EU may not act. Administrative procedural law and administrative organisation fall within this exclusive competence of the Member States. [20]

The EU can also gain influence through soft law reflecting in instruments without legal enforcement power. Although, the EU does not necessarily rely on soft law to achieve its regulatory objectives, it can use it to overcome regulatory barriers. Above all, the European Commission, which itself may only adopt implementing acts, can thus give weight to its objectives. [19]

In the context of digitization, the European Union, as the superordinate instance, can use its power by virtue of its legal status to create regulations that promote the expansion of electronic administrative services in the Member States' administrations.

3. eGovernment strategy of the European Union

The European Commission has set itself the goal of modernising the public sector. In particular, interoperable solutions are to be introduced to strengthen the internal market and prevent its fragmentation. [22] This should pave the way for cross-border electronic administration. The background for the EU is the realisation of a digital internal market. Together with the Member States, measures are to be taken to connect isolated digital services and thus make cross-border accepted services a reality. [24] The European Union expresses its objectives in the Digital Single Market Strategy and the current eGovernment Action Plan, which is updated every four years.

Regarding eInvoicing, the European Commission has declared that it is to become the standard in the public sector in Europe by 2020. The focus is on ensuring a coherent legal framework, promoting a common standard and creating an appropriate and flexible environment. [13] An electronic invoice means an invoice that has been issued, transmitted and received in a structured electronic format, which allows for automatic and electronic processing. [9]

As early as at the 2005 eGovernment Ministerial Conference in Manchester, the Member States agreed to focus initially on the standardisation and electronification of cross-border public procurement procedures in a Large-Scale Pilot project entitled 'Pan-European Public Procurement OnLine' (PEPPOL). With the aim of achieving new dimensions of European cooperation and finding a European way forward. [22] In the project, which was launched in 2008, electronic invoicing was considered as a partial package. [3] These so-called Large-Scale Pilots represent on the one hand a political commitment, which are half financed by the European Commission and half by the Member States, and on the other hand are model projects of strategic importance, which produce interoperable and reusable sub-services that can be used by the Member States' authorities as open source solutions. [24]

Building on this Large-Scale Pilot, in which interoperable eInvoicing specifications has been developed, the European Commission reaffirms in the European eGovernment Action Plan 2011-2015 the will to digitize all public procurement and electronic invoicing in a sustainable manner. [24] The European Commission also set up a European Multi-Stakeholder Forum on Electronic Invoicing. [5] The forum serves on the one hand to exchange experience and on the other hand to identify measures at Union level that could support the mass introduction of electronic invoicing. [13] Additionally, the European Commission has established the 'Connecting Europe Facility' (CEF) funding program that supports public entities in the implementation of eInvoicing.

After the European Commission has already implemented various strategies / measures for an increase in electronic invoicing, Directive 2014/55/EU will follow in 2014 to establish electronic invoicing as the predominant method. [9] According to Art. 3 (1) of Directive 2014/55/EU, the European Commission requests the European Committee for Standardization to draft a European standard for the semantic data model of the core elements of an electronic invoice. Under the Directive, the Member States' authorities are obliged to accept and process electronic invoices that comply with this standard by 18 April 2019 at the latest. [6] Although the content of this European standard (EN 16931) lies within the internal organisation of the Member States, uniformity is essential

for the cross-border functioning of electronic invoicing and for the achievement of the European Commission's objectives. [20]

4. eInvoicing in German public sector

With §4a Gesetz zur Förderung der elektronischen Verwaltung [10] and the Verordnung über die elektronische Rechnungsstellung im öffentlichen Auftragswesen [26], the German legislator has implemented the European requirements in national law. The regulation takes the European Standard into account and names XRechnung, a German format developed in the steering project of the IT Planning Council, as the preferred format, which is in conformity with the European standard. [8]

Furthermore, the IT Planning Council obliges the federal and state governments to offer PEPPOL as an access point if they provide a web service for the delivery of electronic invoices. [18] Since the project was completed in 2012, PEPPOL serves as a network providing a web services-based infrastructure for sending and receiving electronic invoices. [21]

The obligation of public entities to receive and process electronic invoices in the future applies initially only to federal authorities. For local authorities, the legal transpositions of the federal states are decisive, but the latest transposition deadline is 18 April 2020.
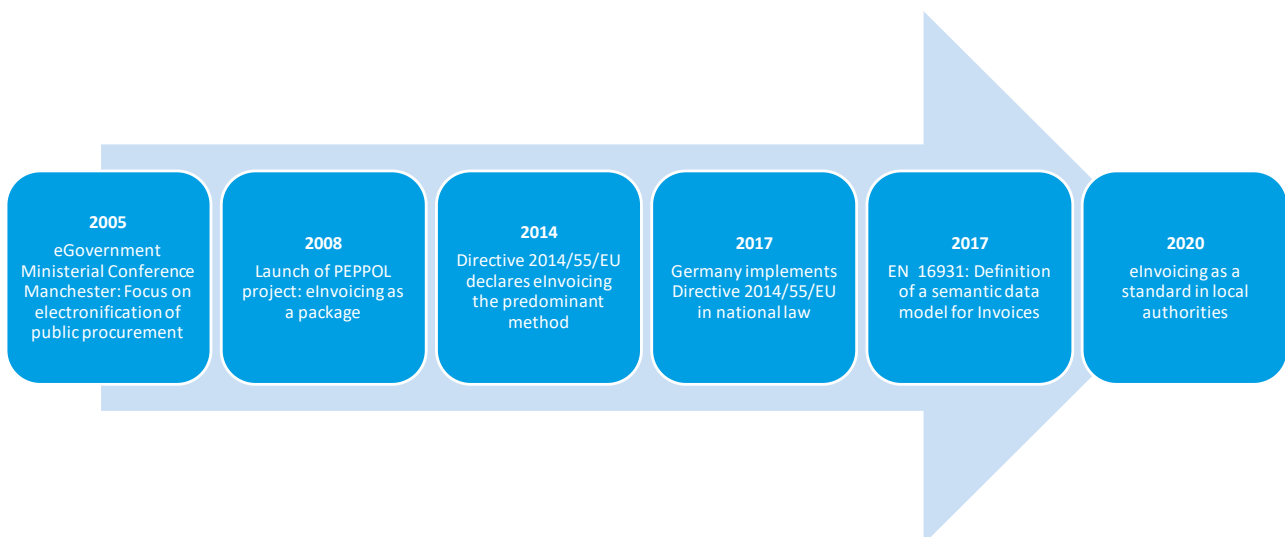
Figure 1: Timeline: Implementation of eInvoicing

In 2018, a study by ibi research Institute at the University of Regensburg showed that 39% of the local authorities had not yet taken any direct measures to implement the law at that time or will not complete the implementation on time. In contrast, around 43% of the municipalities surveyed expect electronic invoice processing to be introduced on time, although at this point in time 68% of the municipalities still printed out the digital invoice after receiving it. [17]

In operational terms, it is ultimately up to the local authorities to meet the implementation obligation. In addition to the technical requirements, they must create organisational prerequisites and, if necessary, adapt administrative processes in order to switch from paper-based to electronic invoicing and processing. Furthermore to the technical implementation and integration into the existing IT landscape, the local authorities cite the adaptation of process flows and the creation of acceptance within their organisation as the main challenges in introducing eInvoicing. [17]

There is no latest information on the implementation status available, but the introduction of eInvoicing should have progressed in municipalities in the meantime in order to meet the deadline of 18 April 2020.

5. Impact of the European strategy

First of all, it should be mentioned that local authorities have the possibility to monitor proceedings at European level or projects of the European Commission. Especially after the adoption of directives, which affect the municipal level, the municipalities can familiarise themselves with the subject even before the federal legislator implements the European requirements into national law and they are able to initiate their project planning with sufficient temporal advance.

With regard to the PEPPOL project, the municipalities had the opportunity to contribute their own experience and knowledge. The Free Hanseatic City of Bremen, for example, was involved in the project. [7] The preparatory work within the framework of PEPPOL led to the development of common specifications with the participation of public authorities, which can subsequently be used freely by the authorities concerned. The project has also resulted in a web service-based infrastructure for the transfer of data, which has been operated by the OpenPEPPOL organisation since 2012. [21] These Large-Scale Pilots can therefore be assigned a special role, as they promote the exchange between European authorities and the joint development of European standards. [24]

Within the framework of the 'Connecting Europe Facility' program, the 'PEPPOL eInvoicing for Government in Germany' project (PeGGy) was funded in Germany, which was implemented by the Hanseatic City of Bremen and two partners. The project served to pilot and disseminate the PEPPOL infrastructure and situate a best practice example for other administrations. The funding program 'Connecting Europe Facility' also offers trainings to help users of electronic invoicing to initiate, execute, and complete the implementation project. [11] As a further aid, the European Multi-Stakeholder Forum on Electronic Invoicing, established by the European Commission, published a checklist of support mechanisms for the successful adoption of eInvoicing solutions in 2018, in support to a guidance paper. [4]

If one reflects on handouts or recommendations of various German public authorities on the introduction of electronic invoicing, it is striking that they name the European Union merely as the place of origin of the Directive 2014/55/EU. The measures taken by the European Commission are rarely mentioned, for example the financial support provided by CEF and existing guidance papers or the opportunities for participation at European level within the framework of forums or projects. [e.g. 8] However, the EU initiatives have certainly led to the emergence of a broad public for the topic of eInvoicing. After the adoption of Directive 2014/55/EU, forums and other exchange formats were established in Germany, pilot projects were initiated and recommendations were published. The extent to which municipalities use the instruments provided by the European Commission or the PEPPOL infrastructure in their introduction processes remains to be determined in the context of further research.
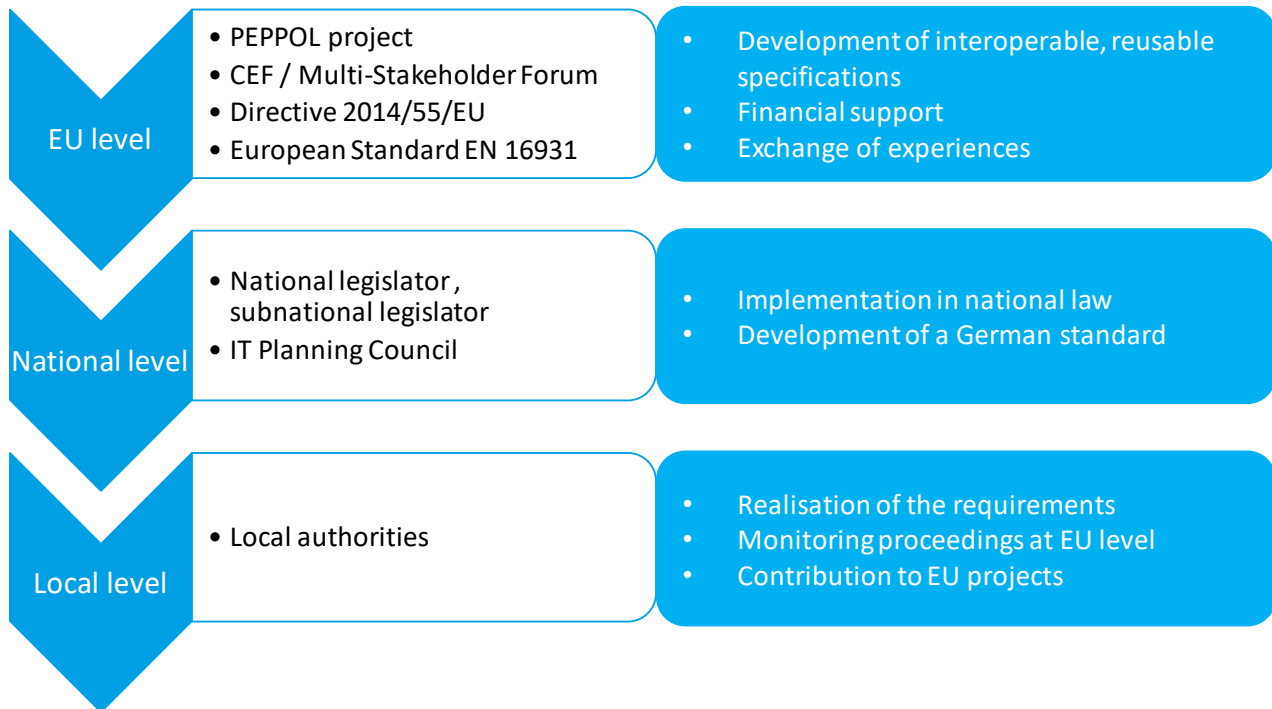
EU level	• PEPPOL project • CEF / Multi-Stakeholder Forum • Directive 2014/55/EU • European Standard EN 16931	• Development of interoperable, reusable specifications • Financial support • Exchange of experiences
National level	• National legislator, subnational legislator • IT Planning Council	• Implementation in national law • Development of a German standard
Local level	• Local authorities	• Realisation of the requirements • Monitoring proceedings at EU level • Contribution to EU projects

Figure 2: Implementing eInvoicing in the European multi-level system

For the municipalities, obstacles within the adoption of electronic invoicing are the technical implementation and integration into their existing IT landscape. [17] The European Commission has taken up this challenge and examined the technical perspective and created interoperable data models, standards and infrastructure, which can be used by public sector entities. However, the biggest obstacles for local authorities during the implementation process are the adaptation of process flows and the creation of acceptance in their own organisation. [17] The European Commission was only able to remove these obstacles to a limited extent by for instance creating a broad public for eInvoicing. For local authorities, the focus is not only on the technical implementation, but further on the procedural and cultural changeover. The Commission can use this insight its own for future digitization issues.

It is striking that the period between the first declaration of intent and the actual implementation lasted almost 15 years. The choice of the transposition period of four and a half years in the Directive 2014/55/EU was an extensive time period, and it is debatable if it meets todays expectations in a fast-developing global world. It is apparent, that the introduction of technological innovations in public authorities takes time, nevertheless could become shorter and shorter as digitisation progresses. Hence the time taken to introduce electronic invoicing is not be seen as a respective example.

Nevertheless, the result speaks for itself: electronic invoicing has arrived in German municipalities and will be introduced with a European standard in a large part of these municipalities on schedule. New and more efficient ways of cross-border electronic administration within the framework of a digital internal market have thus been opened.

6. Conclusion

The influence of the European Union on the expansion of electronic administrative services can be well illustrated using the example of eInvoicing. Legislative developments at the European level can clearly be seen as a major driver for the implementation of electronic invoicing in local authorities.

Through its initiatives and, above all, the Directive 2014/55/EU, the EU has triggered the introduction process and promoted the EU-wide acceptance of electronic invoices.

The European Union can make targeted use of the Europeanisation of administrative action to push its overriding goal of a functioning digital single market and promote the expansion of eGovernment services. Even if the EU does not have the competence to regulate administrative procedural law and administrative organisation in its Member States, it does have, on the basis of written and unwritten legal principles, an effective instrument of power which enables it to intervene in critical areas and ultimately to achieve the plans it has set itself in the field of eGovernment. It is apparent that the EU has different approaches to exerting influence on its Member States but compared to soft law instruments the EU's legislative competence is undoubtedly proving to be the most powerful instrument.

Although, the Member States and their governmental authorities are responsible for the implementation of the European requirements, the EU offers an exchange of best practices and technologies in advance and can contribute to the expansion of electronic administrative services by supporting the development of infrastructure or research on the effective use of eGovernment applications. Furthermore, the EU can support the Member States and their municipalities by financially promoting pilot projects. [14]

The embedding of local authorities in the implementation of Union law and their direct involvement can generate added value. The EU contributes to increasing the spread of eGovernment services, thus achieving its goal of a digital single market. At the same time, local authorities benefit from the requirements and ultimately the advantages of digitisation.

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STATUS QUO OF ELECTRONIC INVOICE PROCESSING AT MUNICIPALITIES IN THE FEDERAL STATE OF BADEN-WÜRTTEMBERG

Jasmin Oster[1] and Birgit Schenk[2]

Abstract

On 16 April 2014, the European Parliament and the Council of the European Union adopted the Directive on electronic invoicing for public contracts (2014/55/EU) in order to establish electronic invoicing as the predominant method by 2020. The e-invoicing directive requires all contracting authorities to be able to receive and process electronic invoices (ABI L133/1). The European legislator defines e-bill as "an invoice issued, transmitted and received in a structured electronic format that enables its automatic and electronic processing" (ABI L133/7).

This raises the question of (a) the status quo of electronic invoicing in Baden-Württemberg's municipalities, (b) their implementation barriers and drivers, and (c) the status quo in Baden-Württemberg compared to all other German states. This paper answers these questions and points out interesting aspects that raise new research questions.

1. Introduction

The economically strong state of Baden-Württemberg wants to take a leading role in digitalization. In a state comparison by the Association of the Internet Industry, Baden-Württemberg is currently in second place behind Hesse (72 points) and ahead of North Rhine-Westphalia (53 points) with 58 of 108 possible points [1]. The assessment is based on the political declarations of intent, not on their actual implementation. With the digitalization strategy "digital@bw" Baden-Württemberg wants to establish itself as a leading region for digital change in Germany [2]. One of the main topics of the strategy paper agreed upon in 2017 is Administration 4.0. An important component of Administration 4.0 is e-government, by which the state understands "the use of modern technologies to simplify and increase the efficiency of administrative processes". Particularly great potential is offered here by the application field of e-workflow, which aims at the electronic representation of conventional business processes without media breaks [3].

The European Union also wants to push the digitisation of its member states. With the adoption of the European Directive 2014-55-EU in 2014, the EU therefore pursued the goal of establishing electronic invoicing as the predominant invoicing method in its member states by April this year [4]. With an estimated 32 billion invoices per year in Germany alone, the invoice is the central document in business relations [5].

The aim of this paper is to determine the status of digitisation of local government in Baden-Württemberg using the example of electronic invoice processing. To enable a comparison of the

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actual state between Baden-Württemberg and Germany as a whole, a Germany-wide online survey was replicated. Two research questions are central to this:

RQ 1: What is the current status of the transition to an electronic invoicing workflow in the municipal administrations of Baden-Württemberg compared to the whole of Germany?

RQ 2: Which factors act as implementation barriers before or during the transition to electronic invoice processing?

In addition to the online questionnaire, guideline interviews were conducted with administrations that are in the process of converting to electronic invoicing or have already completed the conversion.

2. Background

Before discussing the results of the survey, a brief overview of the legal development of e-invoicing will be given and the benefits of e-invoicing processing will be highlighted.

2.1. European Directive 2014/55/EU and the definition of e-invoices

In order to establish electronic invoicing as the predominant method by April 2020, the European Parliament and the Council of the European Union adopted the Directive on electronic invoicing for public contracts (2014/55/EU) on 16 April 2014. The Directive on electronic invoicing obliges all contracting authorities to be able to receive and process electronic invoices. According to EU law, this obligation applies to so-called cap procedures. These are contracts which, due to their volume, require public EU-wide tendering. The national legislators are free to decide whether to comply with these ceilings or to introduce the obligation to award contracts below the thresholds. The threshold value for supplies and services is currently 214,000 euros net, for construction services 5,350,000 euros net [6].

The European Law defines e-invoice as "an invoice that is issued, transmitted and received in a structured electronic format that allows its automatic and electronic processing" [4]. A structured format is an invoice format consisting of symbolic data, which can be read and processed directly electronically [7]. Such an invoice cannot easily be read by humans. It is typically received by the recipient as an XML (Extensible Markup Language) file. The scope of the information depends on the processing depth. Either only the header data (for example, invoicing party, number, date, amount, bank details) or additionally the item data (price, article, quantity) can be transmitted. An example of a structured data format is the standard "XRechnung", which was developed by the IT Planning Council of Germany specifically for the requirements of public administration in Germany [8].

A distinction must be made between this and the iconic format in which the invoice data is available in a purely visual form [7]. Typical for this format are PDF files or image file types such as JPEG and TIFF. Since no invoice data is embedded in the invoice, the invoice data must either be typed or read with OCR (Optical Character Recognition) software. Invoices in this format are not electronic invoices as defined by the EU. However, there is an exception in the case that an iconic invoice contains an identical element with symbolic data in addition to the picture element. This combination of iconic and structured format is called a hybrid format. An example of such a hybrid format is ZUGFeRD (abbreviation for "Zentrales Benutzerhandbuch des Forums elektronische Rechnung Deutschland"), the current version of which meets the requirements of European Law.

2.2. Implementation of the EU Directive in federal and state law In order to implement the EU

Directive into national law, the German Parliament passed the law on December 1, 2016, implementing Directive 2014/55/EU on electronic invoicing in public procurement (E-Invoicing Act) [9]. The law forms the legal basis for customers of the federal public sector. The corresponding e-invoicing ordinance was published on 18 October 2017 [10]. From 27 November 2020 it obliges federal suppliers to issue and transmit invoices in electronic form. The data exchange standard to be used is usually the XRechnung.

The individual federal states are responsible for the implementation of the Federal Directive at state level. On 7 November 2018, the state parliament of Baden-Württemberg passed the law amending the eGovernment Act, which extended the existing eGovernment Act to include the regulations for implementing the eInvoicing Directive [11]. In principle, it obliges contracting authorities to receive and process electronic invoices regardless of their value. However, an exception applies to municipalities and associations of municipalities. Here the regulation only applies above the EU procurement thresholds. The corresponding e-invoice regulation is currently only available in the draft version of 29.10.2019 [12]. According to this draft, the data exchange standard XRechnung should be used. For the transmission of electronic invoices to state authorities, billers must use the state's service portal. Otherwise, they must use a transmission path specified by the invoice recipient.

2.3. Definition and advantages of electronic invoice processing

In the following, electronic invoice workflow means the electronic representation of the work steps of invoice processing, from the input and validation of invoice data, the checking of the factual and arithmetical correctness, the ordering, the accounting entry, the payment, and the archiving. The electronic processing is carried out independently of the form of invoice receipt (paper or electronic) without media discontinuity. In the case of paper invoices, this requires scanning, reading and checking the invoice data. It is irrelevant in which format (structured, iconic, hybrid) electronic invoices are received.

The changeover to electronic invoice processing has several advantages [7]. Since waiting and transport times are eliminated, the processing times for invoices are shortened. The digitalization of the process achieves a high degree of transparency, since all those with access rights can view the invoices in the system at any time and thus monitor the process. This also makes it easier to meet payment targets. In addition, the automation eliminates manual entries, which reduces the error rate. Cost and time savings can also be realized in archiving, as no additional space is required and retrieval of invoices is much easier.

If, in future, only electronic invoices within the meaning of the EU definition are fed into the electronic invoice workflow, there will be a high potential for increasing efficiency and saving costs. The processing time could be reduced from just under half an hour for the paper-based invoicing process to an estimated two minutes for the digital processing of e-invoices [13, p. 22 fig.8]. A prerequisite for this is that the invoice contains both the header data and the item data in a structured form. On the cost side, an estimated 15 to 20 euros can be saved per e-bill [14, p. 38]. At municipal level, there is a savings potential of at least 88,000 euros per authority [14]. E-bill is also desirable from an ecological point of view. According to calculations, CO_2 emissions from digital invoice processing can be reduced by almost 50 percent [14, p. 40f.].

3. Methodology

The study "E-Government in the municipal sector" by the research institute ibi at the University of Regensburg from 2018, in which, among other things, the electronic invoice processing of municipal administrations was examined, will be replicated in Baden-Württemberg [16]. To ensure the comparability of the results of both samples, a state-wide survey was conducted. The data collection was carried out with the help of the standardised questionnaire developed by ibi, which was extended by further questions. An online survey was conducted. The following variables from the ibi-study were used to answer the first research question: *accepted and preferred receiving channels*, *current processing of invoices* (procedures for invoice receipt, data capture) and *status of the changeover*. In addition, the questionnaire was supplemented by the variables *archiving* and *proportion of the different invoice formats*. In order to answer the second research question, the variable *challenges during the changeover* was adopted. In addition, the questionnaire was extended to include the reasons that prevented the administrations from making the changeover (*reasons for the delay*). Therefore, 13 administrations were contacted in advance by e-mail, 9 of which replied to the questionnaire. The response characteristics were derived from the feedback.

The statistical population of the study are the municipalities in Baden-Württemberg. There are a total of 1,136 municipalities in Baden-Württemberg. These can be divided into 35 administrative districts, 313 cities and 788 municipalities [17]. The participants were actively recruited for the survey. For this purpose, the survey link was forwarded to its members via the municipal council of Baden-Württemberg (Gemeindetag), the largest regional association of municipalities. The city and district administrations were each contacted personally by e-mail and asked to participate. In the field phase from 25 July to 16 August 2019, a total of 341 administrations took part in the survey. After data cleansing, 326 cases were included in the evaluation. This represents a response rate of 29%. A comparison with municipal population figures of Baden-Württemberg showed that local administrations with small populations are underrepresented in the sample.

To answer the second research question, guideline interviews were conducted with the aim of obtaining more detailed information about the challenges of electronic invoice processing. A total of five project managers from administrations that are currently in the changeover phase or have already completed it were interviewed. The interviews lasted between 25 and 60 minutes. Contact with these administrations was established via the local council. The transcribed interviews were evaluated by a content analysis.

4. Results

4.1. Status Quo in digital invoice processing

For RQ1 on the current status of electronic invoice processing in Baden-Württemberg compared to Germany, the evaluation produced the following results, see table 1.

Status quo of digital invoice processing		Baden-Württemberg		Germany	
Variables	*Reply options*	*percent*	*n*	*percent*	*n*
Accepted forms of invoice receipt*	E-Mail	91%	326	85%	205
	DE-Mail, E-Postbrief	1%		3%	
	Download	27%		31%	
	EDI	2%		11%	
Preferred form of invoice receipt	Paper form	82%	325	52%	196
	E-Mail	14%		32%	
	DE-Mail, E-Postbrief	1%		3%	
	Download	0%		3%	
	EDI	1%		9%	
	Other	2%		2%	
Proportions of the invoice formats (estimated values)	Paper form	92%	322	No data available	
	Iconic format	8%			
	Structured format	0,5%			
	Hybrid format	0,2%			
Invoice receipt* (paper invoice)	paper-based further processing	95%	326	64%	204
	digitisation of the invoice	21%		50%	
Invoice receipt* (electronic invoice)	further processing on paper after printout	97%	298	68%	197
	digital further processing	5%		34%	
Data acquisition* (paper invoice)	manual entry in it-system	90%	326	73%	204
	automatic acquisition in it-system after scan and ocr	7%		27%	
Data acquisition* (electronic invoice)	manual entry in it-system	89%	295	68%	197
	automatic acquisition of iconic invoice data (ocr)	4%		23%	
	automatic acquisition of structured invoice data	3%		14%	
Archiving (electronic invoice)**	Only paper form (printout)	28%	296	No data available	
	Only electronic form	14%			
	Both	58%			

Table 1: Overview of the results of the online survey

* Multiple selection possible
** Due to the high level of conformity in the archiving of paper (only paper: 27%, only electronic: 16%, both: 56%, n = 326) and electronic invoices, no separate presentation was made.

Form of invoice receipt: The majority of the administrations surveyed in Baden-Württemberg (n = 326) and Germany as a whole (n = 205) accept electronic forms of receipt. The acceptance of invoices via e-mail attachments is the most widespread so far (Baden-Württemberg: 91%, Germany: 85%). Invoices via download (Baden-Württemberg: 27%, Germany: 31%) or electronic data interchange (Baden-Württemberg: 2%, Germany: 11%) were accepted comparatively rarely.

Preferred form of invoice receipt: There is a large discrepancy between the samples of Baden-Württemberg and Germany as a whole with regard to the preferred form of reception. While in Baden-Württemberg only 16% of the administrations surveyed (n = 325) prefer an electronic form of invoice transmission, this figure is already 47% in the German sample (n = 196).

Invoice format: It is currently estimated that 92% of invoices in Baden-Württemberg are received in paper form. Almost every tenth invoice is received in an iconic format (8%). A tiny proportion consists of invoice formats that can be read directly by machine (structured invoice format: 0.5%, hybrid invoice format: 0.2%).

Invoice receipt: In principle, invoices in paper form (95%) are further processed in paper-based form by the administrations in Baden-Württemberg (n = 326) after receipt. In the nationwide sample (n = 204) only two thirds (64%) of the administrations do this. Instead, half of the respondents (50%) digitise the invoices as soon as they are received. In the Baden-Württemberg sample, one-fifth (21%) of the administrations proceed in this way. When electronic invoices are received, 97% of the administrations surveyed in Baden-Württemberg (n = 298) print them out and then process them in paper form. In the German sample (n = 197), only 67% of the administrations proceed in this way. Instead, 33 % of those surveyed stated that they process the invoice digitally. In Baden-Württemberg this proportion is currently only 5 %.

Data acquisition: In the Baden-Württemberg sample (n = 326), 90% of the municipalities manually enter the invoice data from paper invoices into an IT system. Only 7% of the respondents enter the data automatically. Nationwide (n = 204), the number of manual data entry is 73%, while the remaining 27% enter the invoice data automatically.

Furthermore, 9 out of 10 (89%) of the surveyed municipalities in Baden-Württemberg (n = 295) still enter the data for electronic invoices manually into the IT system. In the case of iconic invoice data, the invoice information is automatically captured by 4% of the administrations, and by 3% for structured invoice data. In the Germany-wide sample (n = 197), 7 out of 10 administrations (68%) enter the data manually into the IT system. The invoice data is automatically captured by iconic invoice data (23%) and structured invoice data (14%).

Archiving: During archiving, it is apparent that almost three quarters of the administrations (72%) in Baden-Württemberg already archive paper invoices electronically (n = 326). However, 56% of the respondents archive both in electronic and paper form, while only 16% are restricted to purely electronic archiving. A quarter of the respondents (27%) archive exclusively in paper form. Similar results are shown for the archiving of electronic invoices. However, the procedure of exclusively paper-based archiving of electronically received invoices is actually not permitted.. According to the GoBD (principles for the proper management and storage of books, records and documents in electronic form and for data access), electronically received invoices must also be kept in this form. No comparative data is available for the nationwide survey of local authorities.

Status of the conversion: When asked about the status of the conversion to electronic invoice processing in their state, one in five administrations (19%) in the Germany-wide survey (n = 167) replied with "We can receive and process electronic invoices", see Figure 1. 4 out of 10 administrations (43%) stated that they would be able to do so by the legal conversion date. Another 4% have started implementation but will not complete it by 18 April 2020. 3 out of 10 administrations (28%) have already informed themselves about the issue but have not yet taken any concrete implementation steps. The remaining 7% had not yet addressed the topic in autumn 2018, the survey period of the ibi research study.

Figure 1: Current status of the implementation of electronic invoice processing

Implementation completed* — Baden-Württemberg 2%, Germany 19%

Implementation will be completed by the EU-deadline — Baden-Württemberg 10%, Germany 43%

Implementation will be completed after the EU-deadline — Baden-Württemberg 13%, Germany 4%

Up to now only informed — Baden-Württemberg 62%, Germany 28%

Not yet engaged with the topic — Baden-Württemberg 14%, Germany 7%

*Different wording of the question in the samples. See explanation in the text section.

Baden-Württemberg (n = 325)
Germany (n = 167)

Figure 1: Status Quo of the implementation of electronic invoice processing

In the Baden-Württemberg sample, 2 % chose the first response option - which differs from the original form[3] - "We have completed the switch to electronic invoicing". By the EU deadline, 10% of administrations will have completed the changeover to e-invoicing. Another 13% will complete the changeover after the EU deadline. 6 out of 10 administrations (62%) have so far only informed themselves about the issue but have not yet taken any concrete steps to implement it. 14 percent have not yet addressed the topic.

All in all, it can be stated that digitalization with regard to invoice processing in the Baden-Württemberg administrations surveyed is not yet as advanced as in the nationwide sample. In the following chapter the reasons for this become apparent.

4.2. Implementation barriers and challenges[4]

The barriers and challenges raised by the municipalities are described in the following paragraphs.

4.2.1. Results of the online survey

Barriers: Local authorities that have not yet taken concrete steps to introduce an e-invoicing workflow were asked in the online survey about the reasons that have prevented them from making the changeover so far ($233 \leq n \leq 241$), see figure 2.

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[3] For the survey of local authorities in Baden-Württemberg in summer 2019, the first response option deviated from the formulation of the replicated study. The reason for this is that the original formulation merely asks whether the legal minimum requirements applicable from April 2020 have already been met. However, administrations can also meet these requirements without having introduced a complete electronic invoicing process. The implementation of this "small solution" continues to cause a media disruption. Although the invoice is received electronically, it must be printed out, signed by hand and finally scanned in again for further processing. With this interim solution, the advantages of an electronic invoice process cannot be realized.

[4] For reasons of clarity, in the presentation of the results for the obstacles in the text part, the percentages for the response values "applies/ rather applies" (approval) and the values "does not apply/ rather does not apply" (rejection) have been combined.
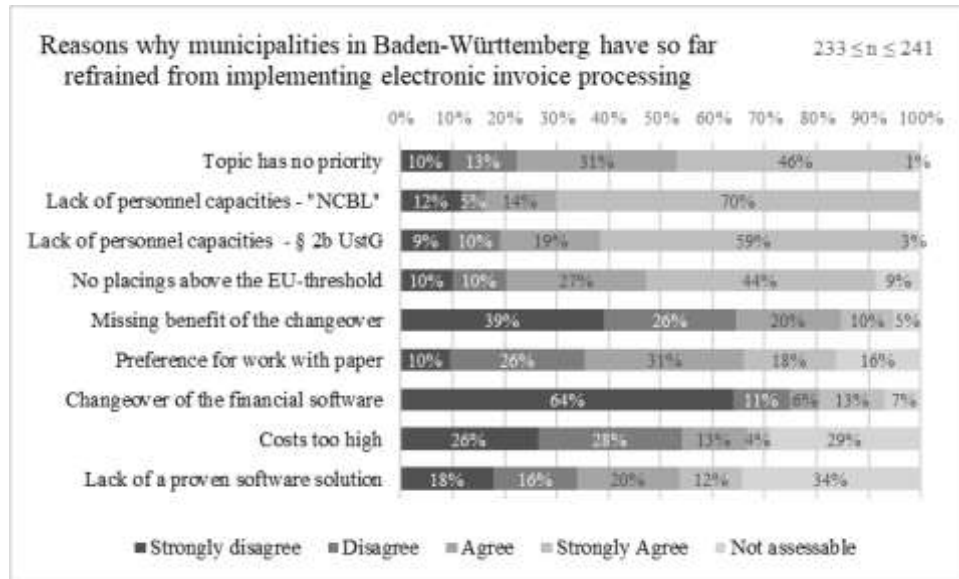
Figure 2: Implementation barriers before the changeover

For 77% of the respondents, e-invoicing is simply not yet a priority. The reason for this could be that administrations currently consider it more urgent to adapt to other legal regulations. For example, 84% of respondents said that they lacked capacity due to the changeover to the new communal budget law ("ncbl"). The new introduction of § 2b UStG (value added tax act) also has a negative impact on 8 out of 10 administrations (78%). By contrast, the EU e-invoicing directive is of little significance for a large number of municipalities: 7 out of 10 administrations (71%) state that they practically never place orders above the EU thresholds. The fact that a changeover does not bring sufficient added value, e.g. in terms of potential savings and efficiency gains, due to a comparatively low invoice volume, is not seen by the administrations. Two thirds of the respondents (65%) rejected this statement. A rather split picture emerges when asked whether the majority of employees prefer to work with paper instead of electronic documents. Half agreed with the statement, 36% disagreed with it. The remaining 16% could not evaluate the statement. Nearly one-fifth of administrations are still waiting for the changeover because they are currently converting their financial software or will be doing so in the near future. This reason seems to be particularly relevant for the cities, where a quarter of the administrations agreed with the statement. Whether the costs associated with the changeover are too high, 29% of respondents were unable to judge. However, more than half of the respondents (54%) did not see this as an obstacle and rejected the statement. Even a third of the administrations surveyed (34%) could not judge whether there is a lack of a proven product solution. Otherwise, opinions were divided here. Approx. one third (32%) agreed with the statement, the other approx. one third (34%) rejected it.

Main challenges of the changeover: Administrations currently in the process of changeover or having already completed it were asked about their main challenges during the changeover. In both the sample for Germany (n = 152) and the sample for Baden-Württemberg (n = 78), the adaptation of processes is seen as one of the greatest challenges in the introduction of electronic invoice processing. In each case 7 out of 10 municipalities chose this answer (Germany: 71%, Baden-Württemberg: 70%). In second place in each case is the creation of acceptance within the organisation, even if there is a discrepancy of 20% (Germany: 69%, Baden-Württemberg: 49%). The determination of legal requirements is perceived as a challenge by about one third of the municipalities (Germany: 36%, Baden-Württemberg 31%). In the Germany-wide survey, half of the respondents (48%) see integration into the existing IT landscape and the IT implementation of existing processes as a major challenge. In the Baden-Württemberg sample, this was only the case for one third of the respondents

(36% and 33% respectively). In both samples, 3 out of 10 administrations considered the development of expertise to be one of the greatest challenges (Germany: 31%, Baden-Württemberg: 30%). One feature that was only asked about in the present study was the delay caused by the high workload of the selected service provider. This circumstance was chosen by a quarter of the administrations surveyed (26%). The fact that this provider-side problem could be important for Baden-Württemberg was shown by the preliminary survey, which was used to determine the response characteristics for the additional variable "barriers".

4.2.2. Results of the guideline interviews

Challenges from the point of view of the project managers: Table 2 summarizes which factors hinder the changeover from the point of view of the project managers.

	Selected answers
Legislation **unclear legal situation**	*Interview 1* "Many also waited because the whole legislation was still in force. And in Baden-Württemberg we still have the problem that the legal standard was not yet pronounced until recently. So there is still no regulation on this §4a eGovernment law. I saw the draft for the first time last week, about three quarters of a year too late. It was not clear at that time either, what do you have to consider? Do you have to accept with portal, you may accept by e-mail, all the questions were not clarified. Or are still unsettled. You can only really get started when you know what the legal situation is.."
Legislation **too little pressure for invoice recipients**	*Interview 3* „It is the fault of the legislator who did not make the whole thing mandatory. Not like the SEPA changeover, which was mandatory for all municipalities in the country on the key date X [...] Now the EU is coming with its directive, the municipalities or public authorities are to accept and process electronic invoices. Then again the small print [...], which invoices are meant? It is about the threshold value for the award of contracts: Construction works over 5 million and services are 120,000 ungrades net. At least 90 percent of the municipalities in Baden-Württemberg sit back and say that this doesn't concern me at all. [...] So I can well understand why so few local authorities - I don't mean to say are not thinking about it – but shy away from the implementation."
Legislation **Too little pressure for billers**	*Interview 5* „And then there is the acceptance by the suppliers. The question is how many real e-bills will actually be received over time. Whether it is even worth it. Or will the majority of invoices, and I suspect that, continue to be received in paper form and must be scanned. There is no real pressure, because very few bills are above the threshold above which we have to accept e-bills."
Municipal IT-Provider **Time frame**	*Interview 5* "We have requested an offer from our municipal data network Iteos. It took a relatively long time until we received an offer. We are scheduled to start the project in December 2021, the pilot phase will run until August 2022. So it's a very long time horizon to introduce the whole thing. [...] The biggest problem is the time frame. As far as I've heard, the data network is completely booked out to implement this. And that's why it simply takes a long time. They don't have enough staff because of a lack of specialists to implement the whole thing and get the project off the ground."
Municipal IT-Provider **Dependency**	*Interview 5* "…At the same time, we are still looking for alternative possibilities outside the Iteos solution. I personally am not enthusiastic about this. It's about an interface solution that maps the invoicing process outside the system and then transfers it to SAP via interfaces. We are users of SAP KommunalMaster Doppik and that's where the consideration comes in. I don't think much of it, because I don't think it will work. In my view, we need an SAP-integrated solution. …"

Municipal IT-Provider **Finances / Costs**	*Interview 5* „The question of costs is also problematic. We have now at least received the offer from the data center. The introduction costs for us are about 50.000€, so I say okay, these are one-time introduction costs. The problem is the running costs. Because you would have to pay per invoice transaction processed. We have about 65,000 payout receipts per year and they charge a certain amount per item. And that brings us to a running cost of 83,000 euro per year, which is currently not being incurred. In other words, the advantages that e-bill certainly offers - shorter processing times, etc. - must of course first pay off before they can be introduced. This is an issue on which we are still struggling and thinking, does it make sense, does it not make sense.“ *Interview 3* „Then there is the fact that here in Baden-Württemberg we are linked to the ITEOS data network, our service provider. And of course, they try to market the product, and for a small community like my home municipality with 2,200 inhabitants, the switch is not financially worthwhile. [...] And of course not only the follow-up costs but also the installation costs that ITEOS demands are not exactly cheap. Of course, a municipality must first be aware of that. Am I taking the path of digitization, no matter the costs, or do I say it's not worth it for us, we stick to paper bills".
Municipality **Shortage of employees**	*Interview 3* „And in retrospect, I would say that I would only take over the project again when it is clear that I have the appropriate personnel here. As it is so often the case in the combing department, we managed the projects, be it the SAP conversion or the conversion to double-entry bookkeeping, with the existing personnel. And that is not feasible. Everyone has their day-to-day business, and I maintain that everyone, including the working group here, is busy with their day-to-day business, and then there is the project, without additional personnel, which is of course an additional burden. And especially in cases of holiday or illness, the project has to be put on hold. We were euphoric back in 2013, after WMD had given us the order to rebuild the entire city by 2018 at the latest. Then we set it for the first quarter of 2019, and now we have no final date at all.“

Table 2: Barriers out of the perspective of the project managers

From the point of view of the project managers, the responsibility for the slow progress in the conversion to electronic invoice processing lies with the legislator. This is because administrations that show the will to introduce electronic invoice processing are slowed down by the lengthy legislation. For example, the e-invoice regulation has yet to be adopted, and the draft has only been available since autumn 2019. However, the regulation is important for the implementation of electronic invoice processing, as it regulates the invoice format to be accepted and the receipt of invoices.

Due to the implementation of the EU directive into the national law of the federal states, which only requires the receipt and processing of e-bills for contracts above the threshold values, a large number of administrations do not feel compelled to change over. The lack of an obligation for the entire public sector to accept e-bills reduces the attractiveness for companies to issue electronic invoices. However, the low level of acceptance by suppliers means that most invoices are still received in paper form. As a result, administrations with e-invoicing workflows cannot take full advantage of the benefits of digital invoicing and instead face additional scanning and validation costs. To achieve this, not only must the personnel capacities be kept ready, but above all the technical prerequisites must be created. Another factor that has a negative impact on the cost issue is the level of running costs. For each invoice that is fed into the workflow, a certain amount must be paid to the service provider. This leads to additional costs that are not incurred with paper-based processing and reduces the potential for savings. If a local authority decides to introduce electronic invoice processing despite the associated costs, it encounters another problem.

The municipal IT service provider Iteos is the first choice for most administrations in Baden-Württemberg. Due to staff shortages, however, this provider is experiencing massive time delays. It is not only the preparation of offers that is protracted. In particular, the project start itself can only be realised at a much later point in time than the administrations are aiming for. However, switching to other providers can lead to interface problems, as their products are not designed for municipal financial software. Another reason for the displeasure is that the administrations themselves are affected by a lack of personnel. Since no one is usually released exclusively for the project, the introduction of electronic invoice processing must be handled alongside day-to-day business. Due to holiday periods and cases of illness it can happen so easily that the schedule cannot be kept.

5. Summary

The aim of the present study was to survey the current status of electronic invoice processing in the municipalities of Baden-Württemberg. The results of the online survey conducted for this purpose show that three quarters of the administrations surveyed (n = 325) have not yet taken any concrete steps towards implementing an electronic invoicing workflow. Irrespective of whether the invoices arrive in paper or electronic form, the majority of them have so far been processed manually. However, currently 9 out of 10 invoices are still received in paper form, which is the preferred format of the administrations in Baden-Württemberg. However, the majority of administrations also accept invoices by e-mail. Digital archiving is carried out by 3 out of 4 municipalities. Compared to a nationwide survey, Baden-Württemberg is lagging behind in terms of digitisation overall.

The administrations justify the fact that no conversion has taken place so far, in particular by the lack of staff. The changeover to double-entry bookkeeping is particularly important here. The adaptation to the new budget law should also explain why the administrations in Baden-Württemberg are performing worse overall than in Germany as a whole. The conversion, which was approved by the Baden-Württemberg state parliament in 2009, was originally planned to last until 2016. However, this already long period was later extended to 01.01.2020. This makes Baden-Württemberg the only state where the new budget law will only become binding this year. In the other federal states, the changeover was either completed several years ago or the implementation is optional [17].

Nor is the EU directive, which was actually intended to promote electronic invoice processing, proving to be a driving force. In Baden-Württemberg, the directive has been transposed into state law in such a way that it only applies to local authorities in the case of award procedures above the thresholds. The majority of respondents generally do not reach these thresholds. The e-bill law is therefore not relevant for the majority of municipalities. In other federal states, the obligation also applies in the lower threshold range, which is why administrations there are under greater pressure to act [8]. Another problem is the unclear legal situation for billers and recipients, as the e-invoice regulation has not yet been adopted. Only since the end of October 2019 has the draft been available on the state's participation portal. Without concrete legal requirements, it is difficult for both business and administration to tackle the technical implementation. Although the digitisation strategy of the state of Baden-Württemberg is an attempt to advance the field of e-government, the legislation acts more as a brake than as a motor of change. How the actions of the state legislator affect the digitisation of other strategic areas is an interesting starting point for future research.

Especially for the administrations in Baden-Württemberg there is also a problem on the provider side. The municipal IT service provider Iteos, which is favoured by the majority of administrations, does not have the necessary personnel capacities to introduce the workflow of electronic invoicing for administrations willing to change over to the new system in a timely manner. For a quarter of the

administrations, this is the reason for delays. Since many administrations have so far only informed themselves about the subject of electronic invoice processing but have probably not yet received a concrete offer, this problem is likely to become even more acute in the near future. These administrations will probably have to wait several years before starting the project. In addition to the time frame, the high implementation costs and running costs also act as a deterrent. Especially for small administrations, this is unlikely to lead to savings. At this point it would be interesting to examine to what extent the high savings potential predicted in the studies can actually be realised by the municipalities. In this context, it also seems worthwhile to take a closer look at the implementation status of purchase-to-pay processes at municipalities in future scientific studies. The purchase-to-pay process goes beyond digital invoice processing, as the steps from procurement to payment of the invoice are digitised. This could result in a significantly greater efficiency potential, especially for larger municipalities.

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eParticipation

PUT YOUR MONEY WHERE YOUR MOUTH IS - PARTICIPATORY BUDGETING IN ROMANIAN CITIES

Nicolae Urs[1]

Abstract

Almost 40 years ago, New Public Management theorists reserved an increasingly important role for citizens and civil society in the policy making process. This trend continued afterwards with proponents of Digital Era Governance or New Public Service theories. But without the opportunity of taking decisions on how to spend at least some parts of the government money, the influence of citizens and NGOs is fairly limited.

Local governments, as the institutions closer to the needs and wishes of the communities, have gradually taken note of the increasing clamor for more power and transparency. Participatory budgeting processes have sprung up all over the world in the last years. Romania is no exception; a number of cities have implemented platforms that allow their citizens to propose and vote on projects to improve the quality of life in their communities.

Our research will try to ascertain the level of success such initiatives have in Romania, a country with a generally low level of civic engagement. For this, we will use questionnaires and interviews with public servants in charge of these platforms.

Keywords: participatory budgeting, Romania, e-participation

1. Introduction

Governments are losing the trust of the population. Or so is the general sentiment among the public, and the view among a lot of media outlets that periodically publish articles and video stories that try to find the reasons for this perceived loss of trust. Some researchers agree that this loss of trust is indeed happening [8], some do not [6], but for elected political figures, with an eye on TV screens and twitter influencers, the perception is at least as important as the reality.

A lot of factors influence citizens' trust in their governments: the economic situation of the country, political upheavals, the level of authoritarianism, corruption perception, and a myriad other events that can have a salient or enduring effect on public trust in institutions.

On the other hand, it is universally recognized that a society that exhibits a high level of trust enjoys multiple benefits, such as economic involvement (people are more willing to spend and invest if they trust the government), or civic engagement (people are more inclined to work together to help solve communities problems). Also, official initiatives are more likely to work and citizens are more willing to pay their taxes and abide the law if they think that these are fair.

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Some researches show that heavy internet users have a lower trust level in government; however, this level can be increased if e-government services are properly implemented [14]. Other studies show that even if good online services do not significantly increase trust, bad services definitely decrease it [6].

Both local and national governments throughout the world are trying to engage with citizens, companies and NGOs, for a number of reasons. New Public Management and then Digital Era Governance and New Public Service theories assign an increasingly important role to citizens and organizations outside public administration in deciding public policies. This wave of growing democratic participation is relaying more and more on technology to connect citizens, institutions and organizations. The tools employed and perfected by commercial companies, many originated in Silicon Valley, are repurposed or reimagined with the lofty goal of increasing public involvement in running communities or countries.

A common catch-all for this initiatives is e-participation, which can be defined as "the use of digital tools for political participation" [2] and includes o wide range of tools, both formalized and informal. The digital platforms that are used for this political participation are either purpose-made by public institutions (almost all the platforms of participatory budgeting) or repurposed for this (social media platforms for example). It is still early days for e-participation (also evident in the fact that the term has multiple spellings in the literature: eParticipation, e-participation, electronic participation). Researchers found out that, at present, e-participation is "largely confined to the initial and the final stages of the policy cycle and rarely allows for entries into the core stages of decision-making and policy execution" [23].

Participatory budgeting (PB) is part of this newish trend of involving citizens in the decision-making process. In its simplest form, it involves allocating a certain percentage of a community (usually a city) budget towards projects proposed and supported by citizens of that particular community. Nowadays, the whole process typically happens on a software platform that is transparent in all stages of the process: the project proposal phase, the voting phase, the winners' selection phase, and the implementation.

This paper is the first of a larger project that aims to better understand the way in which participatory budgeting is employed in Romania, the reasons that cities choose to create such platforms, the results of these efforts and, if possible, to measure the effectiveness of participatory budgeting initiatives in improving trust in local governments.

2. Lit review

The current consensus among researchers is that participatory projects play an increasing role in government, especially local government. PB projects are just one application of this new trend, which also contains other types of platforms (fixmystreet type of apps, e-petitions, e-consultations, etc.) [12][4].

E-participation systems can be viewed as both socio-technical systems and tools for advancing democracy through increasing dialogue between citizens and governments [19]. Local governments are seen, in general, as more trustworthy than central governments [10]. They are also perceived as closer to the citizens' needs and wishes, and more transparent [15], so it is no surprise that PB initiatives are adopted with gusto by city halls and local institutions. Researchers are beginning to test whether PB initiatives are having an effect on citizens' view of their governments, and there are some

initial encouraging results [22] and signs that citizens are beginning to adopt electronic platforms more widely [9]. Other researchers are skeptical that the promises of e-participation are fulfilled, citing very low participation and the reinforcing of the already existent digital divide [20], arguing that vulnerable groups are excluded and do not benefit from PB [21][17] or that PB's focus almost exclusively on infrastructure investments, which can limit their usefulness [5].

PB has a long history, with the first modern examples in Brazil, at the end of 1980s. The first complete participatory process of this kind was designed and implemented in the city of Porto Alegre, in 1989 [3] (ironically, just as participatory initiatives are mushrooming all around the world, the Porto Alegre PB process was closed down in 2017, after a run of more than 25 years).

The vast majority of such projects were created at local level, by cities big and small, in countries on all continents. According to an estimate of the Participatory Budgeting Project, an international NGO that analyzes this field, participatory budgeting is the most widespread form of participatory democracy, having spread to more than 7,000 communities around the world [18]. The objectives of these types of e-participation systems can range from trying to attract more citizens in the democratic dialogue to increasing trust in institutions [24], combating the so-called democratic deficit and the feeling of alienation among citizens [11], or improving the quality of governance [25]. Moreover, the main reasons for adopting PB by communities seem to be learning and imitation (more studies may reveal if competition also plays a part) [16].

The vast majority of PB processes are, in the taxonomy proposed by Cabannes and Lipietz, territorially based (mostly, like we said, at city level) [7]. Aside from those, PB initiatives can be thematic (dealing with one particular issue, such as transportation or education) or actor-based (with money earmarked for specific vulnerable groups, such as women, youth, or the poor).

There is a reversal of roles in participatory processes. In the Weberian bureaucracy, citizens play little or no part in the decision-making process. Public servants are tasked with all the decisions related to running a community. The direction is now reversed, with citizens having more and more of a say in defining priorities, determining public policies, and funding projects [3].

In almost all cases, the initiative for implementing PB came from governments. If other organizations proposed such a process, there were many constant hurdles and obstacles, especially in the wake of the financial crisis. If the initiative comes from outside (such as from a nonprofit), convincing public officials to allocate funds for this is an extremely difficult endeavor [1].

The scope of this study is only online implementation of the participatory budgeting projects in Romania. The design of PB online platforms differs around the world. In some cases, citizens are only allowed to propose projects, to vote for them (or both). In other cities, discussion forums are created to enable debates or discussions of the proposed projects and to spur support networks for one project or another [13].

PB is a new trend in Romania. The first city to implement such a system (in an offline form, for one neighborhood, with the help of academia and nonprofits) was Cluj-Napoca, in 2013 (in the end, the cost of the projects implemented amounted to almost €4 million) [5]. After this dress rehearsal, an online PB process called CO'MMON Cluj-Napoca, linked to the European Youth Capital 2015 (a title held by Cluj-Napoca that year), was set up by nonprofits with the help of the local council.

After these smaller projects, in 2017 Cluj-Napoca implemented the first full online PB process in Romania. All citizens living, studying, or working in Cluj-Napoca could propose projects and vote. During the first phase of the procedure, projects were put forward by citizens, in 6 different categories (alleys, sidewalks, and pedestrian areas; mobility, accessibility, and traffic safety; green areas and playgrounds; arrangements of public spaces (urban furniture, public lighting, etc.); educational and cultural infrastructure; and digital city). After that, each project was evaluated by the City Hall, from both a legal and a technical standpoint. The projects declared eligible went to the first round of voting (where 30 projects were selected). After that, a second round of voting selected the 15 projects to be implemented (each with a maximum budget of 150.000 €).

Being the first of its kind in Romania, this model was adopted in this form (sometimes with small variations) by many Romanian cities that introduced PB in 2018-2019.

3. Methodology

During the first phase of our research, we identified Romanian communities that have implemented PB projects in the last 2 years. Through a combination of desk research, media canvassing, conversation with companies that offer PB platforms, and personal contacts inside City Halls, we compiled a list of all PB projects in Romania (17 such projects were identified until January 15, 2020).

After phone contact with each of the 17 City Halls, a questionnaire was sent to the people in charge. In some cases, more phone calls followed, to clarify some data or to get more details. In the end, we received 8 usable responses (a response rate of 47%). Also, in 2 cities (Brașov and Craiova) the process was ongoing, therefore some data from them will be incomplete.

4. Results

The organization of each process was generally the same. At first, citizens or nonprofits could propose projects, usually assigned to categories (with the exception of Florești). These categories could be very broad (like Mobility and accessibility, encountered in most cities) or narrow (Building a skate park, in Arad). The most used categories were Smart city or Digitalization, Mobility and infrastructure, Green spaces and Playgrounds, or Education). The number of categories varied between 5 (Roman) and 9 (Deva).

After that, the City Hall (through a special body created for this purpose) checked the projects for feasibility (from technical and legal point of views). The citizens could then vote for the approved projects (once or in multiple rounds) and the most voted projects went into execution. The citizens that proposed the winning projects did not usually play more than a decorative role in the implementation.

Cluj-Napoca was the first city to implement online participatory budgeting in Romania (it helped that it had experience both with offline PB and with a limited version of online PB) in 2017. After that, other cities took notice and in 2018, PB started in Sibiu, Arad, and in Florești (the biggest rural municipality in Romania, near Cluj-Napoca). In 2019, more cities implemented such a process (Deva, Craiova, Roman, Brașov). It is interesting to note that, out of the 4 cities that started in 2017 or 2018 (Cluj-Napoca, Sibiu, Arad, Florești), only 2 (Cluj-Napoca and Sibiu) managed to have PB each year (Arad and Florești had it for 1 year only and then it stopped). It will be interesting to see how many Romanian communities manage to keep their platforms active.

The maximum budget per project is, of course, determined also by the financial might of the community. It varies from € 20,000 in Roman to €150,000 in Cluj-Napoca and Sibiu.

Maximum buget/project (€)

City	Value
Cluj-Napoca	150.000
Sibiu	150.000
Florești	105.000
Deva	100.000
Brașov	100.000
Craiova	50.000
Arad	28.000
Roman	20.000
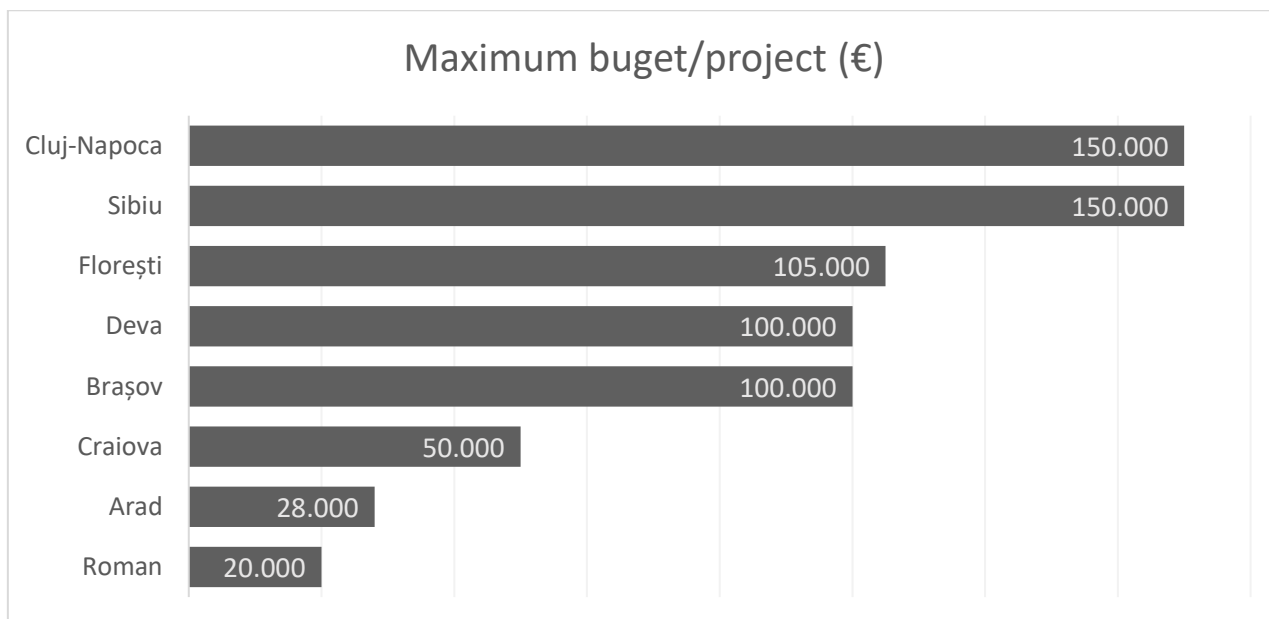
Chart 1: Maximum budget per PB project, by city and year

The percentage of municipal GDP that communities allocate to PB should be a rough indicator of the importance they attribute to this process. Here the differences are also stark:

% of GDP

City	Value
Brașov	ongoing
Florești	2%
Deva	2%
Roman	1%
Sibiu	1%
Arad	0,75%
Cluj-Napoca	0,75%
Craiova	0,15%
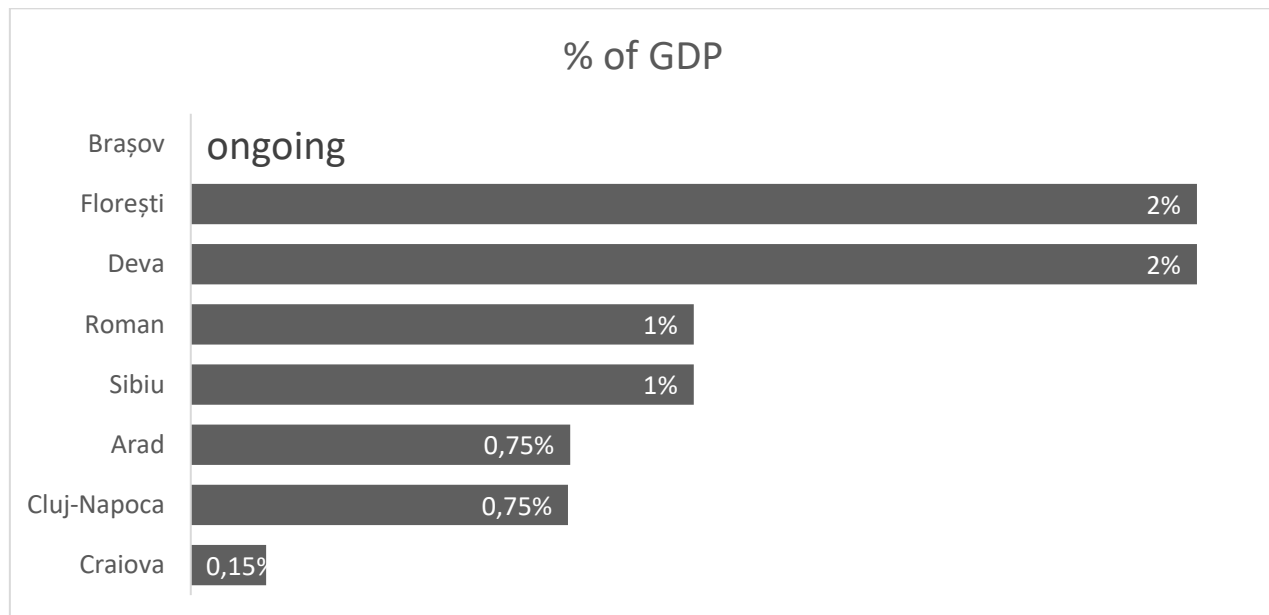
Chart 2: Percentage of city GDP allocated for PB

The number of projects proposed varies from city to city. Cluj-Napoca and Sibiu vie for the first places by this metric. The size of the city bears an influence, naturally, but it is not the sole determinant: Craiova is almost twice the size of Sibiu, and the number of projects is much higher in Sibiu.

Number of projects

City/Year	Value
Cluj-Napoca 2017	338
Cluj-Napoca 2019	202
Sibiu 2018	179
Cluj-Napoca 2018	164
Sibiu 2019	141
Brașov 2019	42 (ongoing)
Craiova 2019	39
Arad 2018	32
Deva 2019	27
Florești 2018	15
Roman 2019	7
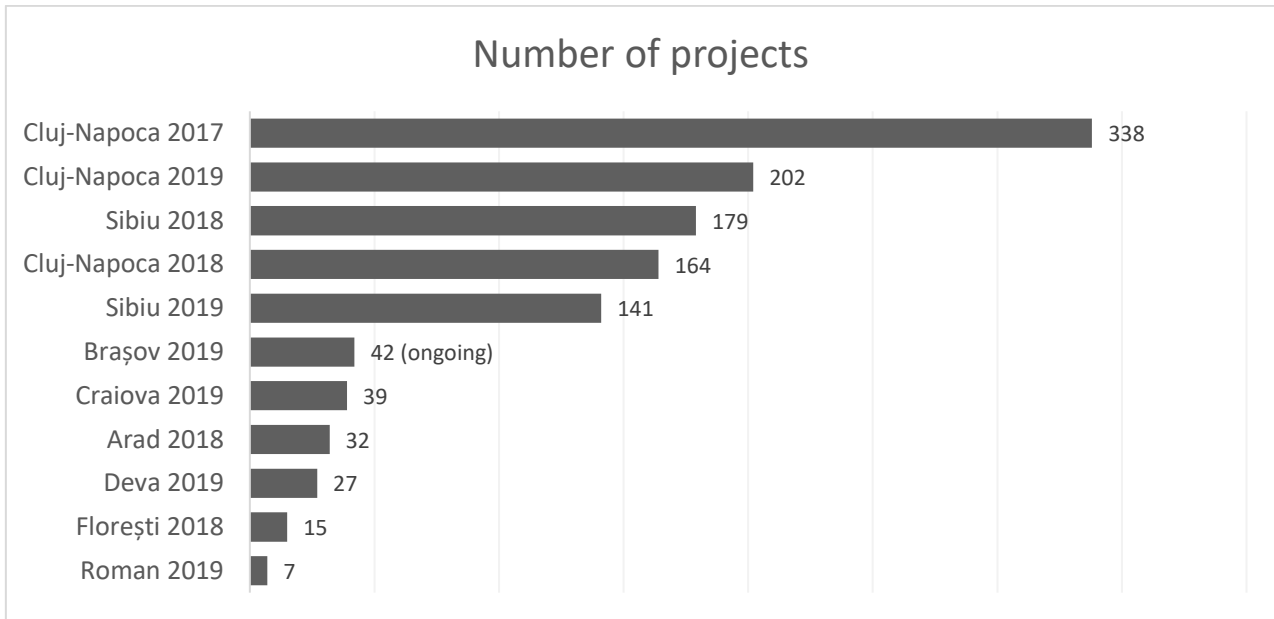
Chart 3: Number of proposed projects, by city and year

The main objective of PB is involving as many citizens as possible in the process and giving them the tools to influence the way their money is spent in their communities. As such, the number of votes gathered by the proposed projects is an important number by which the success of the PB can be judged.

Number of votes

City/Year	Value
Cluj-Napoca 2017	40637
Cluj-Napoca 2018	19032
Cluj-Napoca 2019	17168
Sibiu 2018	8108
Sibiu 2019	5006
Arad 2018	4221
Craiova 2019	3210 (ongoing)
Roman 2019	2502
Deva 2019	689
Florești 2018	460
Brașov 2019	ongoing
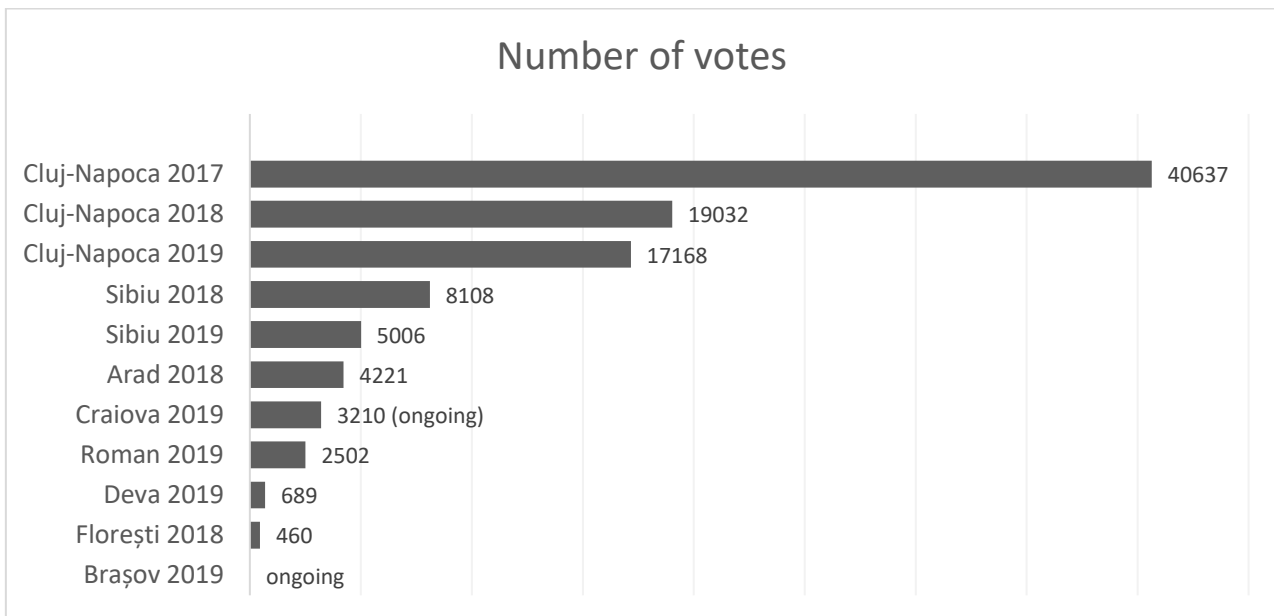
Chart 4: Number of votes for all proposed PB project, by city and year

What % of population voted

City	Percentage
Cluj-Napoca 2017	10,49%
Sibiu 2018	5,51%
Roman 2019	4,93%
Cluj-Napoca 2018	4,91%
Cluj-Napoca 2019	4,43%
Sibiu 2019	3,40%
Arad 2018	2,62%
Florești 2018	1,28%
Craiova 2019	1,19%
Deva 2019	1,13%
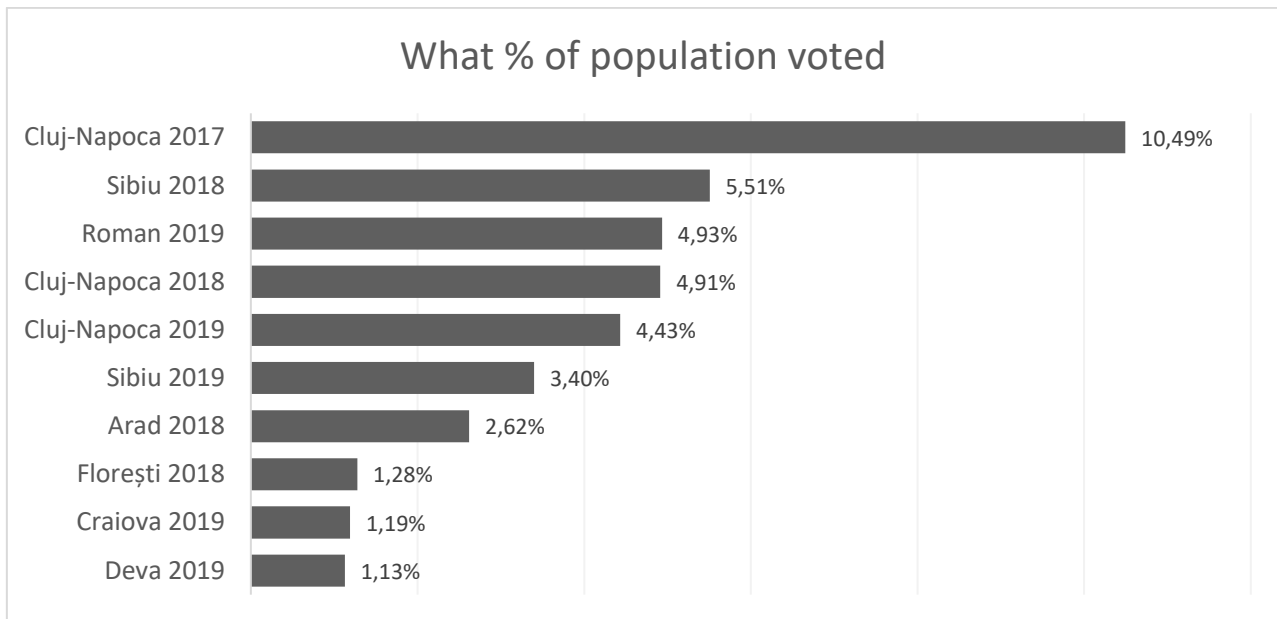
Chart 5: Percentage of population that voted, by city and year

The number of winning projects varies from city to city. If in Cluj-Napoca, in each of the three years, 15 projects were declared winners and implementation started, in Sibiu there were 9 in the first year and 6 in the second year, in Arad 14 in 2018 (after that, Arad dropped PB, at least temporarily), in Deva 6 projects won, in Florești 2 and, in Roman, 1.

City Halls generally under-appreciated the time it took to implement projects proposed through PB. A small number of projects were completed – the cities that provided specific numbers were Cluj-Napoca (3 projects), Deva (2), Roman (1). Other proposals were in different stages of implementation (42 in Cluj-Napoca, 4 in Arad, 2 in Florești). It is interesting to note that only Cluj-Napoca provides any information on their platform about the stage of implementation of the winning projects.

5. Discussion

The theory says that participatory budgeting has the potential to attract people, especially the young and the educated. Detailed data obtained from Cluj-Napoca, from all three years, show that almost 30,000 people participated in PB (in one or more years) and their average age is 37 (at the national level, the average age is 41). It is interesting that 31.9% of those who voted were university students (around 20% of the population in Cluj-Napoca are university students).

Participation rates are mostly in line with those encountered in other countries. For example, in Eastern European countries, the percentage of citizens involved in PB in cities was between 0.5 and 8.43 in Slovakia, between 0.77 and 6.8 in Croatia, while in Poland the relative indicators are 5.15 to 24.1, depending on the specific cities [9].

In cities that had managed to keep the PB process alive in consecutive years, there seems to be a decrease in participation. A number of factors can explain this trend. The initial novelty determines increased participation, spurred by extensive local media coverage. This freshness wears off in the following years. It is also not helpful that, evident from discussion we had with the public servants in charge of these projects in City Halls around Romania, the marketing campaigns for PB were almost exclusively consigned to the social media accounts of the City Halls. Another possible reason for

decreasing participation is the small number of projects seen through to the end. The City Halls seem to have overestimated their capacity to implement the winning projects. Also, during the vetting phase (where public servants asses the proposed projects and approve or reject them), there is little transparency on the reasons a particular project is accepted or excluded.

Even if the sums allocated from the city budgets to PB projects are in line with those in other countries, the only cities that come close to spending the full amount are Cluj-Napoca and Sibiu. For the others, the lack of participation or the small number of eligible projects may mean that most of the allocated money will remain unspent.

6. Conclusions

Participatory budgeting in Romania is still in its early days. A fair number of cities have implemented such processes and we expect this number to increase in the years to come. Some successful projects were proposed and are either already up-and-running (dedicated public transport lanes for children going to school in Cluj-Napoca, for example) or in the implementation phase (a number of apps that should increase City Halls' transparency and accountability, in a number of cities). On the other hand, citizens are usually held at arm's length, once the voting period has finished, and are not allowed to get involved in the implementation.

Anecdotal evidence tell us that a majority of people in cities that have PB do not know about this processes. A more extensive marketing campaign could reach more citizens and involve them in this opportunity to participate in the betterment of their communities.

City Halls could also be more transparent during both the selection phase and the implementation period, with constant updates and realistic deadlines.

7. Limits and further research

This research is just a first step towards understanding the PB projects in Romania. Even if the response rate is relatively good, the small number of cases does not allow us to draw definitive conclusions and generalizations.

Another weakness of this study is the reluctance of some City Halls to release complete data about PB in their communities; we can speculate about the motives (low participation, small number of implemented projects, or lack of technical expertise) but without this data is hard to go more in depth with the analysis.

We will continue to monitor the PB platforms in Romania (both the existing ones and those that will undoubtedly appear in the next years) to fill the gaps in understanding the importance and effects such projects have on communities.

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INNOVATING A CITY
THROUGH CITIZEN PARTICIPATION:
COULD INTERDISCIPLINARY ORIENTATION
PLAY A ROLE?

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Abstract

This exploratory study is based on a grounded theory research performed with the intention to find new potential explanations for citizen participation to processes related to city innovation through public administration and e-governance initiatives.

Considering (1) the huge importance and amount of previous work on innovation, (2) the societal challenges with which we are confronted, most of them requiring multiple, system thinking type of knowledge and an interdisciplinary perspective, as well as (3) the need to transform our cities in better living and working places, one research question was raised: what does it take to make people more involved in the process of innovating a city, other than traditional factors previously investigated? It is a subject at the intersection of several fields and streams of research: public administration, innovative cities in terms of governance and e-government, civic participation and citizen science, researchers' skills and competencies, inter and transdisciplinary research - a complex array of intertwined challenges.

The research objective was to find out if interdisciplinary orientation could be considered among the influence factors that explain citizen participation. The grounded theory method was applied, based on the inductive approach, to generate future hypotheses. The research is exploratory and qualitative; we conducted a semi-structured group interview with 18 researchers, to identify the most important traits of human innovation, followed by a survey with 30 researchers to measure their perceptions towards interdisciplinary research. Researchers were used as an extreme case selection unit for the initial formulation of our research hypothesis, having in mind their double quality – highly educated people and citizens.

Our pilot study findings indicate that interdisciplinary orientation could be a significant explanatory factor for citizen participation, but further quantitative testing is necessary.

1. Introduction

Europe needs, asks and offers support for initiatives designed in favor of more innovative cities, human-centered, inclusive, safe, resilient and sustainable, in which citizens are involved and

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participate to the development of their local community, through co-creating approaches. [33], [34], [35], [36]. These desiderates change the whole picture in terms of governance, including e-government, as well as in terms of skills and competencies required from various publics, from the narrowly specialized ones (academics, politicians, administrators etc.) to the large society as a whole (all citizens). Present global health challenges add supplementary concerns over citizen behavior and citizen's willingness and abilities to cope with radical behavioral changes. Civic engagement, in various forms – do something or quit doing something, in various ways = offline and online, is desired and thoroughly analyzed, to better understand it and discover ways in which could be stimulated [1], [4], [12], [15], [24], [28], [33]. Be it policy people, local administrators, educators, researchers or citizens, they all need to go beyond their more or less narrow, specialized knowledge and interests, transgress disciplinary boundaries and adopt a more complex, inter and transdisciplinary perspective for solving societal problems at their level. Could interdisciplinary orientation have a role in explaining citizens' participation to the community life? Are we prepared for such an interdisciplinary approach?

The present research started with these rather philosophical questions, specific to grounded theory research designs, and got a more structured form during a course within a postgraduate program on innovation for doctoral and postdoctoral studies, which served as a small scale pilot exploratory research. Finding a research idea that brings together various research subjects and experiences from all fields of economics and business, allowing students to work on a common agenda is very similar to the way city's inhabitants need to act in order to solve common societal issues; we decided to use previous research backgrounds and results to suggest ways to make the city in which they all studied a more innovative one.

The whole approach is a grounded theory type of research design [20], in which exploratory, inductive reasoning is used (in contrast to a deductive approach based on previous theories and hypotheses testing). Grounded theory designs, developed by sociologists, begin with quite general questions and qualitative data collection, and try to develop the basis for new theories, other than the existing, traditional ones, giving the researcher freedom to generate new concepts with potential in explaining human behavior [20].

Considering the huge importance and amount of previous work on innovation, the societal challenges with which we are confronted, requiring an interdisciplinary perspective, as well as the need to transform our cities in better living and working places, the general research questions were further refined: what does it take to innovate a city, from the people's (human resource) perspective? How could a local public administration encourage citizen to adopt an innovative societal behavior? Do we have the openness towards various fields of study needed to understand the whole process and to get involved?

The subject is situated at the intersection of several fields and streams of research: inter and trans disciplinary research, public administration, innovative cities in terms of governance and e-government, civic participation and citizen science, researchers' skills and competencies - a complex array of intertwined challenges. In line with grounded theory recommendations [20], we did not start with a literature review, but with an idea for a potential explanation of citizens' participation outside of the main streams of theories and researches; this idea was inductively generated by the observation of people's attitude towards civic engagement, during the course talk, and the ascertainment that participants having a mixed background (more than one previous degree specialization) were more prone to participate, at least at a stated level. From here, we moved to a next step – collecting data to see if it supports the nascent idea for a future theory testing.

The exploratory research objective was twofold: to find out doctoral and postdoctoral students' (generally addressed throughout the paper as researchers) perceptions about the intangible human innovation required for innovating a city and to find out their orientation towards interdisciplinarity. We conducted a semi-structured group interview with 18 researchers, to identify their perceived important traits of human innovation, followed by a survey with 30 researchers to measure perceptions towards interdisciplinary research. Both samples were convenience type ones and partially overlapping: the 18 researchers used for the interview were those physically present to the first kick-off meeting of the innovative research postgraduate course module; 30 researchers (including the previously interviewed ones) represented the total number of participants enrolled in the course module on innovative research.

The rationale for this approach is rather simple: behind any aspect of public sector, e-democracy, ICT, e-government or e-citizen participation we have behavioral influence factors related to inner, innate traits (human nature), to environmental or development type variables (nurture), or a combination of these [31]. Education, disciplinary backgrounds and previous experiences with social norms contribute to a person's attitude and behavior; the more diverse are experiences, the higher is the likelihood for understanding various initiatives and the probability to get involved. In this light, interdisciplinary orientation could be a potential explanatory factor for citizen participation – a relationship that was not previously investigated.

2. Literature review

Our research started as a grounded theory approach, with some general questions, followed by a qualitative data collection through observation and informal interviews. Only after these initial steps we moved to the third stage, the literature review; a survey of the theory was performed, to test the viability of the potential explanation revealed during the first two stages from a theoretical point of view.

Several rounds of literature search were performed, first using key words pertaining to the specific fields of research (e-government, public administration, citizen participation, city innovation). In a second phase, an intersection of fields was performed and results analyzed, using all possible combinations of the four groups of key words related to the main fields of research. The final result was a search with common words, and thus a number of studies from eGovernance, eParticipation etc. which had in common the idea of interdisciplinarity. We shortly present, as it follows, the main identified themes.

In recent years, the volume and pace of research on topics like e-government, e-public administration, innovative cities, or citizen involvement has increased considerably [4], [9], [10], [22], [26], [25]. A diversity of referent domains and ideas can be noticed, with more and more investigators emphasizing the need to strengthen research and practical implications considering multiple theories, methods and fields – from law, sociology, politics, economics, management, marketing, philosophy, communication, information science, computer science, ethics [5], [10], [16], [17], [18]. If the desire to develop 'human-centered' or citizen centered services, especially e-government ones, to provide timely, accessible, relevant information and quality services should be transformed into action and applied in practice, then traditional 'brick and mortar' approaches, narrowly specialized are not enough, and various government agencies need to find out more types of factors with possible influence on citizen adoption of innovative services [4]. We retained, thus, the main categories or codes for this section of the literature review - influence factors for citizen behavior, and multiple approaches.

Public administration is a complex applied social science, still struggling to better define its place; despite the internal controversies in terms of paradigms, research traditions, epistemologies, and modes of thought, or despite the fact that it is generally divided either along an academic dimension versus a vocational one, or an educational focus versus a research one [22], scholars agree that their knowledge and thinking should raise above singular disciplinary perspectives, for being able to suggest solid, sustainable solutions to the more and more complex societal challenges. Interdisciplinary cooperation and integration is needed, and so are real exchanges between scholars, often leading to transdisciplinarity and new insights. [5], [22]. Again, we find various influence factors, and interdisciplinary approach, as main codes for this second group of articles.

The exponential development of ICTs or Social networks impacted almost every facet of our lives and societies, including or especially concerning city governance and public administration; researchers try to respond to these challenges through massive interdisciplinary research [14], [15], [27]. Although some scholars speak about a painful dilemma in public administration – independence or interdisciplinarity [21], governance is considered itself a deeply interdisciplinary concept [32].

Without citizens' involvement and usage, any project would be meaningless; citizen engagement is a core concept of participatory planning and e-governance. Citizens need knowledge, knowledge is created and distributed, and these mechanisms require, again, interdisciplinary approaches [19]. Research on finding explanations for citizens' participative behavior increased, as well [1], [4], [12],[14], [15], [21], [28], [29]. So, for this third stream of literature, same codes – influence factors and interdisciplinarity.

We searched further for the interdisciplinarity concept in itself – fourth stream of literature. Although skepticism towards interdisciplinarity existed and still exists, interdisciplinary research seems to be a global agenda to scholars, due to increased interconnection between disciplines [2], [3], [5], [8], [11]. Everywhere someone calls for interdisciplinarity - in science, in higher education policy, in sociology, in politics, etc., as a concern towards a too narrow, overspecialized science, distanced from society and its needs [23] The way interdisciplinarity develops is interesting: either through a re-combination of disciplines or specialties from within science (especially through transfers and adoption of methods), or through across boundaries cooperation due to external impulses from research and political bodies. The first approach leads – paradoxically – to increased specialization and new disciplines formed from the previously combined ones; these new disciplines need to define their new, specific identity, and end up using a similar methodological nationalism and new disciplinary fences that were used by the disciplines from which they have been split. The second approach leads, in the end and if properly managed, to transdisciplinary research, with applied societal implications. The evolution of disciplinary and interdisciplinary fields is somehow similar to processes from biology, later applied to sociology [7]: cladogenesis and anagenesis. When a parent species splits into to distinct ones, with common ancestors, biologists speak about clades – and some scientific mono-disciplines were formed like this. In contrast, anagenesis supposes a gradual evolution of a species that continues to exist as an interbreeding population - it would be the case for interdisciplinary researches. In social sciences this process of anagenesis or aromorphosis leads to widely diffused social innovation, raising adaptability and interconnectedness – same thing that would or should happen in interdisciplinary and transdisciplinary research.

As a conclusion of the literature search, the new potential explanatory theory of a relationship between interdisciplinary orientation and citizen participation makes sense, is highly plausible. In all these processes (e-government, e-democracy, city innovation etc.) specific skills are needed – interdisciplinary ones – for a meaningful participation of all actors, not only citizens, although the

way citizens learn these skills is still controversial [1]. Citizens need skills for learning to be participative and effective, to communicate, to connect in networks and groups, to take action – online and offline, as well, to exercise civic rights and contribute to the innovative change of their cities [1], [14], [15], [28]. Researchers are citizens as well, but they have an even more important role, to discover not only what motivates themselves, but also what motivates others in such an enterprise. This is why we wanted to find out what researchers feel about interdisciplinarity, and moved to the next stage of our exploratory research: measure interdisciplinary attitudes.

3. Methodology and main findings

The research was an exploratory one, with the intent to identify and describe the most important variables that could be used in a future causal study in the field of relationships between interdisciplinary research orientations and other institutional and individual variables, if public administration and e-governance initiatives should be embraced, respected and supported by citizens. Researchers were used as a pilot sample, based on the idea of the extreme case selection [6]: they are the category with the largest amount of information on various fields, the most educated public, from which we would have the highest expectations in terms of civic involvement and interdisciplinary collaboration.

We first employed a semi-structured laddering type group interview with 18 researchers, in order to find out what researchers think about people's reactions in a community, whenever some type of change – for example an innovative behavior towards a city – is expected and intended by local public administration/government people. The starting question was: "What are, in your opinion, the most important concepts/factors influencing people's attitude towards a change in societal behavior?" Each respondent expressed an opinion, the answers being transcribed and then analyzed, using the content analysis as method, based on the emerging coding procedure. Three categories of factors were obtained: way of reasoning/thinking, personal beliefs/convictions and mentality/culture. For each of the three categories the interview continued with the next ladder step question: "What do you understand by way of reasoning?", "What are personal beliefs/convictions?", "What do you understand by mentality/culture?" Again, all answers were registered and a second round of content analysis was performed, to extract more specific influence factors. The main common variables identified during this stage were: information processing, individual values, social norms, and habits. With these potential influence factors we moved to a quantitative research, still exploratory in nature, in order to find out researchers' information, individual orientations and values, as well as habits in terms of doing research in general and towards interdisciplinarity in particular.

The questionnaire was taken from a study designed for a previous research, with several separate objectives [30], and had 42 questions, from which 33 related to latent variables of interest (interdisciplinary orientation, intellectual capital, profile of research collaborations etc.) and the rest being descriptive questions for the respondents' academic profile. We selected from the total response data file only those questions pertaining to the present research, and the results (descriptive statistics – frequencies) are presented in Table 1.

Questions	SD	D	N	A	SA	SD+D	SA+A
1. I value reading about topics outside of my primary field	0	3.3	16.7	46.7	33.3	3.3	80
2. I enjoy thinking about how different fields approach the same problem in different ways	0	3.3	6.7	36.7	53.3	3.3	90
3. Not all problems in my field of research are relevant only for my own field of research	0	0	13.3	43.3	43.3	0	86.6
4. Not all problems in my field of research can be solved by people from my own field	0	3.3	20	30	46.7	3.3	76.7
5. In solving research problems in my primary field of research I often seek information from experts in other academic fields	0	16.7	16.7	33.3	33.3	16.7	66.6
6. When I'm given knowledge and ideas from different fields than mine, I can figure out the appropriate way for solving a problem in those fields	3.3	6.7	26.7	50	13.3	10	63.3
7. I see connections between ideas in my field and ideas in quite different fields (for example, from technical or science to humanities and arts)	0	6.7	23.3	40	30	6.7	70
8. I can take ideas from outside my field and synthesize them in a way easy to be understood by others	0	6.7	16.7	46.7	30	6.7	76.7
9. I often step back and reflect on what I'm thinking, to determine whether I might be missing something	0	0	26.7	26.7	43.3	0	70
10. I frequently stop to think about where I might be going wrong or right with a problem solution	0	13.3	10	36.7	40	13.3	76.7
11. I recognize the kinds of evidence that different sciences or fields of study rely on	0	16.7	23.3	46.7	13.3	16.7	60
12. I'm good at figuring out what experts in different fields have missed in explaining a problem or a solution	3.3	33.3	40	20	3.3	36.6	23.3
13. I tend to be more productive working on research problems with people from my field than working in a research team with members from various fields	3.3	20	13.3	43.3	20	23.3	63.3
14. It is important to focus my research efforts with others in my own field/discipline	0	6.7	20	43.3	30	6.7	73.3
15. The benefits of collaboration among scientists from different fields usually outweigh the costs and publication inconveniences of such collaborative work	0	13.3	23.3	50	13.3	13.3	63.3

Table 1: Descriptive statistics
(percentages of strongly disagree, disagree, neutral, agree and strongly agree)

The first four questions (1- 4) refer to the researchers' general attitude towards interdisciplinary collaboration. The next four (5-8) describe their behavior in terms of interdisciplinarity. Questions 9 to 12 relate to researchers reflective capacity (which is an antecedent of interdisciplinary orientation) and their confidence in their own interdisciplinary skills. The last three questions (13-15) describe researchers' perceived usefulness of getting involved in interdisciplinary research.

4. Discussions and conclusions

Researchers have a good attitude about interdisciplinary collaboration, with higher percentages (ASA) appreciating the theoretical and passive side (reading, observing) rather than the active one (being involved in doing it, in solving problems). We can notice the percentages of disagreement for questions 3 and 4, suggesting a higher trust in solving problems inside their disciplinary field, which is in line with what we find in the real world. The proportion of people not valuing totally the idea of interdisciplinarity worth being noticed, as well – again, in line with what happens in real life, where fields are rather separated, insular and tribal [2].

When looking at stated behavior, we can notice that although a comfortable majority (more than 60%) of researchers crosses their discipline's boundary for getting information, a rather worrying percentage doesn't – and if this highly educated and informed segment of population doesn't, we cannot expect regular citizens to do more. Reflective capacity and confidence in seeing connections between fields or communicating across fields are also comfortably high, yet at the same time worrying if we consider researchers as being able to have the largest interconnected perspective about societal issues to be solved.

Finally, the answers to the last three questions show that mono-disciplinary work is considered more productive, more important and more beneficial in terms of costs and benefits (especially publication). It is not a surprising result, since previous studies on interdisciplinary work suggested similar positions and worries for researchers ([2], [3], [18]), and since interdisciplinary work is more difficult to evaluate and publications in interdisciplinary journals are quite often less valued for promotions.

Although several limitations exist for this exploratory study (limited samples, convenience selection procedure, researchers belonging to the same field – economics and business studies, risks of subjective interpretations for content analyses due to the fact that both authors come from the same field), it could be a good starting point for a future quantitative study and especially for reconsidering the way we prepare researchers first, and then policy people and citizens, as a whole, for interdisciplinary knowledge, collaborative work and participatory civic activities.

Innovating our cities will require a higher effort for an interdisciplinary orientation, comprehension and behavior. Getting people or citizens more participative and engaged, either offline or online, improving e-participation and governance could be obtained by a shift in education, towards a greater interdisciplinarity curricula. This is the hypothesis generated by our exploratory research based on grounded theory principles – hypothesis that needs further testing and investigation.

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MOLDOVAN DIASPORA´S SOCIAL NETWORKS: POLITICAL MOBILIZATION AND PARTICIPATION

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Abstract
In the early 90s, the Republic of Moldova declared its independence and began to build a sovereign state. The state construction was characterized by severe political, economic and social crises that pushed many Moldovans to leave the country and look for a better life abroad. Once settled abroad, many Moldovans kept in contact with their homeland via online platforms. Additionally, they began to create online communities and social networks, and start using them as main tools to inform and share the information, to debate the political situation at home and share some opportunities. Later on, social networks became a place for political mobilization and a source of transnational influence and transfer of innovation back home. Drawing on a qualitative analysis of diaspora´s social networks the current article acknowledges their potential to engage and mobilize the political participation of the Moldovan diaspora. Such a practice is an example of active engagement and solidarity with the Moldovans back home and points out the decisive role that Moldovan diaspora can play for the country of origin transformation. Therefore the article concludes that social networks transcended their initial aim and transformed into a space of political mobilization and participation.

1. Introduction

Nowadays, regardless of the geographical location, he or she can connect, talk, and access a big amount of information online. This opportunity has been of paramount importance for migrants. Being abroad and far away from their families and community, online platforms have become spaces of information, resource exchange [22] and political participation [34]. With a simple click, recently arrived migrants and diaspora can access and distribute social media, can debate the online information, create new media content, can establish and join social networks, and can mobilize and inspire political participation.

Many studies have proved that there is a positive correlation between social media and political participation [3,5,9], nevertheless, *how* social platforms influence citizen engagement and participation remains unexplored [20]. Additionally, there has been little attention paid to the case study of the Moldovan diaspora political participation. Thus, without testing, if there is any evidence of the positive or negative influence of social networks on Moldovan diaspora mobilization and political participation, as well as diaspora claims and causalities between social networks and political participation remains unclear. Therefore, in this article, we examine one such path of "strong" and "weak" social ties [11] which enable Moldovan diaspora to increase their social capital and to obtain different types of embedded resources in social networks [6,25] and influence political participation [34]. Because social networks possess particular characteristics, we argue that online platforms enable more constructive communication among diaspora with distinct types of ties. Consequently, these

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social ties facilitate unique routes for engaging in political activities [5]. Specifically, we theoretically suggest that social network sites successfully combines both strong and weak ties in Moldovan diaspora´s mobilization and political participation. As a result, social network sites might be more efficient at promoting political engagement by needed reinforcement, as well as might provide optimal premises at sharing and debating political information. Thus, this combination of social ties on social network sites might lead to Moldovan diaspora political mobilization and participation.

Despite of this, few studies have focussed on the influence of different online platforms and online social networks on participatory behaviors [34]. To fill in this research gap, we first start with the literature review on social capital and political participation – that is closely linked to social networks and diaspora. Subsequently, we present the case study of the Moldovan Diaspora social network site. The results reveal the Moldovan diaspora's strong interest in politics back home, and a positive correlation between the social network's engagement and political participation. The link between Moldovan diaspora mobilization and political participation is framed by the social network sites within which diaspora participate and communicate. Additionally, the social networks' power to mobilize the Moldovan diaspora political participation seems to be influenced by the size, heterogeneity, and ties of the diaspora´s social network. Therefore, participation might increase within large social networks of like-minded individuals, but might declines inside homogeneous networks that are small in size and consequently have reduced chances to influence and inform about political issues. The final part of the article is dedicated to the significance of these results for the Moldovan diaspora´s social networks and political participation.

2. Theoretical foundation

2.1. Social Capital and Migration

Social capital can be explained as the resources (information, knowledge, ideas, supports) coming from the individuals' relationships in social networks [4,6,31]. Analyzing social capital Bourdieu emphasized the structure and ties of acting individuals in resource accumulation. Later on, Putnam added the community level to the social capital analysis and Coleman emphasized the outcomes of social networks through civic engagement and political participation. Accordingly, the main difference of social capital relies on the complex relationships between individuals and their bonds with communities, networks, or societies that bring material or non-material added value. In this way, individuals have access to resources thanks to their relationships with other individuals, communities, and networks that share some common norms, values, and experiences in a structured field [25,29]. Keles defined it as follows the "social capital refers to the resources (information, knowledge, ideas and various supports) embedded in social networks that individuals procure by virtue of their relationships with other people" [18]. At the same time, Nahapiet and Ghoshal framed the social capital as a set of resources rooted in relationships with three clusters of attributes: structural, relational and cognitive dimensions of social capital, and which, according to the authors, are highly interrelated. The structural attribute outlines the pattern of relationships and networks ties in an organization, and it describes the linkages´ density, connectivity, and hierarchy. The relational attribute emphasizes the nature of relationships, where the key values are trust, norms, obligations, expectations, and identifications. While the cognitive attribute outlines the impact of a shared language, code or narratives on reaching a common understanding, interpretation or meaning [27].

In migration studies, social capital becomes relevant due to its contribution to understanding how migrants gain or lose access to resources and participate in the social, economic or political life of their country of origin or destination [8,24]. These studies discuss migrants and community

development as a result of within-group connections (bonding), between-groups connections (bridging) and linking social networks that influence the resources´ access and capital return [24,29]. Additionally, these studies argue that social networks of ethnic, cultural, religious, etc. groups represent a powerful tool to enhance social mobility and support to overcome discrimination and marginalization of subordinated individuals and groups, such as diasporas [8].

Diaspora membership in a social network can increase their opportunities to access new information as well as offer opportunities to affiliate participate and as a result, have a direct impact on social status and wellbeing. This cause and effect mechanism means that one can increase their social capital by joining a social network and access additional information, influence, social and political credentials, and reinforcements. In this line, Lin points out that a revolutionary rise of social capital is due to cyber-networks or the internet [25].

Some research brings evidence on the positive contribution of the internet in accumulation and increase of social capital [13,16] as well as its role as a catalyst for civic and political participation [10,34]. Diaspora communities, far away from home, establish virtual communities to increases their social capital, and with the socio-political and geographical mobility and the Internet manage to compress time and space, and access multiple online supports [18].

Globally many scholars, from a variety of disciplines, have undergone researches on diaspora´s social networks. Some studies focused to understand the diaspora phenomenon regarding the use and consumption of technology and media [1], diaspora´s transnational network claims and engagement [22], while others tested the influence of social networks on political behavior [19] and the role of social networks in facilitating protest and social movement organizations [21]. Nevertheless, little attention has been paid to the other diaspora online social networks, such as Moldovan one.

Since the 90s, shortly after the independence and the multiple and crosscutting crises, the migration flows from the Republic of Moldova started and became a phenomenon with huge social, economic and political impacts. Although the migration phenomenon from the Republic of Moldova has been studied broadly considering its economic, social and political aspects, little research has been undertaken on the study of Moldovan diaspora´s social networks in general and on diaspora's social networks political mobilization and participation, in particular. Thus, the current article aims to contribute to filling in this gap.

Drawing upon the existent literature, this article considers the social capital framework to analyze the Moldovan diaspora´s social networks and test the influence on diaspora mobilization and political participation.

2.2. Diaspora Social Networks and Political Participation

Political participation and political talks are fundamental to democracy [17]. Traditionally these talks took place face-to-face or via unilateral channels but during the last decades, a new form of political talks emerged online, where the users could not only hear the political talks but get actively engaged in the debate, share the political information and generate new political talks themselves. Accordingly, they became active actors in political mobilization and participation. The previous research argues that talking about politics, online or offline, helps individuals overcome uncertainty and helps make sense of political information [28]. Such a possibility to clarify the political doubts as well as critically assess the wide range of information online might be vital for the diaspora members. Some empirical research reveals a positive correlation between debates online and political

engagement offline [12] but the study of the impact of online debates in the case of Moldovan diaspora is almost absent. Additionally, some research points out the complementary role of the online debates and argue that they usually diversify the sources of information [14,33].

Research Question 1: To what extent the Moldovan diaspora online political discourses associate with political participation?

Discussing Moldovan diaspora's social network characteristics, particularly size, heterogeneity, and social ties can reveal their effect on the levels of political mobilization and participation. Looking at the size of social networks, some researchers argue that membership in larger networks tends to foster political mobilization and participation [9,23]. Consequently, the bigger a network is than more opportunities it offers to encounter other politically active diaspora members, which helps to boost participation [9]. Because social ties can play an important role in framing online communication practices [5,13,26], their characteristics (weak or strong) might have an important influence on whether social networks play a constructive role in political mobilization and participation or jeopardize it. Therefore, it is likely that the benefits of engaging in social networks online for political mobilization and participation might be influenced by social network characteristics.

Research Question 2: To what extent the Moldovan Diaspora Social Networks´ characteristic – size, heterogeneity, and social ties – affect political mobilization and participation?

The above research questions examine the interactions among Moldovan diaspora´s social networks on a social network site and test the network influence on diaspora mobilization and political participation.

3. Research methodology

To extract, process, and analyze the data from social network sites of Moldovan diaspora analysis related to political mobilization and participation, we used the qualitative research software NVivo 12 Plus. NVivo is a Qualitative Data Analysis (QDA) tool and the computer software package produced by QSR International, and it is a software that can be used to organize, store and retrieve unstructured data. An elaborated book that addresses the NVivo application in research has been elaborated by Jackson and Bazeley, who described how to use NVivo in qualitative research [15]. The authors argue that NVivo can be used to import data from virtually any source and with advanced data management, query, and visualization tools are just other added value that the software brings to the research. Moreover, NVivo´s add-on NCapture can extract online data from a variety of social media sources and social network sites, such as Facebook, Twitter, and others. Consequently, it is a tool that fits best into the aims of the current research and will be used to extract the online data and later on analyze it.

The add-on NCapture for NVivo was installed in our browser to download the required information from the Moldovan Diaspora groups on social network sites during 2019. At first, research has been undergone to identify the Moldovan Diaspora social networks. Therefore, by December 2019, there were 124 social networks of Moldovan diaspora established and functioning. Nevertheless, this modest number does not represent the whole picture of Moldovan diaspora groups online, because it does not include the social networks belonging to the Moldovan diaspora NGOs, and the social network sites that lack the word "Moldovan" in the name of the group. Consequently, the real number of Moldovan diaspora social networks is expected to be much higher. An overview of the social networks' discussions on political mobilization revealed some shared and reposted contents from

another social network site "ADOPTA UN VOTE" (further after AuV). Additionally, this site seems to be the biggest Moldovan diaspora social network and the discussions are predominantly of a political character. Due to this rationale, for the NVivo analyses was selected the social network AuV. It was created in 2016 with the main aim to mobilize diaspora for political participation, counting at the moment of analysis with 79938 members. Seven hundred posts and comments were downloaded by the authors, and the dataset was then imported in NVivo for further analysis[3]. The following steps were performed to classify a comment as political mobilization or action for political participation.

Generally, data extracted from social network sites come out with a lot of meta-data such as the Post ID, the name of the person commenting, the actual text of the post or comment, the date and time the post or comment was made, etc. For this study, only the actual texts of the posts and comments field were used and analyzed. The posts and comments are finally coded into mobilization and political participation clusters by making use of the auto code feature in NVivo12. Examples of political participation words are vote, elections, president, party, etc., and examples of mobilization words are let´s vote, diaspora vote, election stations, etc. Words that do not have political relevance are considered to be neutral.

4. Moldovan diaspora's social networks and political participation

A growing number of social networks have been established by Moldovan online. These networks usually associate with the country of origin and the group name many times comprise "Moldovans" followed by the name of the country they stay in, the city, region, and continent (for example Moldovans in Australia, Moldovans in Bilbao, Moldovans in Africa, etc.). Not so frequent are social networks that try to unite all Moldovans abroad regardless of their country of residence, using the names of "Moldovans abroad" or the "Moldovan diaspora" (for example Moldovan Diaspora, Moldovans abroad, the network of Moldovans). Additionally, some social networks try to bind the Moldovan younger generation (for example Moldovan students in Lyon, young Moldovans in Greece) or social networks of Moldovan women (for example The network of active diaspora women from the Republic of Moldova). The description of these social networks altogether with the posts brings evidence on the groups´ positive contribution to increasing the diasporas´ social capital. Many networks offer access to a wide range of information, starting with employment opportunities, information on local integration policies and laws, transfers of goods and sending money back home and ending some solidarity campaigns.

In an earlier study, Rosca explored the Moldovan diaspora online dialogue and found out that political issues are among the top five arguments discussed by Moldovan diaspora [32]. From one side, it seems that the Moldovan diaspora did not lose their interest in the political situation back home, on the contrary, they seem to access, share information and engage in debates on the political situation, political mobilization, and political participation quite frequently. On the other side, since 2010, the Moldovan political parties started to pay particular interest to Moldovan diaspora, because of diaspora's right to vote abroad, inside the Moldovan embassies and consulates. Such a change triggered both diaspora leaders as well as political parties to try to influence the diaspora decision making, and online platforms and social networks started to be the place of political outreach. In this way, the Moldovan diaspora social networks transcended their initial aim and transformed into a space of political mobilization and participation, bonding and bridging Moldovan diaspora and capitalizing their social capital.

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[3] The data were exacted as a sovereign action of the authors without the consent of the site or members of the group. Therefore the group members data are anonymous and they cannot be identified in the content of the article.

The diaspora political mobilization culminated with the creation of the social network site AuV which aim and objectives from the start were diaspora political mobilization and participation. Although this is not a novel initiative at the global level (because similar social networks seem to exist from 2012 in Philadelphia, USA), it has been an innovative and powerful political mobilization tool during the presidential elections in 2016 and the following elections. It has to be mentioned that the candidate Maia Sandu (from Party Action and Solidarity - PAS) is a diaspora that returned home and that might be one reason why diaspora showed high solidarity with PAS party. Secondly, Maia Sandu was the first women candidate ever and leading a pro-western party, in addition to her personality assets such as integrity and professionalism.

The NVivo word cloud analysis of the AuV social network online talks proves a highly politicized diasporas´ discourse (Figure 1). The interest of diaspora in sharing, posting and debating the political issues from Moldova, in Figure 1, represents a visual representation of the main topics discussed by AuV social network extracted and elaborated with NVivo. This show, from one side, the hierarchy and trends of political themes among diaspora online debates (for example the political leaders Igor Dodon, Maia Sandu, Andrei Nastase, 2016 presidential elections, etc.) and, from the other side, reveals a direct influence of Moldovan diaspora's online political discourses and their political mobilization and offline political participation.

Figure 1: Moldovan Diasporas online discourse
Source: Elaborated by the authors with the data from AuV, extracted in December 2019.

In reference to the presidential election from 2016, some reports qualified the Moldovan diaspora political participation as an "unprecedented presence" [2]. In this way, the social networks managed to mobilize the Moldovan diaspora and increased political participation. This finding is in line with the other studies that have proved the positive correlation between social media and political participation [3]. Thus, the Moldovan diaspora online political discourses associated to a great extent with their political participation.

An important contribution of the AuV seems to be, from one side to capture the previously social networks and sporadic diaspora´s political activism and establish for the first time a social network

with political mobilization and participation aim. According to the final report of Promo Lex, AuV is described as follows "A group of Moldovan citizens living abroad started an online campaign "Adoptă un vot" ("Adopt a vote") to mobilize the Moldovan diaspora. The campaign ensured free transport and accommodation for fellow citizens who wanted to vote in the second round of the presidential election because many citizens had to travel long distances to exercise their right to vote"[30]. After the 2016 presidential elections, the AuV remains an active social network for political mobilization and participation and inspired the creation of other social networks (such as Adopt a Moldovan or Adopt a village) that have a philanthropic aim. The *size* of the AuV social network is the biggest compared to the other Moldovan diaspora social networks and because of social network particular characteristics, it seems that online platforms enable more effective communication among diaspora with different types of social ties.

The establishment of a social network that aims to political mobilization and participation crystalize a positive influence of social networks with political goals. The voluntary actions that the AuV fostered and successfully delivered inspired not only Moldovan diaspora but also motivated similar actions back home (for example offers for a free ride to students and individuals that otherwise will not go to vote). Consequently, these social ties foster unique routes for engaging in political mobilization and participation actions [5].

The rapid growth of the group members could be explained by the network ties. Each diaspora member, taken separately, possesses a unique and personal social network normally based on strong social ties (friends, relatives, and acquaintances). Thus, we argue that this social network site successfully combines both strong and weak ties in Moldovan diaspora´s mobilization and political participation. Consequently, it seems to be efficient at promoting engagement by needed reinforcement, as well as provides good premises at sharing and debating political information.

It is particularly, the "weak" social ties which enable Moldovan diaspora online to increase their social capital and to obtain different types of embedded resources in social networks, and has also a positive influence on their political participation. When Granovetter proposes to revise the network theory he finds out that weak social ties can have an important contribution to social capital growth. The author argues that "while members of one or two cliques may be efficiently recruited, the problem is that, without weak ties, any momentum generated in this way does not spread *beyond* the clique" [11]. Accordingly, the majority of AuV members might share no ties or some weak ties inside the group but it is particularly these weak ties that manage to access the social benefits that from one side increase their social capital and have a positive impact on diaspora political participation. The posts of hosting and car-sharing as well as bus rides, or collective crowdfunding to rent busses and go to vote are just some proves of the weak social ties impact.

This finding is in line with the research undergone by Keles. The author argues that the internet "contributes to the growth of social networks, social capital, and the community's cultural and political participation" and it encourages subordinated people to participate in civic society and creates a collective source of social capital in the diaspora [18]. The revolutionary importance of the internet, according to the author, is also rooted in its contribution to building social networks that constitute vital resources and different opportunities for Diasporas. In the case of Moldovan diaspora political mobilization, there has not been a vital need for resources but the opportunity to access additional resources generated and available in the AuV social network had mobilized and positively influenced the diaspora political participation. This is an example of reciprocity and solidarity among Moldovan diaspora and is not a usual happening; on the contrary, it could be labeled as exceptional. Such a state of art points out that Moldovan diaspora, similar to other diaspora groups, has developed

significant bonding and bridging social capital (strong and weak ties), that helps them consolidate their offline and online resources and generate human, social and economic capitals over time and space [18].

The diaspora social network ties seem to be weak but these ties are vital for diaspora´s integration into hosting society and political participation. The weakness of the ties is due to the fact that the AuV members are globally dispersed and their heterogeneity relates to the origin mainly but their social status seems to be asymmetrical. Some Moldovan diaspora members abroad have a subaltern status, due to the economic and social inequalities while others enjoy a high level of integration and enjoy highly skilled jobs. Thus, the membership in AuV bridges Moldovan diaspora members with different economic and social status for a political goal.

While Moldovan diaspora, for example, has some weak ties within the AuV social network, they seem embedded within each diaspora member's existing set of strong ties of friends and relatives. This offers the possibility of bridging and bonding to other not yet known Moldovan Diasporas. Coser developed a similar argument and he argues that bridging weak ties since they do link different groups, are far more likely than other ties to connect individuals who are significantly different from one another [7]. This point can be clarified by the evidence that AuV social network members are globally dispersed and come together to foster diaspora´s political mobilization and participation. Similar to other researches NVivo content analysis to examine political mobilization in AuV finds that online Moldovan diaspora talks keep being linked with offline problems. And the political situation of the country of origin for the Moldovan diaspora seems to still be an important topic and preoccupy them to quite a high extent. The NVivo summary report, with the option of grouping, reveals the main codes of political interest back home.
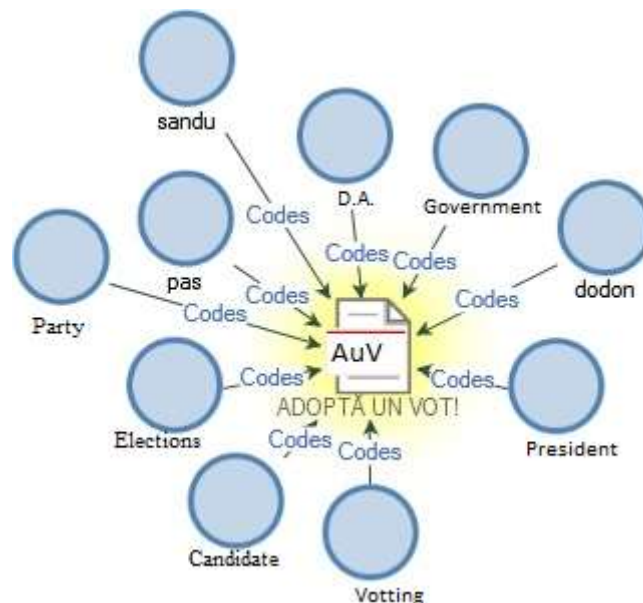
Figure 2: Moldovan diaspora social network main codes
Source: Elaborated by the authors.

As the social network has been established during the presidential election of 2016 the main codes are related to the two candidates: Sandu and Dodon. Additionally, a high presence of Moldovan diaspora online talks is in support of two pro-European parties: PAS and DA. The election results confirm that the Moldovan diaspora voted for the coalition of these two parties. Thus, it can be argued that social network characteristics correlate positively with diaspora political mobilization and

participation. Additionally, these networks contribute to the increase of diaspora social capital. During the elections, Moldovan diaspora shared their homes and offered free rides to the election spot to other Moldovans and established friendships and future initiatives. The off-line sessions organized by AuV administrators and moderator both outside and inside of Moldova that consequently led to other actions are just an example.

AuV is a *heterogeneous* social network and all members are Moldovans sharing the same cultural, historical, and social interest. Nevertheless, some asymmetries can be identified in linguistic and identity fields. Some prefer Russian, some Romanian and other Moldovan language and identity. On top of this, the heterogeneity of the social network seems to be an interest in some pro-European parties (PAS, DA) whiles a negative discourse persists about the pro-Russian party (PSRM) and oligarch Moldovan Democratic Party. In this way, the Moldovan diaspora political mobilization and participation are moderated to a great extent by the social network heterogeneity in regards to political party preferences. This finding is in line with Campbell and Kwak´s research that reveals that online diaspora discourse is positively associated with political participation, but that this relationship is moderated by the size and heterogeneity of one's network. Additionally, the authors argue that diaspora participation increases in large networks of like-minded individuals, but declines inside the homogeneous networks that are small [5]. This seems to be the case of AuV social network where the big majority support a particular party, come from the same country and united together to foster political mobilization and participation.

5. Conclusions and future research implications

Drawing upon the existent literature, this article considered the social capital framework to analyze the Moldovan diaspora´s social networks and tested its influence on diaspora mobilization and political participation.

Two main findings are concluded from the empirical analysis of the AuV social network. First of all, this study explores the relationship between the Moldovan diaspora online political discourses and their political mobilization and participation. As a result, the study finds out that online interactivity and debates among AuV Moldoval diaspora social network members are highly politicized. Consequently, more political information is discussed and shared, altogether with the alternative and non-censured information available online foster a better understanding of political issues back home. Accordingly, more talks and debates on political issues online positively influence diaspora political mobilization and participation. Additionally, social interaction and shared understanding among AuV diaspora social network members online seem to increase because the platform enables members to comment freely, interact and receive immediate feedback from the network´s diaspora members.

Secondly, this study examines the Moldovan Diaspora Social Networks´ characteristic (size, heterogeneity, and social ties) influence on political mobilization and participation. Our empirical results demonstrate that the AuV Moldovan diaspora social network was established and function mainly via social ties. In AuV one can identify three types of ties: strong (e.g. family, close friends), weak (e.g. ex-colleagues, neighbors, schoolmates, etc.) and no ties (members of the same group without really knowing each other). However, the research did not have any information on what kind types members have in AuV, but most probably no ties must be the most common. Nevertheless, the AuV no ties and weak social ties heavily rely on each member's strong social ties. Consequently, it is an example of a successful combination of no ties, weak and strong ties and a positive contribution toward political mobilization and participation. Additionally, the results prove a positive influence of the size and heterogeneity of AuV social network on political mobilization and participation.

Therefore, results reveal the Moldovan diaspora's strong interest in politics back home, and a positive correlation between the social network's political mobilization and participation. The link between Moldovan diaspora mobilization and political participation is explained by the characteristics of the social network within which diaspora participate and communicate. Additionally, the social networks' power to mobilize the Moldovan diaspora political participation is moderated by the size, heterogeneity, and ties of the diaspora´s social network. Therefore, political participation seems to increases within large social networks of like-minded individuals.

For theoretical implications, this study makes at least one major contribution to the extant literature. The study contributes to filling in the research gap on Moldovan diaspora online social networks and political mobilization and participation from a social capital theoretical perspective. Previous literature in this area mostly focused on Moldovan diaspora dialogue online [32], while the influence of social capital on political mobilization and participation was ignored. Additionally, the research findings are consistent with the previous empirical analysis of social capital, diaspora participation, and online social networks.

In spite of this, further studies are necessary to test the data and analyze the Moldovan social network's interest in political issues and as well as test the potential for political mobilization and participation in future election campaigns. Moldovans abroad are globally dispersed, thus the online social network might be the only source of contact with the political parties back home. Due to this, the online social networks of the Moldovan diaspora can play an active role in future political mobilization and participation campaigns.

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Social Media I

REGULATORY APPROACHES TO SOCIAL MEDIA

Balázs Bartóki-Gönczy[1]

Abstract

Social media platforms are mainly characterised by private regulation.[2] However, their direct and indirect impact on society has become such (fake news, hate speech, incitement to terrorism, data protection breaches, impact on the viability of professional journalism) that private regulatory mechanisms in place (often opaque and not transparent) seem to be inadequate. In my presentation, I would first address the problem of legal classification of these services (media service provider vs. intermediary service provider), since the answer to this question is a prerequisite for any state intervention. I would then present the regulatory initiatives (with a critical approach) at EU and national level which might shape the future of 'social media platform' regulation.

1. Introduction

Social networks allow any citizen to publish the content of their choice and share it with other network users. They have revolutionized the media industry and the ways of communication by offering citizens and civil society a medium for direct expression. The appeal to mainstream media is no longer required to communicate publicly. The possibility for citizens to exercise their freedoms of expression, communication, and information are therefore considerably increased by these services. However, the capabilities offered by social networks give rise to unacceptable abuses of these freedoms. These abuses are committed by isolated individuals or organized groups to which large social networks, Facebook, YouTube, Twitter or Snap, to name a few, do not fully answer satisfactory to date. However, by the scheduling that they produce published content and by their policy of moderation, social networks are able to act directly on these most obvious abuses for prevent or respond to them and thus limit damage in terms of social cohesion.[3]

Even Mark Zuckerberg (CEO of Facebook) has recognized that "we need active role for governments and regulators. By updating the rules for Internet, we can reserve what's best about it – the freedom for people to express themselves and for entrepreneurs to build new things – while also protecting society from broader harm."[4]

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[2] In the context of the present study, we mean private regulation as a set of rules applied by platforms to their own activities. By contrast, self-regulation is defined as the rules for private market participants being laid down by an independent body separate from them but composed of their members. Co-regulation is understood as a system where the State cooprate with representative bodys of private entities. We mean co-regulation where the state defines the frame of the rules defined by private operators and controls their execution.

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The challenge is how can we ensure the right to access to information and protect the users from online abuses. From a legal point of view, how should we definy and regulate the social media platforms? In this paper I aim to highlight some of these legal challenges and to show the most likely way the EU will go on with the revision of the Electronic Commerce Directive (hereinafter: E-Commerce Directive).

2. Legal classification of the social media service

2.1. The evolution of the audiovisual media service' notion

Large Internet gatekeepers consider themselves tech companies. As Koltay mentions, it is their best interest to do so, for two reasons. First, the regulations applicable to technology companies are far narrower and less stringent than those applicable to media companies (which are also subject to content regulation, special restriction on competition, the prohibition of concentration, and the obligation to perform public, interest tasks). Second, the moral requirement of social responsibility is far less frequently mentioned concerning the activities of tech companies.[5]

The E-Commerce Directive[5] and the Audiovisual Media Services Directive (hereinafter "the AMS Directive")[6] seek to separate information society services from media services. According to the E-Commerce Directive, a service whereby the service provider selects or modifies the information transmitted is not an information society service within the scope of Directive. On the other hand, the AMS Directive excludes from its scope services that do not have "effective control" over the content in question.

However, as a result of convergence, it is becoming increasingly difficult to determine clearly whether an online intermediary activity involves "selection" of content or exercising "effective control" over it.[4] It is enough to think only about content selection by algorithms. The EU legislator also seeks to adapt flexibly to the challenges of the age and to dynamically shape the concept of media service. Therefore, where the concept of media service is constantly expanding, the most delicate question is where to draw the line. Whether Facebook and other social media are still "technical" mediators or they behave more like "media" service. To determine this, we will analyze below the concept of dynamically changing media services, with particular reference to the future classification of social media services and video sharing platforms.

The scope of media services has been expanding over the last 30 years, albeit with cautious steps, but also in order to keep pace with the changing market environment, consumer habits and technological developments. The concept, codified in the AMS Directive adopted in 2010, makes the editorial responsibility the heart of the definition. According to the Directive, audiovisual media service is:

> "a service as defined by Articles 56 and 57 of the Treaty on the Functioning of the European Union which is under *the editorial responsibility* of a media service provider and the *principal purpose* of which is the provision of programs, in order to inform,

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[5] Directive 2000/31/EC of the European Parliament and of the Council of 8 June 2000 on certain legal aspects of information society services, in particular electronic commerce, in the Internal Market ('Directive on electronic commerce'), OJ L 178
[6] Directive 2010/13/EU of the European Parliament and of the Council of 10 March 2010 on the coordination of certain provisions laid down by law, regulation or administrative action in Member States concerning the provision of audiovisual media services (Audiovisual Media Services Directive), OJ L 95,

entertain or educate, to the general public by electronic communications networks within the meaning of point (a) of Article 2 of Directive 2002/21/EC. Such an audiovisual media service is either a television broadcast as defined in point (e) of this paragraph or an on-demand audiovisual media service as defined in point (g) of this paragraph." (…)."[7]

The 'editorial responsibility' means the exercise of effective control both over the selection of the programmes and over their organization either in a chronological schedule, in the case of television broadcasts, or in a catalogue, in the case of on-demand audiovisual media services. Editorial responsibility does not necessarily imply any legal liability under national law for the content or the services provided.[8] The Directive of 2010 does not further clarify what is meant by 'selection', but in practice there may be several cases where the answer to the question is unclear.

Therefore, the Directive of 2010 excluded many services from its scope. According to its audiovisual media service definition, it covered only audiovisual media services intended for the general public and having a clear influence on it, excluding, inter alia, private websites and services in which individuals make their own audiovisual content (e.g. social media service providers).

In recent years, the EU legislator itself has recognized the need to adapt the material scope of media regulation to a rapidly changing reality. According to the European Digital Single Market Strategy adopted in 2015,[9] the AMS Directive needs to be updated to reflect these changes in the market, consumption and technology. On 25 May 2016, the Commission published its Amending Proposal ("the Proposal")[10] explaining that the reason for the change was the emergence of new business models, which allowed new, growing and competing players on the Internet to compete for the same audience. (such as video-on-demand service providers and video sharing platforms) offering audiovisual content. However, the Commission notes that television broadcasting, on-demand video and user-generated content are subject to different rules and that there are different levels of consumer protection.

The modification of the AMS Directive has been adopted in Fall 2018.[11] In terms of its scope, it represents two important changes to the Directive of 2010. The first, that the criterion of 'editorial responsibility' loses its significance in the concept of media service, focuses on the 'primary purpose' of the service:

> "audiovisual media service" means: a service (…) where the *principal purpose* of the service or a dissociable section thereof is devoted to providing programs, under the editorial responsibility of a media service provider, to the general public, in order to inform, entertain or educate, by means of electronic communications networks (…)."[12]

The biggest change, however, is the point in the amendment extends the scope of media regulation to online "video sharing platforms" (with less burden compared to audiovisual media services):

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[7] Directive 2010/13/EU, Art. 1., point 1.a)
[8] Directive 2010/13/EU, Art. 1., point 1.c)
[9] Digital Single Market Strategy for Europe, SWD(2015) 100 final
[10] COM(2016) 287 final, 2.
[11] Directive (EU) 2018/1808 of the European Parliament and of the Council of 14 November 2018 amending Directive 2010/13/EU on the coordination of certain provisions laid down by law, regulation or administrative action in Member States concerning the provision of audiovisual media services (Audiovisual Media Services Directive) in view of changing market realities, OJ L 303
[12] Directive 2018/1808, Art.1.

"video-sharing platform service" means a service as defined by Articles 56 and 57 of the Treaty on the Functioning of the European Union, where the principal purpose of the service or of a dissociable section thereof or an essential functionality of the service is devoted to providing programs, user-generated videos, or both, to the general public, for which the video-sharing platform provider *does not have editorial responsibility*, in order to inform, entertain or educate, by means of electronic communications networks within the meaning of point (a) of Article 2 of Directive 2002/21/EC and the organization of which is determined by the video-sharing platform provider, including by automatic means or algorithms in particular by displaying, tagging and sequencing.".[13]

2.2. What about social media services?

According to the original Commission proposal,[14] social media services fall within the scope of the AMS Directive only if they provide a service that meets the definition of a video-sharing platform. According to the Council's amendment proposals adopted in March 2017, social media has become an important tool for information sharing, entertainment and education. Therefore, the Council argues, social media platforms should be subject to media regulation where audiovisual content represents a significant proportion of the social media interface.

To determine what constitutes 'a significant part', it is necessary to consider (i) whether the service provider has developed a separate business model for contents shared by third parties or by itself and (ii) it is important to consider how the audiovisual content is displayed.

I agree with this position since the come social media service providers, such as Facebook, are increasingly taking on the role of "editor", having a significant and direct discretion in deciding what content may appear in users' "daily news".[1] It is a well-known fact that Facebook, Twitter, Snapchat and Instagram employ a dedicated editorial team to select the content available on their site. Twitter CEO Jack Dorsey himself stated in 2016 that "we recruited people to help us select the best tweets for Moments (…)".[15]

This is linked to the controversy surrounding Facebook's "Trending Stories" service launched in 2014. This "box" at the top of the sidebar of the feed was intended to display the most current and recent news and highlighted in this section the news that was read and shared by many. What was important and what was interesting was not determined by algorithms, but by an editorial team. In addition, gradually leaked documents,[16] statements by insiders and former editors revealed that the selection of news had overtaken conservative sources and the Liberals were clearly favored by an editorial team whose subjective decisions were based on a written instruction. So the problem was not only that, despite Facebook's assertions, it was edited selectively, but that it was done biased. Facebook first denied the allegations, but later admitted that the personal bias of the editors could indeed have distorted the selection of news.[1]

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[13] Directive 2018/1808, Art. 1.

[14] COM(2016) 287 final, recital 3.

[15] http://www.lefigaro.fr/secteur/high-tech/2016/05/12/32001-20160512ARTFIG00332-jack-dorsey-twitter-les-annonce urs-attendent-beaucoup-de-la-video.php, (23-01-2020)

[16] The Guardian: Facebook news selection is in hands of editors not algorithms, documents show, https://www.theguardian.com/technology/2016/may/12/facebook-trending-news-leaked-documents-editor-guidelines, (23-01-2020)

In addition to his assumed editorial role, the so-called fake news phenomenon may also force social media service providers to take on new roles beyond the technical mediation provider. It is suspected that the Russian Federation has used the most popular social media providers as a tool to influence the US presidential election in 2016. The case may have shocked Facebook itself, which first denied that its platform was appropriate for engaging in social debate at this level, but was forced to admit, after an internal investigation, that Russian propaganda reached about 126 million (!) US citizens through the social media site.[17] Social media (or Facebook in particular) has a disillusioning power, and the influence and exposure of the public to fake news in the feed is a cause for concern. It has become clear that the vast majority of the population will indulge in everything they read through Facebook indiscriminately. In response, Mark Zuckerberg announced in October 2017 that they would tighten their rules on sponsored content. First, they increase transparency by displaying the advertiser alongside supported content and what other advertisers are paying for on Facebook.[18]

In my view, these steps point to the fact that social media service providers, due to their indisputably important role and responsibility in social debate, are taking on a number of editorial tasks, simply being no more than technical service providers. This approach is shared by Potier and Abiteboul, who consider that all content published on a social network cannot be presented to the user without scheduling. The volume of content published necessarily implies that the platform defines an order of appearance, makes a selection, while leaving the user the possibility of searching, at his initiative, specific content. The content that he will actually consult will primarily depend on the layout of its interface and the use of algorithmic rules to prioritize and individualize the presentation of the different contents. The existence of this information structuring function plays an essential role in the dissemination of content and in the capacity of social networks to prevent or accentuate damage to social cohesion. The observation of the existence of this content scheduling function, which constitutes a form editorial de facto cannot call into question the legal status of these actors, nor lead to them requalify as publishers when the majority of social network services do not select prior to the publication of content.[19]

3. Fight against illegal content on social media networks

3.1. Responsibility in general of social media service providers for illegal content

Depsite the tendencies described above, Under EU law, social media platforms are still considered to be 'hosting service providers', as the users of such services store, sort and make available their own content in and through the systems. This means that, pursuant to the E-Commerce Directive, the platforms are required to remove any violating content after they become aware of tis infringing nature, but they may not be subject to any general monitoring and control obligation.[3]

Nevertheless, a tendency to challenge this principle could be observed recently. The Court of Justice of the European Union (hereinafter: CJEU), in its judgment C-18/18 of 3 October 2019, ruled that the Directive does not preclude a national court to order a host provider to remove content identical or

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[17] The Guardian: Tech giants face Congress as showdown over Russia election meddling looms, https://www.theguardian.com/technology/2017/oct/22/facebook-google-twitter-congress-hearing-trump-russia-election, (23-01-2020)

[18] Guiding Techs: 5 Ways Facebook Will Improve Transparency in Ads and Avoid Fake News, https://www.guidingtech.com/73648/facebook-ads-transparency-enforcement/, (23-01-2020)

[19] Créer un cadre français de responsabilisation des réseaux sociaux: agir en France avec ambition européenne (2019), p. 9.

equivalent to a message previously declared unlawful, provided that the message (i) remains essentially unchanged and (ii) does not require an independent assessment from the host provider.[20] As the CJEU notes, "*although Article 15(1) [of the E-Commerce Directive] prohibits Member States from imposing on host providers a general obligation to monitor information which they transmit or store, or a general obligation actively to seek facts or circumstances indicating illegal activity, (...), such a prohibition does not concern the monitoring obligations 'in a specific case'.*"[21]

Such a specific case may, in particular, be found, in a particular piece of information stored by the host provider concerned at the request of a certain user of its social network, the content of which was examined and assessed by a court having jurisdiction in the Member State, which, following its assessment, declared it to be illegal. According to the CJEU , in order to ensure that the host provider at issue prevents any further impairment of the interests involved, it is legitimate for the court having jurisdiction to be able to require that host provider to block access to the information stored, the content of which is identical to the content previously declared to be illegal. In particular, in view of the identical content of the information concerned, the injunction granted for that purpose cannot be regarded as imposing on the host provider an obligation to monitor generally the information which it stores, or a general obligation actively to seek facts or circumstances indicating illegal activity.[22]

In the same vein, the draft French Bill on Countering Online Hatred ("loi Avia"), as amended in first reading by the National Assembly,[23] intended to impose a "notice and stay down" obligation on online platforms stating that appropriate means have to be implemented to prevent any re-publication of online content that has already been removed. However, strong objections to an erosion of the host provider's liability principle have been raised.

The European Commission argued that the article of the French Bill was a potential breach of the article 15 of the E-commerce Directive as it creates a general obligation of monitoring, and underlined the limited impact of the CJUE Judgement (C-18/18). The Commission pointed out that, in the CJEU case law, the obligation came from a court injunction and only concerned specific content. These conditions, according to the Court, provide to the injunction the appropriate guarantees and the required proportionality to be compatible with the Directive. Unlike the provision in the French Bill, it does not create a general monitoring obligation. The European Commission also underlines that this provision is likely to interfere with the future Digital Service Act.[24]

3.2. Towards a co-regulatory model?

Although the French law amendment is far from certain to be approved by the Senate, initiatives by the CJEU and the French government show that reform of the liability system will be a central issue in the 2020 revision of the E-Commerce Directive. Perhaps one of the most important issues is that, in the future, rules on the removal of infringing content will continue to be set entirely by the service providers themselves or State oblige service providers to comply with certain procedural rules in order to enhance transparency.

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[20] https://www.epra.org/news_items/blocking-access-to-content-previously-declared-unlawful-a-new-obligation-on-the-platform, (01-24-2020)

[21] Judgment of the Court In Case C-18/18,point 34.

[22] Judgment of the Court In Case C-18/18,points 35-37.

[23] http://www.assemblee-nationale.fr/15/ta/ta0310.asp, (24-01-2020)

[24] https://www.epra.org/news_items/blocking-access-to-content-previously-declared-unlawful-a-new-obligation-on-the-platform, (01-24-2020)

Social networking sites in many ways go beyond a classical state law jurisdiction. The frontier of services only contributes to the fact that community platforms are a teacher of nation-state sovereignty in some cases remain resistant. At the same time, social networking service providers usually make their own rules that essentially define the framework for the expression, limits and procedures that can be applied in the event of a breach of these mechanisms also introduced. Rules created by service providers essentially create a specific "content control", and these rules, say, on the state media control platform mappings.[5]

As a French report mentions. neither the public authorities nor civil society know what value to place on social media statements. They share, with a few exceptions, the same level of information as a user. All the information made public by the platform concerning its private regulatory action cannot be corroborated by any observable fact. This limit is consubstantial with the operation of the main social network services due to the individualization of the content offered. Creating an account on the platform allows you to observe only a tiny fraction. Only the platform can measure the effects on a global scale. This lack of credibility is increased by the huge volume of content and users of social networks, which necessarily involve algorithmic processing in a statistical approach. Without being able to characterize the existence of a systemic failure of the social network, public authorities as well as representatives of civil society can only point to individual cases of unmodified or poorly moderated content. These isolated failures are however not sufficient to characterize a potential systemic failure.[25]

3.2.1. Germany: a national approach

In response to this problem, the German legislator has adopted in 2017 an Act aiming to "improve enforcement of the law in social media networks (hereinafter: NetzDG).[26] The Act applies to "telemedia service providers" which, for profitmaking purposes, operate internet platforms which are designed to enable users to share any content with other users or to make such content available to the public (social networks). Platforms offering journalistic or editorial content, the responsibility for which lies with the service provider itself, shall not constitute social networks within the meaning of this Act. The same shall apply to platforms which are designed to enable individual communication or the dissemination of specific content. The Act applies only to social media network providers having more than two million registered users in Federal Republic of Germany.[27] The NetzDG imposes obligations in two important areas: (i) reporting and (ii) handling of complaints about unlawful content.

As far as the reporting obligation is concerned, it applies to providers of social networks which receive more than 100 complaints per calendar year about unlawful content. The service providers concerned are obliged to produce half-yearly German-language reports on the handling of complaints about unlawful content on their platforms and shall be obliged to publish these reports in the Federal Gazette and on their own website no later than one month after the half-year concerned has ended. The reports published on their own website shall be easily recognizable, directly accessible and permanently available. The reports shall cover:

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[25] Créer un cadre français de responsabilisation des réseaux sociaux (2019), p. 12.
[26] https://www.bmjv.de/SharedDocs/Gesetzgebungsverfahren/Dokumente/NetzDG_engl.pdf?__blob=publicationFile&v =2, (24-01-2020)
[27] NetzDG, Art. 1.

- general observations outlining the efforts undertaken by the provider of the social network to eliminate criminally punishable activity on the platform,
- description of the mechanisms for submitting complaints about unlawful content and the criteria applied in deciding whether to delete or block unlawful content,
- number of incoming complaints about unlawful content in the reporting period, broken down according to whether the complaints were submitted by complaints bodies or by users, and according to the reason for the complaint,
- organization, personnel resources, specialist and linguistic expertise in the units responsible for processing complaints, as well as training and support of the persons responsible for processing complaints,
- membership of industry associations with an indication as to whether these industry associations have a complaints service,
- number of complaints for which an external body was consulted in preparation for making the decision,
- number of complaints in the reporting period that resulted in the deletion or blocking of the content at issue,
- time between complaints being received by the social network and the unlawful content being deleted or blocked,
- measures to inform the person who submitted the complaint, and the user for whom the content at issue was saved, about the decision on the complaint.

The best evidence to date about the specific effects of NetzDG comes from the law's transparency requirements. Four major online platforms released their first transparency reports in June 2018:Google (i.e., YouTube), Facebook, Twitter, and Change.org. This provoked another round of debate about the law's impact and efficacy. Perhaps unsurprisingly, opinion remains divided.[6] According to Heldt, after the NetzDG came into force, initial reports reveal the law's weak points, predominantly in reference to their low informative value. When it comes to important takeaways regarding new regulation against hate speech and more channeled content moderation, the reports do not live up to the expectations of German lawmakers.[2]

It is also important to mention that the NetzDG triggered fierce debate and widespread concern about its implications for freedom of expression. The first concern surrounding freedom of expression was that NetzDG would encourage the removal of legal content, also known as "over-removal." Online platforms, it was argued, would not have the expertise or time to assess every complaint in detail. Relatedly, critics objected to NetzDG as an instance of "privatized enforcement" because, rather than courts or other democratically legitimated institutions, platforms assess the legality of content. The NetzDG process does not require a court order prior to content takedowns nor does it provide a clear appeals mechanism for victims to seek independent redress.[7]

4. France: a European ambition

France, like Germany, also finds the private regulatory moderation policy of social media inadequate and insufficient. In addition to the aforementioned Loi Avia, the Department for Digitization has put forward a proposal to tackle the problem at EU level.[28]

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[28] Créer un cadre français de responsabilisation des réseaux sociaux: agir en France avec ambition européenne, Rapport de de la mission 'Régulation des réseaux sociaux – Expérimentation Facebook', Secrétaire d'État chargé du numérique, 2019., https://www.vie-publique.fr/sites/default/files/rapport/pdf/194000427.pdf, (21-01-2020).

the regulation ex ante proposed by the report should respect three conditions: (i) follow a logic of conformity according to which the regulator supervises the correct implementation of preventive or corrective measures, without focusing on the materialization of risks or seeking to regulate the service itself, (ii) focus on systemic actors capable of creating significant damage in our societies without creating a barrier to entry for new European actors, (iii) remain agile in facing future challenges in a particularly scalable digital environment. The legislative system should therefore aim to create an institutional capacity to regulate and not a fixed regulation on current problems. This regulation could be based on the following five pillars:

- *First pillar*: A public policy of regulation guaranteeing individual freedoms and freedom to undertake platforms.

- *Second pillar*: Prescriptive and targeted regulation on the empowerment of networks initiatives implemented by an independent administrative authority, based on three obligations incumbent on platforms:

  o   transparency of the content scheduling function;
  o   transparency of the CGU implementation and moderation function of content;
  o   a duty of care vis-à-vis its users.

- *Third pillar*: Informed political dialogue between actors, the government, the legislator, regulator and civil society.

- *Fourth pillar*: An independent administrative authority partner of the other branches of the state and open to civil society.

- *Fifth pillar:* A European ambition to strengthen the capacity of member states to act against global platforms, and reduce the political risk linked to implementation in each member state.[29]

5. Conclusions

Social media services are difficult to integrate into the existing legal conceptual framework. While, de facto, more and more editorial activities are being performed (directly or through algorithms), social media service remains, de lege, a hosting service under EU law. However, the revision of the AMS Directive has made it possible to extend the scope of media regulation to social media services in respect of elements of the service that meet the Directive's video-sharing platform concept.

Due to the growing impact of social media in our society, the effective removal of infringing content has become a top priority. This issue is also sensitive because action against allegedly infringing content should not lead to a disproportionate interference with freedom of expression. The notice-and-take-down rules of the E-Commerce directive are outdated and will be reviewed this year at EU level. The main question is whether the EU legislature is satisfied with the rules on content moderation being arbitrarily set by the service providers or the it considers that the State should intervene in a more robust manner. German regulations and French proposals point in the latter direction. I do believe that a co-regulation model could be a good compromise where the social media

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[29] Créer un cadre français de responsabilisation des réseaux sociaux (2019), p. 3.

service providers could keep their limited liability but their internal processes should comply with a clear regulation imposed by the State.

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[2]   HELDT, A., Reading between the lines and the numbers: an analysis of the first NetzDG reports, Internet Policy Review, Vol. 8., Issue 2., p. 1.

[3]   KOLTAY, A., New Media and Freedom of Expression: Rethinking the Constitutional Foundations of the Public Sphere, HART, 2019, p. 87.

[4]   KLEIN, T., Adalékok az online diskurzusok szabályozási kérdéseihez, in: KOLTAY A. – TÖRÖK B. (edit.): Sajtószabadság és médiajog a 21. század elején, Wolters Kluwer, 2017, p. 156.

[5]   KLEIN, T., Az online diskurzusok egyes szabályozási kérdései, in: Tamás Klein (szerk.): Tanulmányok a technológia- és cyberjog néhány aktuális kérdéseiről, Médiatudományi Intézet, 2019., p. 34.

[6]   TWOREK, H., LEERSEN, P., An Analysis of Germany's NetzDG Law, 2019, https://www.ivir.nl/publicaties/download/NetzDG_Tworek_Leerssen_April_2019.pdf,   (24-01-2020)

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SOCIAL MEDIA –
A TWO-EDGE SWORD IN POLITICAL CAMPAIGN:
THE CASE OF THE REPUBLIC OF MOLDOVA

Ina I. Vîrtosu[12]

Abstract

Social media, as interactive technologies, have given people unprecedented possibility to access information about elections and electoral contestants, to publicly express their opinions, interact with candidates, and get actively involved in electoral campaigns. This disruptive set of tools that allows and encourages individuals to engage in all stages of the political process, has become a powerful mechanism for political campaigns, in building and enhancing communication strategies.

The use of social media in politics dramatically changed the way campaigns are run. Social media provide useful platforms for electoral contestants, inclusively for those with limited resources, to present their agenda and mobilise a larger support base for their causes, at substantially lower costs. They offer the possibility for creation of shareable content that candidates and supporters can use to increase awareness, engage the targeted groups, and appeal for votes. However, the changes in the production and consumption of election-related content also raise a number of concerns that question the effectiveness of electoral rules, in their current form.

The aim of this paper is to underline the potential problems which have emerged and have been aggravated with the shift of political propaganda during election campaigns onto social media and identify safeguard measures that may be set in place to prevent abuse of the political process.

1. Introduction

In the age of digital democracy, the Internet has become an important tool for communication, providing unprecedented access to previously unattainable information. Production, processing and transmission of information through the Internet have a considerable impact on the political and socio-economic processes that occur in the Republic of Moldova, and in the world in general. The country managed to achieve good coverage in both wired and wireless communications infrastructure, boosting also the use of social media.[3] These factors increased the use of the Internet, as the second most important source of information, including political news, talk-shows and information during the election campaign.[4] With the development of technologies, traditional media also went digital,

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[3] Although, the Internet penetration remains in 2019 at 71.4 %, telecommunications in Moldova are maintained at a relatively high-performance level. "Digital 2019: Moldova," DatarePortal, https://datareportal.com/.
[4] According a survey Vox Populi held by Vox Populi in 2018, the most important source of information of the population is television - 73%, the Internet - 68%, the family - 37%, the radio – 32 etc. See "The Internet and the electoral process in the Republic of Moldova," Sociologists and Demographers Association of Moldova, 2018

offering an alternative source for those who prefer the Internet as a primary source of information. Important segments in communication and dissemination of information are covered by social media.

Social media, as interactive technologies facilitating the creation or sharing of information, ideas and other forms of expression, are changing the nature of political communication, inclusively, in the electoral campaign. Loader and Mercea pointed out that the most obvious impact of social media upon democratic politics has been its disruptive capacity for traditional political practices and institutions. [19] The advent of social media opened new ways of promotion for the electoral contestants, offering the possibility to integrate these techniques into regular campaign planning. Importance of online political marketing can be seen in, among other factors, the major advantages offered by social networks, such as improvement of political engagement, increase of awareness and political interaction, and fostering of offline participation, by impacting political discussion, information, and political campaigning.

However, this increasing popularity has also a dark side: as social media grow in prominence, it is natural that people find ways to abuse it. The technology revolution has endangered the democratic process itself, as electoral campaigns on social networks have the capacity of massively influencing voters' decision. Nowadays unprincipled campaign practices are performed mainly online, by transmission of false information, and/or creation of alternative truths and realities, intended to influence the electoral outcome. The paper aims to reflect positive and negative sides of the use of social media in political campaign and identify necessary policies and measures apt to respond to the potential undermining of democratic legitimacy of the political process.

2. The use of social media in the Republic of Moldova

Until not long ago, all candidates, mainly, offered brochures, knocked on doors, organized meetings, and literally spread political messages through megaphones. Nowadays, conveying a political message across to the voters is the challenge that can be addressed by going digital. The candidates, using new media, have to demonstrate their proficiency to interact with people, to inform and mobilize their voters in these new ways. Social platforms have become new battlefields for political crusades, engaging electoral contestants and voters in a virtual relationship, in a manner and to an extent that traditional media could not offer. Modern political life revolves around "The Network", with its status updates, news feeds, comment chains, political advocacy, omnipresent reviews, rankings and ratings, and symbolic digital imagery that Internet users employ to express and communicate their support for various political causes and movements. [5]

The Republic of Moldova is also part of this trend. Recent data on the influence of social networks in the Republic of Moldova, obtained as a result of a survey conducted at the end of 2018, clearly shows that 66.6% of respondents use socials networks to access information about the socio-political situation in the country.[5] Among all social networks in Moldova, Facebook has undergone a rapid expansion, as the social network for majority of Internet users. The popularity of the well-known social network has caused Moldovan politicians to bend to the new current. The majority of them have created accounts. Facebook has established itself as a central platform for political communication, not only for militants of different political sides, but also for parties and politicians

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[5] Sociologists and Demographers Association, which attests to be the most popular the social network mentioned by the respondents is Facebook (34.2%). Another 25.9% of respondents mentioned that they use it for information about the socio-political situation in the country the Odnoklassniki network. Networks less popular social media are Vkontakte (4.7%) and Twitter (2%).

that now perceive and use their official Facebook pages as key tools of political communication. Arguably, such political communication is most important during election campaigns, when political parties and candidates seek to mobilise citizens, and persuade them to vote for a given party or candidate.

3. Positive aspects of political campaigning on social media

3.1. Going digital may enhance political campaign

Online social media tools play a crucial role in the successes and failures of numerous political campaigns and causes. A successful digital campaign can boost electoral candidate rating, and enhance the whole electoral campaign.[6] In recent years, in the Republic of Moldova it has been attested an activation of political actors on social networks, using political marketing methods to mobilize their own electorate during, but also, outside election campaigns. Moldovan electoral competitors use social media tools to inform voters about their intention to apply, announce their candidate's lists, mobilize supporters, and submit signatures for registration as an electoral candidate.[7] In addition, social media are always used to communicate and organise events that take place offline, by posting messages about upcoming events. Almost all political leaders in Moldova use these techniques to organise flash-mobs, meeting with voters, demonstrations and other events.[8]

Political digital marketing can highlight the candidate and his/her candidacy platform. By creating social media pages and profiles, politicians increase their visibility through likes and shareable content that could, in their view, create viral effects. The option for users to share, like, or retweet political messages instantly has opened up a new avenue for politicians to reach out the voters. By simply pressing the "like button" on Facebook on candidates' pages or by following them on Twitter, users can connect with the electoral contestant, as well as with other voters, and express or promote their views.

Indeed, a virtual presence increases the person's digital mileage. A website, Facebook, Twitter, YouTube, and other such channels greatly benefit those politicians if he/she are able to show how relatable he/she can be. Message consistency across all candidate's channels, paired with a message that matches voters' political preference, increases the chances of voters' return, and, consequently, the chances to receive voters' support for his political discourse. Social sites offer more than the opportunity for politicians to inform on key objective of their political program. They also make the politician appear approachable and "mundane". For added credibility and likeability, electoral contestants often share their daily activities, thoughts or opinions on issues ranging from national importance to sensationalist events.

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[6] Perhaps one of the most obvious examples of political digital marketing in recent history is Donald Trump's digital campaign. Although it was certainly controversial, no one can deny the incumbent U.S. President's campaign was extremely effective.

[7] The results of the monitoring exercise of political parties' pages have demonstrated that their activity in online space is prevalent focused on Facebook and Odnoklassniki, Youtube and in some cases on Instagram. All political parties have Facebook pages, not all have Facebook, and 8 out of 10 parties have Youtube channels.

[8] These events, as a rule, garner much television, press and social media coverage.

3.2. Political leaders in direct connection

One of the most beneficial aspect of web-based social networking is the open door for voters to interact with political leaders. Indeed, social media offer the possibility for politicians to communicate with the electorate virtually, and provide a direct, real-time connection with the voters. In the past, if the voters need to meet a political leader, they have to attend an event. However, these events were not available for everybody for different reasons. With the advent of the Internet and, in special, of social media, voters have the possibility to "attend" virtual occasions, where they can interact with political leaders from the privacy and comfort of their homes.

Although politicians can communicate with the electorate virtually, it is necessary to emphasise that digital campaign cannot 100% replace door-to-door campaigns, or face to face meetings. First, not all citizens have access to the Internet and social media, thus a part of society may be excluded from political discussion on social media due to this "digital divide". Second, certain category of voters, such as the elderly, still lean more towards more traditional ways of communication with the electoral contestants.

3.3. Increase the engagement and political participation of the young voters

Since the 2000s, democracy across the country has been characterised by the increasing disengagement of citizens and, particularly, of young voters. Active involvement of young people in political life exercises constitutes the key element in ensuring a sustainable development of the country. However, the participation of young people in these processes significantly decreased. This disengagement is not only characteristic for party membership and electoral registration, but also for the actual voting process. For instance, if the rate of young people (aged 18 to 25) was 10.11% in the 2016 presidential race [4], in the local elections of October 2019, it had already decreased to less than 7%. [25] The lack of interest in the political process, frequently negative opinions about politicians, and decreasing voter turnout are seen as clear signs of the diminishing legitimacy of the political system.

A reduced political and civic engagement among young voters is explained primarily by the disappointment in the political class: many young people see politicians as self-indulgent, self-centred, and indifferent to their interests. There are also and other reasons, such as systemic lack of political and democratic education, and lack of genuine opportunities to meet and interact with politicians.

Since most young people frequently use the Internet, and are active on social networking platforms, social media offer the possibility of encouraging more active participation in debates, and more widespread participation in the elections, factors helping to overcome the democratic deficit. Politicians have unique opportunity to dialogue online with their young voters, and educate a generation of young, responsible citizens in the spirit of democracy and genuine political engagement.

3.4. Social media can be used as a means for political targeting

Social media allows politicians to direct political messages towards certain target groups of voters. Voters targeting is defined as sending of an individualised message from a candidate to a group of voters, with the intent of influencing the group to evaluate the candidate favourably. [14] Political parties have always tried to tailor their political advertising to potential voters, based on their specific demographics and political leanings. To identify these voters, candidates' strategists depend upon

development of large and sophisticated databases that contain personalised data about as many voters as possible.

An important goal of a targeting initiative is to know the target audience so well, that messages get delivered through the target's preferred communication channel. Although a candidate may have one concrete political message, how he/she speaks to his/her target voters may vary. Understanding the voting population on an individual level, enables campaign leaders to go beyond standard political party-oriented messages and communicate with voters about specific topics in order to influence the voter's decision. In the Republic of Moldova, targeting is a very used technique, intended to reach various category of voters, such as elderly people, young voters, sexual and ethnic minorities, groups of voters with different geo-political preferences etc.[9] In creating such messages during campaigns, electoral contestants assume that members of these groups possess unique values or issue priorities, or are subject to distinctive framing because of shared characteristics.

However, targeting shall be a "dog whistle", a sound only heard by a limited group that is ideally not heard by another group, for fear of how that group might react [19], otherwise candidate might portray for himself/herself a negative image in front of the non-targeted group. The risk is higher when these groups are subject to social bias, and/or less integrated with the mainstream population, since they often are perceived as threatening, such as Roma ethnic groups, sexual or religious minorities (e.g., as Muslims) etc.

4. Potential problems related to political campaigns on social media

The degree of brightness or darkness of social media is often a subjective matter. However, recent events have proved social media's potential for negative or detrimental consequences, inclusively on political campaigns, and on the outcome of elections. Facebook, Google, and Twitter, among others, have all been subjected to intense scrutiny because of the negative externalities that their services create. At the global level, a focus of concern has been the abuse of social-media channels, as part of efforts to influence the outcome of major political events. The June 2016 Brexit referendum in the United Kingdom, and the U.S. presidential election later that year, are already textbook examples: in both cases, studies and intelligence reports show how nation-states and nonstate actors alike, exploited, manipulated, and abused social media as a tool of their "information operations." [26] The role that social-media analytics firms played in these events was especially pronounced.

To see and understand the other side of the coin of the digital electoral activity in the Republic of Moldova, the answer to the certain questions should be sought: do political parties and their supporters aggressively use the internet, including social networks, in order to win elections? How such use fit into the realm of democracy? Bellow there are several problems may arise from and in relation to the use of new social media and related digital techniques in political campaigns, and their potential impact on the legitimacy and fairness of elections.

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[9] For instance, analysing the Dignity and Truth Platform Party (PPDA) campaign program, it can be easily noticed microtargeting of farmers, Moldovan diaspora, citizens which rights were violated by public authorities etc; the National Unity Party of Moldova (PUN) and the Liberal Party (PL) address mainly Moldovan citizens with Romanian identity and with unionist ideal, Christian values, European Union integrationist aspiration: the Party of Socialists of the Republic of Moldova orientates its target messages for anti-NATO, anti-European Union, anti-Romanian, pro-Russian, anti-LGBT stance, that support nostalgia for the Soviet Union etc.

4.1. Transparency and the problem of tracking the sources of political campaign

In the Republic of Moldova, online electoral advertising is subject to regulations only in the segment covered by the financial reports of the parties or electoral competitors. In these reports, a sub-heading is dedicated to expenses for online advertising. Analysis of campaign money spending for each advertising sub-categories shows that electoral competitors allocated in average only 3% to online advertising for the parliamentary election of February 2019, and local election of October 2019.[10]

Promo-LEX Association experts, monitoring the polls, have repeatedly found that, in fact, electoral competitors report sporadically on the costs of Internet advertising, although, before and during the electoral campaigns, online portals abound in advertising of the parties, distributed automatically by Google. [1] Digital advertising could be hidden within larger categories of electoral expenses, such as market research, advertising and unsolicited campaign material. Identification of what constitutes "digital" is made based on the name of the provider. Although, Google or Facebook are notorious providers of advertising services on digital platforms, a lot of digital spending takes places via intermediaries such as advertising agencies or consultant businesses.

4.2. Negative campaigning on social media

In the digital era, the relationship between social media content, emotions, and user engagement is one of the most important question when attempting to understand politics. A large number of recent elections have been seen as largely driven on social media by campaigning dominated by a strong emotional stance. Although electoral contestants can opt out for a positive rhetoric, such as focus on promises for social improvement, welfare, and public services in their campaign, nowadays social media politics is dominated mostly by a strong emotionally negative charge, build on emotions, such as fear, hate, anger, and resentment. As a rule, these tools are used mostly by populist candidates and their supporters. However, in the Republic of Moldova, it was noticed the deployment of such means by all political opponents. For instance, in their attempts to put to end the hegemony of oligarchs, a system of nepotism, patronage, and entrenched corruption, political bloc "ACUM" developed, starting with the 2016 presidential race, a predominantly negative campaign, highlighted by negative emotions, such as hate and anger against oligarch and ex-leader of the Democratic Party of Moldova (PDM), Vladimir Plahotniuc and his close allies.

Negative campaigning is often built around hate speech, orientated against electoral opponents and their supporters. European Commission against Racism and Intolerance (ECRI) defines hate speech as promotion or incitement, in any form, of the denigration, hatred or vilification of a person or group of persons, as well as any harassment, insult, negative stereotyping, stigmatization or threat in respect of such a person or group of persons and the justification of all the preceding types of expression, on the ground of race, colour, descent, national or ethnic origin, age, disability, language, religion or belief, sex, gender, gender identity, sexual orientation and other personal characteristics or status [10]. In the Republic of Moldova, all these forms of hate speech has a consistent presence in the virtual space, during and outside election campaigns. In the context of a divided society, geopolitical struggle, ethno-linguistic and religious tension, the aforementioned became efficient tools for the manipulation and generation of false problems and threats.

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[10] It is worth mentioning that in the case of Maia Sandu, leader of the Party of Action and Solidarity (PAS), in the first round of presidential elections of 2016 the party indicated that allocated over 70% of the budget for digital advertising, the internet being the priority medium for promotion, See Livia Țurcanu and Mihai Mogîldea, The activity of the political parties from Republic of Moldova in size online in the pre-election period, Monitoring report, Chisinau 2019.

A 2018 report shows certain political actors constantly use hate speech to divide society, including stereotypes and bias, orientated against some groups: unionists, women, LGBT, Muslims, refugees, Roma, Jews etc. [28] The same report showed that the Party of Socialists of the Republic of Moldova (PSRM) and "Sor" Party generated more hate speech than all other political parties together. [28] Since politicians are often considered by a significant part of the population to be the most important people in the state, their behaviour can root out prejudices and build attitudes, especially about phenomena insufficiently known to the public. As a rule, many candidates' supporters internalize and multiply the hate speech on social media. Hate and discrimination promoted by politicians are dangerous not only because of the impact on media and the tensions they provoke in the society during campaigning: the real risk lies in the long-term effects.

Over the last years, social media has been invaded by two very current topics: unionism[11] and traditional values. Unionists attract much hate and criticism, not only from left-wing parties that have included anti-union slogans in their electoral programs, but also from right-wing political parties and their supporters. In fact, hate speech against unionism, and its supporters, reached the top aggressiveness level monitored over the last three elections. [28] Hate speech against unionism is fuelled also by the President of Republic Moldova, Igor Dodon, a strongly pro-Russian politician, and de facto leader of PSRM, who repeatedly spoke in favour of a bill draft, outlawing unionism and unionist parties.[12]

A body of empirical evidence suggests that social media favours negative content and negative communication tactics, as they are more effective than positive campaigning. [5] However, other studies argue the contrary, insisting that positive contents can attract a far higher level of user engagement than negative ones [11]. Focusing on the promise of social improvement through public spending, of welfare, health, and employment policies, and adopting a hope-driven call to vote to supporters, infused with positive terms such as *change*, *hope*, *together*, and *care*, make election campaign messages viral, and attract high user engagement. [11] In reality, it is more likely that dominance of negative or positive content in political discussions on social media, and their efficiency in mobilising voters, depend on particular societal circumstances, as well as on factors, such as the levels of voters' education and, alternatively, frustration related to different political, economic and social conditions occurring in a specific country.[13]

4.3. Campaigning on wedge issues and society polarization

In the Republic of Moldova, microtargeting has come under fire many times, as a technique criticized for the potential to "manipulate" political debates and upcoming elections. Indeed, message targeting can have, also, a negative side, since it encourages contact and engagement only with those who are

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[11] The unification of Romania and Moldova is a popular concept in the two countries beginning with the late 1980s, during the collapse of communism, due to the common history, traditions and language. The idea, while widespread in Romania, is only supported by 30% of population in Moldova. Individuals who advocate the unification are usually called "unionists". The supporters of the union refer to the opponents as "Moldovenists" or "statalists".

[12] See for instance, Igor Dodon wants to outlaw unionism, Observator, 29 June 2017, https://observator.tv/extern/igor-dodon-vrea-sa-scoata-in-afara-legii-partidele-unioniste-din-republica-moldova-218543.html.

[13] See Pew Research Center, The political environment on social media, (2016), http://assets.pewresearch.org/wp-content/uploads/sites/14/2016/10/24160747/PI_2016.10.25_Politics-and-Social-Media_FINAL.pdf; Allport G. W., Postman L., The psychology of rumor, New York: Russell & Russell, 1965; Garrett R.K., Weeks B.E., Neo R.L., Driving a wedge between evidence and beliefs: How online ideological news exposure promotes political misperceptions, in Journal of Computer-Mediated Communication, vol. 21, no. 5 (2016);. Garrett R.K., Troubling consequences of online political rumoring, in Human Communication Research, vol. 37. No. 2 (2011); Klein E., Robison R., Like, Post, and Distrust? How Social Media Use Affects Trust in Government, in Political Communication, vol. 37, no. 1 (2020).

deemed worthy of political campaigning (for instance, those in marginal seats or undecided voters), while simultaneously neglecting voters not regarded as strategically important.

The ability to micro-target political messages increases the likelihood that electoral contestants campaign on wedge issues. A *wedge issue* is a political or social issue, often of a controversial or divisive nature, which splits apart a demographic or population group. Typically, wedge issues have a cultural or populist theme, relating to matters, such as crime, national security, sexuality, abortion or race etc. A high number of such issues exist in the Republic of Moldova that, while highly divisive in a public forum, have the ability to mobilize voters, such as national language, idea of unification with Romania, sexual minorities, geopolitical issues, interference of the church in public affairs etc.

Wedge issues can also be advertised or publicly aired in an attempt to strengthen the unity of a population, with the goal of enticing polarized individuals to give support to an opponent or to withdraw their support entirely out of disillusionment. Electoral contestants use wedge issues to soften tension within a targeted group of population. However, a wedge issue may often be a point of internal dissent within an opposing party, which that party attempts to suppress or ignore discussing because it divides "the base".[14] Political scientist Schattchneider argued long ago that the effort of all political struggles "is to exploit cracks in the opposition while attempting to consolidate one's own side." [27] Therefore, a wedge issue intended to bring a contradictory debate within the opposing party gives the public a perception of disarray. In an extreme case, a wedge issue might contribute to the actual fracture of the opposing party as another party spins off, taking voters with it.

This, however, raises additional questions about the impact such of precise hidden campaigning and asymmetric informational flows has on the polarization of citizens. Wedge strategies might seem obsolete if the electorate has polarized along partisan and ideological lines, as is generally thought to be the case today in some political blocs in Moldova (*e.g.,* bloc "ACUM"). The reality, however, is that in a complex and pluralistic society, political parties are inherently coalitions of diverse individuals. The choice of only two major parties ensures that some partisans will be incongruent on some issues, thereby creating policy cleavages within the party coalitions.

4.4. Social media and techniques for manipulating the electorate

Nowadays, people have come to associate online politics with their most antagonistic and incendiary aspects, such as trolling, political scandals, fake news and other "dirty" tactics. All of them are methods of manipulation, imposing the interests of a class, group, communities through misleading. These technologies are widely used, and inaccurate or false information flowing across them has a high profile.

Political manipulation is a latent management of the people's political consciousness and behaviour, in order to force them to act (or not to act) in the interests of the manipulator. [2] For this reason, social media manipulation is an efficient and powerful tool, used against political opponents in situations of divergence of interests and ideology. The methods used to manipulate public opinion are multiple. However, this paper analyses only the most frequently used in political speech with the purpose to misinform voters.

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[14] For instance, Maia Sandu, ex-prime minister of the Republic of Moldova and leader of PAS avoid including such issue in her political campaign as she declared that "the politicians speculate on the topic of union with Romania, which lead to the division of the society." Unionist parties and their supporters treated this declaration with disapproval. See for instance, "Maia Sandu for the Russian press: "Union with Romania, subject of speculation that divides society," deschide.md, https://deschide.md/ro/stiri/politic/52133/Maia-Sandu-pentru-presa-rus%C4%83-.

a)   *Denigrating a political opponent with accusations that cannot be verified immediately or at all*, since the opponent has parliamentary immunity, or with corrupt facts in the media, such as compromising materials on the opponent. Because of them, the candidate's rating may fall significantly. Accurate information can also be used strategically, as when confidential communication is leaked (often selectively) in order to cast a political opponent in a negative light [15]. However, compromising material can have also an opposite effect: when "dirt is very tough", people will begin to feel sorry for the person and, thereby, will raise his rating (the 'rooting for the underdog', as an often-underestimated social phenomenon). Therefore, many electoral contestants use third parties, such as trolls, supporters or media, to launch certain themes or attacks, while placing themselves in a neutral position. This technique is intensely exploited in order to manipulate the electorate by launching negative press campaigns, before triggering direct political attacks.

Trolling, which is now mainstream in political debate, is especially successful in dividing opponents' electorate. Trolls disseminate readily deceptive information as factual information, which includes, but is not limited to lies, fake news, conspiracy theories, and rumours to change electorate cognition or beliefs. This dark current of people who equate free speech with the right to say anything, even hate speech, find on social media platforms a place where their opinions can have a multiplier effect, where they become the elites.

b) *Launching official rumours/fake news and intoxications on social media*. Politicians or mass-media always use phrases such as "credible", "official", or "internal sources" to launch messages that are often untrue, without assuming any responsibility for these actions. Inaccurate beliefs and falsehoods undermine democratic processes by distorting decision making, threatening the very foundations of democracy. Support for a candidate or policy that he/she promotes depends fundamentally on what one believes, and "falsehoods can color individuals' judgments, potentially leading them to support positions that run counter to their self-interests" [18]. In the Republic of Moldova, a significative number of informative portals and blogs, that frequently publish content stories appearing bona fide, but serving as primary source for the dissemination of manipulative content. Instances of "media forgeries", which are subsequently taken over by television and disseminated as credible information, also occur. Advancing conspiracy theories, which weave together truth and fiction in ways that appear to justify attributing social phenomena to a small but powerful group of self-interested individuals, are a related approach. Certain fake news sites are not by any means entertaining, and only exist to invade uniformed voters with misleading content, or, alternatively, troll them. Perhaps one of the most notorious fake news was about presidential candidate Maia Sandu, alleged "to have had an agreement with German Chancellor Angela Merkel to receive 30,000 Syrian immigrants if she wins the presidential elections".[15] When the news was disseminated, some Moldovans were indeed panicked about a "massive" wave of Syrian refugees, withdrawing their electoral support.

It is getting increasingly harder to isolate genuine news from fake news on the Internet. Social media makes this refinement particularly complicated, by displaying a consistent stream of images, connections, and gossips about political leaders, which is often in most of cases a blend of truths, and outward lies. Bakir and McStay affirm that the contemporary fake news phenomenon is a logical outcome of five features of digital media ecology: the financial decline of legacy news; the news cycle's increasing immediacy; the rapid circulation of misinformation and disinformation via user-generated content and propagandists; the increasingly emotionalised nature of online discourse; and the growing number of people financially capitalising on algorithms used by social media platforms

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[15] Initially this fake news was reported by portal guralumii.md, after was disseminated by other news portal and blogs.

and internet search engines. [3] In a complex information environment, individuals have cognitive limits and biases, which make them susceptible to political misinformation. Moreover, a study suggests that people find messages to be more believable the more familiar those messages are [7]. Therefore, repeated contact with falsehoods shared online will increase the validity judgments of those statements, encouraging their acceptance and creating illusory truths. More importantly, people are susceptible to believe messages that affirm their identity or political viewpoint, regardless of the strength of the evidence [20].

If fake news or rumours only aim at putting a particular message into circulation, the intoxication techniques are much more subtle. Polls, ratings and rankings, formative tests or televised debates are some of the methods currently used for misleading or creating false trends favourable to certain topics or making and promoting false political personalities.

c)   *Affective compassion is another way of handling public opinion*. When citizens are generally ill-informed, and lack ideological constraint, trait-based heuristic strategies represent an opportunity to understand why some campaigns succeed and others fail. Compassion appeals are likely to be used by all candidates early in a campaign to develop a candidate's image and shore up partisan support.

Since voters want a politician who "cares about people like them", they look for politicians who are compassionate because they believe that candidate can be trusted to look out for their best interests. Often, political leaders make use of this weapon to get sympathy and support of voters based on so called identity-based empathy. [17] When the candidate and the voters share salient identities, it expresses the candidate's ability to understand how people live and the belief systems dominate their thought processes. However, the candidate can create an image that does not correspond to the reality, trying to persuade the voters that "he is like them and part of them". The message "I am like you", and "care about people like you" has a positive perception among voters, especially when candidate portrays an image of a person that share similar traditional values as majority of voters. For instance, in the presidential election of 2016, PRSM's candidate Igor Dodon built an image family man supportive for traditional family and Orthodox church, that are common values for most of the Moldovan voters. By contrary, with the help of mass-media affiliated to PSRM, his opponent - Maia Sandu, was portrayed as a childless, unmarried woman, and supportive of LGBT. Since stereotypes are too much rooted in the Moldovan society, these tactics helped Dodon gain more votes than his opponent.

Having a positive perception of a leader can make citizens to find excuses when the politician fails, or to give them credit for achievements that, objectively, might have been out of their control. Obviously, most voters lack the time or interest to understand the intricacies of policy-making, nor is it necessarily reasonable to demand that from them. [21] Without these important factors to influence voting decisions, voters will fall back on their perceptions of whether a candidate is a good person who truly cares about people like them.

d)   *Labeling* is also an important element of language manipulation in election campaign. This method allows to discredit a person or an idea, for example, to present a patriot as "fascist", or a person that has a different opinion than majority as a "traitor". For instance, Andrei Nastase, PPDA leader, was labelled as a "village fool" by Igor Dodon, incumbent president of the Republic of Moldova, only because he withdrew his candidacy in favour of Maia Sandu, PAS leader in the 2016 presidential race. More recently, when PUN leader, Octavian Ticu, was labelled a "traitor" by some of his MP colleagues, and their social media followers, only because he had opposed and criticised a long-term coalition with the PSRM, which also was considered toxic by civil society.

Labelling is based on stereotypes in the mass consciousness, which in the Moldovan society are particularly difficult to overcome, due to misinformation and poor democratic and political education of voters.

e)   *Deviating the attention from the important problems in society* it is another manipulation tactic, achieved by launching false topics of general interest, usually of a scandalous nature. This tactic, as a rule, is used by politicians /electoral contestants in order to silence other aspects that could really disturb public opinion, or hurt them personally, e.g., when related to their activity, person or circumstances.

Other used tactics are exaggeration of the stake, the consideration of conformism, keeping population in mediocrity etc.

4.5. Intermediaries – new actors in the electoral process

The rise of digital intermediaries, such as search engines and social media is profoundly changing our media environment. This powerful gatekeeper position enables them to facilitate or impede information dissemination. Epstein and Robertson have highlighted that search engines have the potential to influence the electorate's attention and voting preferences, showing that a biased search engine result ranking can shift undecided voters towards one candidate. [9] Search rankings can in turn affect voter preferences, these phenomena might interact synergistically, causing a substantial increase in support for one candidate at some point even when the effects of the individual phenomena are small. The scholars pointed out that "the process by which search rankings affect voter preferences might interact synergistically with the process by which voter preferences affect search rankings, thus creating a sort of digital bandwagon effect that magnifies the potential impact of even minor search ranking manipulations." [9] The effect is particularly important for elections with a limited number of closely ranked candidates. [6]

Some online platforms, such as Google or Twitter, have introduced policies aimed at identifying political campaigning and bringing it comply with applicable laws of the state in which they are being run. However, there is no guarantee that when the business/ideological interests of the political party and online platform align, the later may not favour the respective electoral contestant over his opponents to reach their supporters. This could lead to new forms of corruption and manipulation that are not captured by existing rules that focus mainly on broadcasting and that cross-jurisdiction boundaries.[22]

5. Regulating social media in the Republic of Moldova

According to Article 52 of the Electoral Code, "the citizens of the Republic of Moldova, the parties and other social-political organizations, the electoral blocks, the candidates and their trustworthy persons have the right to submit freely and under all aspects the electoral programs of the electoral competitors, the political, professional and personal qualities of the candidates, as well as to conduct electoral campaign in meetings, rallies, meetings with voters, through mass media, by displaying electoral posters or through other forms of communication." [8] The Electoral Code does not contain separate provisions for the promotion of electoral messages on social media, but electoral advertising on the Internet is assimilated to offline advertising. Posts on social media are attributed to offline content, and they are compared to messages that are posted on billboards. The problem is that in the both cases, it is neither restricted nor monitored, as is the case of the political advertising aired by the broadcasters and monitored by the Broadcasting Coordinating Council (CCA). For instance,

restrictions are in place for broadcasters these are restrictions regarding airing time when placing electoral advertising. However, these restrictions do not apply to internet advertising. Lack of Internet regulation may affect the capacity of the bodies responsible for the supervision of the electoral campaign to penalize offences committed online by the electoral competitors.

Some restrictive measures for conducting an electoral campaign have been developed by the Electoral Central Commission (CEC) and the Broadcasting Coordinating Council (CCA). They concern certain key issues, such as non-discriminatory or instigative language, correct and not-distorted display of electoral contestants' messages by broadcasters, prohibition of hate speech or sexist messages, prohibition to use different national symbols, images representing state institutions, public authorities for electoral advertising purposes, both within the country and abroad, or international organizations etc.

The existing regulations are based on traditional media and should be reviewed and complemented by measures aimed to regulate social media and other digital technologies to prevent democratic failures and protect the legitimacy of democratic processes.

6. Conclusions and recommendations

Social media can be strategically important during election campaigns. Due to the increasing number of users and existing settings for the distribution of information on social media platforms, their influence on voting results is substantial. Without any doubts, online campaigns tend to gradually replace the classic ones, however, without causing their complete disappearance. Politicians express increased preference for the new media, as they allow more freedom, with very few (if any) regulatory control keys.

The content of online campaigns messaging remains a material issue of concern, absent regulations or standard settings. Bodies monitoring elections and regulators should concern themselves more with issues such as message targeting, redlining and the undermining of deliberation. In many areas, more active standard setting could be desired and fruitful. As the risk of underlying motivations, of undermining democratic institutions and of casting doubt on election results remains a major concern, democratic state actors should update their approaches, practices and regulations, at state-of-the-art technological standards. This process is intrinsically difficult, if only taking into account the ever-evolving nature of technology, and the speed at which its evolution occurs; as well as, at a minimum, the need to safeguard fundamental rights, such as freedom of speech and other open-society values; to the effect that the outcome might not be optimal. It remains, however, a sad fact that, with few, if notable exceptions, material steps in this direction are yet to be taken at both national and international level. The inability of regulation to level the playing field for political contest and limit the role of money in elections, especially on social media, causes major disruptions to the democratic process.

Social media is far more complex, with myriads of actors and contents. On social media, some private or anonymous accounts/sites/users that carry political content may have a wide reach, but it may not be easy to identify them. Therefore, relevant national authorities, such as the CEC and the CCA, may consider monitoring online political advertising and campaigning in the overall electoral campaign context, and establish more specific quotas, limits and reporting categories for online electoral spending. In order for monitoring authorities to move towards these goals, cooperation with civil society, as well as information exchange should be increased, and good practices in social media monitoring developed and implemented. Cooperation shall be established with (at least) major

internet platforms, so that the former can raise concerns in time and provide their findings regarding abuses to respective mentoring authorities.

A wide, objective review of the ability of the legal framework to ensure a fair, clean and clear electoral campaign should be conducted. Definitions of the cost of campaigning should be expanded to include consultancy and database costs that relate to campaign spend, or a shift to donation limits rather than spending limits should be considered. A media law is necessary, which will provide for new and innovative measures to ensure transparency, data protection requirements for platforms and intermediaries, which also play a crucial role in political campaign.

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THE ROLE OF SOCIAL MEDIA IN E-GOVERNMENT: SYSTEMATIC LITERATURE REVIEW AND CASE OF JORDAN

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Abstract

Social media has become a new revolution in communications and most governments around the world use these platforms as two-way communication between them and the citizens. The Jordanian government started using these platforms early, so this paper came to examine the Jordanian's practice on these platforms. The paper use two way of analysis, the first one was a systematic literature review in the largest two databases (Scopus and Web of Science). After the literature has been analysed and the paper found the best practices for governments around the world, three main determinants were identified for any government to start the use of social media (presence, up to date information and interaction). The most popular Jordanian's social platforms (Facebook, Twitter, and YouTube) have been selected to start the analyses and 52 Jordanian governmental institutions (all the 25 ministries and 27 institutions belong to the prime ministry) have been analysed. After the institutions' websites and their pages or accounts on social media platforms scanned and analysed, most of the institutions have fulfilled the first two criteria (presence) and 77% shows that they have appearances on social media and (up to date information) 67% of the institutions regularly updated their information. But for the last criteria (interaction) we have found that the institutions still need to improve their interactions with the citizens since the results showed only 38% of these institutions have interaction on their pages or accounts on social media.

Keywords : E-Government, Social Media, Citizen Engagement , Jordan, Facebook, Twitter, IT Management

1. Introduction

Alongside with the creation of new ways for governments to enhance serving their citizens and businesses through the internet (Nations, 2014), a revolution in governments' use of the internet took place in order to deliver services to their stakeholders. During the 1980s and 90s, the Information and Communication Technology (ICT) revolution had an impact on everyday activities, but moreover, transformed the extent to which governments interact with their citizens. From the mid-1990s, both public and private sector organizations have engaged in finding the best ways to take advantages of the new technologies to provide their services in order to develop their relationship with their stakeholders. In general, the private sector was more proactive in embracing ICT as a mean of communicating, interacting and transacting, whereas governments were initially cautious (Jaeger & Thompson, 2003). But, as Jaeger (2003) observes, this initial caution dissipated quite quickly and by the early 2000s, many governments had initiated e-Government projects: a decade ago, even the most

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technologically aware experts probably would have found the state of e-government in 2003 to be surprisingly robust (Grönlund, 2010).

There are many different definitions of e-Government in the literature, but they all include the concept of the use of technology by government or public sector organizations to serve their stakeholders (which span citizens, business, and public sector organizations, to other agencies within the government). For example, World Bank defined it as the government agencies use of information technologies (such as, the internet, and mobile computing) that have the ability to transform relations with citizens, businesses, and other arms of governments. These technologies can serve a variety of different ends: better delivery of government services to citizens (Sarrayrih & Sriram, 2015).

However, as mentioned earlier, despite the diversity of e-government definitions found in the literature, there is a common central concept that underlies all these definitions - the usage of web-based tools and applications for public service delivery (Rumman & Szilágyi, 2018).

1.1. Social media

Social media is defined as online tools and utilities that allow communication of information online, participation and collaboration such as blogs, microblogs (i.e., Twitter), social sharing services (e.g., YouTube), text messaging, discussion forums, collaborative editing tools (e.g., wikis), virtual worlds, and social networking services (e.g. Facebook, LinkedIn) (John Carlo Bertot, Jaeger, & Hansen, 2012; Clark, Algoe, & Green, 2018).

In the beginning of the 2000s more social media platforms started to appear on the surfaces such as Myspace and LinkedIn and a few years more websites joined like YouTube, Facebook, and Twitter. In 2007 'Facebook' developers upgraded the application to be more interactive, which allows users to participate and interact more by making comments and creating content which made the users of this application increase in a huge way (Boyd & Ellison, 2007). Since then, social media platforms kept developing their websites and made it more flexible, user-friendly and interactive, all that made the number of the viewers, surfers, and the accounts created become a new revolution.

The use of social media websites has dramatically increased in the past few years as we mentioned before, and nowadays it plays a major role in people's social life. By the end of 2010, there was nearly one billion social media users in the world and this number is expected to jump by nearly 300% by the end of 2020 to reach near 3 billion users (Statista, 2019). Social media has become a wide path for dialogue, expressing opinions, communication with others and exchanging news and information. As a result of the user's huge tendency to the use of these social media platforms and because these platforms became very important, the governments around the world became more aware of the role of these websites and platforms, and at the end, using these websites become essential to keep pace with the user's new tendency.

2. Theoretical background and lessons from other countries

Systematic Literature Review was adopted to restrict the existing literature, to explore the research trends in this field and best practices for governments in using social media. In this study, 2 search engines were used (Scopus and web of Science databases).

First, a search was carried out using keywords related to the topic, the keywords were ("e-government" or "electronic government " and "social media" or "social network") as a result to this first search 25,729 articles were found (Scopus 415 and Web of science 25,314) .

After the first search and to minimize the result and get more related results, **secondly** the keywords have been changed to be "e-government and social media" OR "social media and e-government" OR "social network and e-government" OR "social media and electronic government " OR "social network and electronic government", **Third** the results limited for the last 10 years to get the most recent articles.

After this step, the number of studies reduced to 30 studies (21 on Scopus and 9 on Web of Science). The results are called candidate Studies. The **final** step was selecting and filtering the candidate studies based on excluding the book chapters and conferences and secondly a comprehensive review of all the candidate studies and choosing the studies that directly related to the research topic, the studies after this systematic search finalized to 16 studies selected to be analysed for this paper and the summary of the analysed articles shown in Table 1.

Author/ year	Title	Main findings
Alryalat, Rana, Sahu, Dwivedi, & Tajvidi, (2019)	Use of Social Media in Citizen-Centric Electronic Government Services: A Literature Analysis	This paper presented a comprehensive review of all literature related to e-government and social media to find the main topics that combined the two terms in the literature, the paper found that the most used topics used in this field were electronic participation, transparency, interaction, safety, and cooperation. Many studies have mentioned the importance of social media in e-government and identified it as a powerful tool for the governments. Using it can be easily disseminated to the citizens who usually don't participate in government decisions and policies.
Ma, (2016)	Government Website, Social Media, and Citizens' Perceptions of Corruption: Evidence from Chinese Cities	In this study, they explored the relationship between the use of social media platforms, e-government, and the citizens' perceived corruption. It was conducted in 36 Chinese cities and concluded that there is an impact of the social media platforms use on corruption perceptions.
Porumbescu, (2017)	Linking public sector social media and e-government website use to trust in government	This study was conducted in South Korea on 1100 citizens to see if there is a relationship between the use of e-government websites or social platforms and the citizen's trust and satisfaction. The study connected that the use of traditional websites is negatively related to the trust and satisfaction of citizens, unlike social platforms that are positively linked to the satisfaction and trust of citizens.
Didik Madyatmadja & Julio Kiswanto, (2019)	Social media-based e-government application feature	The study was conducted in Indonesia in 9 cities on the applications for e-government if they contain features of social platforms such as (Realtime chat, sharing... etc.) 24 characteristics were identified from the literature. This study found that e-government can build applications based on social media platforms or their features.

Chaieb, Achour, & Ferchichi, (2018)	E-government and social media in Tunisia: An empirical analysis	This study was conducted in Tunisia on some government agencies' pages on Facebook, the paper reviewed the way government agencies use the social media platforms and the way Tunisian citizens interact on these pages. The results show that this use is limited to providing information and news and does not actually take advantage of the social media provided to lead discussions, stimulating discussions that can lead to better citizen engagement. The results also showed that citizens are interested in government decisions. For this reason, it is important for these agencies to develop methodological and technological changes to make the best use of these social platforms, in order to encourage citizens to participate more.
Gao & Lee, (2017)	E-government services and social media adoption: Experience of small local governments in Nebraska state	This study was conducted in the United States /Nebraska to explore the relationship between e-government services and social media adoption by small local governments. The study found that Facebook is used more for e-government transaction services and on the other hand Twitter used more with the information services.
Bosch, (2017)	Use of social media and e-Government in disasters: 2016 Louisiana floods case study	This study was conducted in Louisiana / United States of America and this study explores the way of using social media platforms to communicate with government agencies in disasters. 30 users were surveyed after Louisiana Floods in 2016 and found that the use of these platforms increases in disasters and they use them mainly to locate the family, ask for help and share information. but most surveyed users did not use these platforms to communicate with government agencies, and the results showed that most of the participants were dissatisfied with the use of government agencies for these platforms during disasters.
Porumbescu, (2017)	Linking Transparency to Trust in Government and Voice	This study measures how the use of social media and traditional e-government websites affects the trust and transparency in government. The study concluded that the use of social platforms greatly affects government trustworthiness and transparency more than the use of traditional websites of e-government.
Vicente & Novo, (2014)	An empirical analysis of e-participation. The role of social networks and e-government over citizens' online engagement	This study was conducted in Spain on secondary data from a survey conducted in 2011 on the use of information and communications technology and E-participation (reading, expressing opinions about social and political issues, sharing and public consultations). The results showed that E-participation is mainly related to the skills of using the internet and that there is a large gap between gender with electronic participation. Finally,

		the E-participation of unemployed people is more than the rest of the population.
Kawtrakul et al., (2012).)	Improving disaster responsiveness using a mix of social media and e-government	This paper examined the governmental response to natural disasters using social media platforms. The paper emphasized the importance of using social media in unexpected circumstances, such as disasters, by sharing and receiving information quickly and directly from citizens, and finally The paper suggested a model for the optimal use of social media by the government during disasters to improve response for disasters.
Unsworth & Townes,(2012)	Social media and e-government: A case study assessing Twitter use in the implementation of the Open Government directive	This study was conducted in the United States of America to explore the united stat Department of Agriculture's use of social media and if this use supports the three goals of the open government. The study concluded that social media channels are the most important channels for communicating with the public to achieve the goals of the open government, and the paper indicated that the three pillars of open government (transparency, cooperation, and participation) still need to be expanded to include the interactions that occur on social media platforms.
Camay, Brown, & Makoid,(2012)	Role of social media in environmental review process of national environmental policy act	This study considered the use of social media in the environmental review pross of transportation projects, and the study examined three cases. The study concluded that these platforms allow professionals working in transportation to interact with the public on a wider scale. The study presented several recommendations for the professionals in the transportation sector and finally recommended more research to measure the success of informing and engaging the public more effectively.
John C. Bertot, Jaeger, & Grimes, (2010)	Using ICTs to create a culture of transparency: E-government and social media as openness and anti-corruption tools for societies	This paper examines the relationship between the use of e-government and social media platforms and transparency and reduce corruption. The study concluded that previous efforts and studies of the ability to use technology to create substantive social change in attitudes towards transparency in particular - e-government and social media platforms - were not widely and sufficiently considered. The study identified some recommendations to increase transparency through social media platforms such as (expanding ICT access, increase the trust in ITC and government, empowering citizens to participate) and finally mentioned some challenges such as (Technology literacy, usability, and accessibility)

Shah (2010)	Increasing e-Government Adoption through Social Media: A case of Nepal.	This study conducted in Nepal and measured the effectiveness of the government's past communication outreach efforts and also investigates the possibilities of using social media to enhance citizen's trust., and the study found that governments operate in a centralized, hierarchical manner, while social media allows governments to contact citizens in a different way than any time before.
Bonsón et al. (2012)	Local e-government 2.0: Social media and corporate transparency in municipalities	Conducted an overall view about the use of social media tools in EU local governments in order to determine whether local governments are using these technologies to increase transparency and e-participation. Bonsón also showed that most local governments are using social media tools to enhance transparency but, in general, the concept of corporate dialogue and the use of Web 2.0 to promote e-participation are still in their infancy at the local level.
Magro (2012)	A Review of Social Media Use in E-Government	This paper reviewed the literature focused on social networking applications and social media activities used by citizens and government to communicate for the five years (2007-2012) and he found that more work on social media and e-government policies is still needed since the use of these technologies is changing rapidly. Government regulations have been traditionally slow to catch up with the information age, so more future research on social media in e-government is needed in the areas of objectives and strategy, categorization of e-government applications, and policymaking.

Table 1: Literature review (Scopus and Web of Science)
Source: Authors edit

2.1. Summary of Previous Literature

Social media platforms provide support to the previous view that social media adoption is another step-in e-government evolution (Gao & Lee, 2017)

Some governments already adopted new policies and started communicating with the citizens through social media platforms and are doing more activities on these websites, such as announcing the services they provide, gaining the support for their policies that have been adapted and getting feedback on a lot of cases and services that will be applied in the future. But unfortunately, the number of governments that use social networks as a facility to do all the jobs mentioned before are still below expectations internationally (M.H. Btoush, 2014; Khasawneh & Abu-Shanab, 2013; Shah, 2010).

Social media platforms provide the government with direct contact with the audiences and get closer to them and this can give the citizen the feeling of being close to decision makers and break routine and psychological boundaries between the citizen and the government.

Finally, many previous studies found that the use of social platforms may positively affect E-participation, transparency and trust (Bonsón et al., 2012; Chaieb et al., 2018; Porumbescu, 2017; Shah, 2010; Unsworth & Townes, 2012; Vicente & Novo, 2014), and can also contribute to reducing corruption (John C. Bertot et al., 2010; Ma, 2016). On the other hand, a few studies have identified

some challenges for using these platforms such as privacy, internet access, and technological empowerment (John C. Bertot et al., 2010). Finally, these platforms managed by external entities that governments do not have control of or access to which increases their fears to use it in a wide way.

2.2. Jordan

Jordan is a unique case study because the importance of social media has increased in the Arab world in general and in Jordan in particular after 2011 and that's due to the role that these websites played in what is called "Arab spring" that took place in the region. The use of these platforms has contributed to major changes in various fields (political, social and economic), and the number of users of these platforms started increasing dramatically since that date. Moreover, The UN report showed a significant decline in e-participation index in Jordan, as Jordan ranked 117 out of 193 countries in the world, which is a very low level (Nations, 2018).

In addition, today more than 60% of the population in Jordan appear on social media platforms (We Are Social, 2017). Most of them are active on Facebook, Twitter and YouTube (around 5,300,000 active users on Facebook and 400,000 on Twitter in 2017 (internet world stats, 2017).

Despite this importance, the research on this topic in Jordan is still limited and needs more work (M.H. Btoush, 2014; Khasawneh & Abu-Shanab, 2013). Here this paper used the keywords mentioned earlier with new keyword added this time (" Jordan") in 3 search engines (Google Scholar, Scopus, and Web of Science), and after analyzing all the possible articles, only two articles were found directly related to the topic in Jordan (Table.2) .

Author/ year	Title	Main findings
Btoush (2014)	Government's presence on social media a study with special reference to Jordan	this research conducted a comprehensive review of 31 Jordanian governmental websites to find the presence of governments on social media websites, and he found that the Jordanian government presence is still not making full utilization of the potentials social media can offer, moreover, he mentioned that this presence was so shy and most of it was limited to provide information.
Khasawneh and Abu-Shanab (2013)	E-Government and Social Media Sites: The Role and Impact.	They took one page on Facebook (Jordanian e-government page) as a case study and they did a content analysis for this page to check the level of engagement and interaction by citizens. They found that it has a good level of engagement, where citizens interact positively with the posts published by the page through making a like, comment, share, answering a question or just seeing the page.

Table 2: Articles about Jordan
Source: Authors edit

All these factors make this case study special and important and can give useful results for the Jordanian government and similar countries. Hence, many researchers were invited to study and explore the current situation of the government's use of social media platforms, especially in this region (references) .

In addition, they mentioned that social media can allow governments to have the capacity to rebuild the relationship with their citizens and increase the level of citizens' engagement which can reflect on the citizen's trust and involvement in making policies.

Most of the literature mentioned before showed how important for the governments to consider these means in their plans and how important that governments use these websites to promote their policies or plans and to interact with citizens and finally showed a lack of research in this area, especially in the developing country.

Therefore, most previous studies concluded that the widespread use of social platforms such as (offering services and using the features of these platforms) still needs more studies from many aspects (policies, technological and economically), but this analysis concluded, that governments should use these platforms in three basic levels: presence, update information and interaction.

Therefore, these three levels represent the basic use of social media platforms for any government and keeps them away from the risks that the previous studies mentioned such as privacy, control of these platforms, security, etc. Hence, this paper has adopted these three main basic levels of government use of social platforms to explore the current situation of the Jordanian government, the main goal of this paper is to conduct a content analysis for the Jordanian government pages or accounts on three main social media websites that the Jordanian citizens use (Facebook, YouTube, and Twitter).

3. Materials and methods

After the systemic comprehensive literature review that has been conducted before for the latest research related to this topic and reviews of other countries experiences, this paper identified three basic and safe levels of the use of social platforms by any government, which are presence, information update, and interaction.

The analysis contains the three levels, first if these governmental institutions have any presence on these three websites and secondly if they update their information and lastly if there is any level of interaction with the citizens on these websites.

This research is based on content analysis of the three main social media platforms used by the Jordanian (ministries and institutions belong to the prime ministry). The research is conducted between the end of June and the end of December 2019.

Therefore, this study is mainly concerned with the citizen's interaction and engagement with the Jordanian government's social media platforms. So, this study we will evaluate the Jordanian government use of social media websites based on three indicators: presence, up to date information and interaction, as the following :

3.1. Presence

As Btoush (2014) pointed out, an increase use of social media is the solution to the low participation of citizens in the decision making process and as a start to use these platforms presence is the first stage, in which an official online government's existence is established on one of the social media platforms (pages, accounts or YouTube channel). For this study, we would like to validate this indicator by checking the social media links, tools, and platforms on all governmental institution's

websites, in other words, if the governmental institution is present on the social media websites that we have selected.

3.2. Up to date information (UTD)

This is also an important indicator in social media. Nowadays the users are always interested in new information. UTD has been defined in many ways in literature and it is a diminution of information quality. Information quality is defined as information that is good, useful, current, and accurate (Ovais Ahmad, Markkula, & Oivo, 2013)(Lee & Levy, 2014).

For this study, we will check one aspect of the quality of information 'current' or if it is up to date. Therefore, we will check all the information that the institutions shared (posts, tweets or videos) on their pages or accounts on social media and we will see the frequency and the date of last information was published considering it (up to date information) if it is useful information and the date of the information is within 10 working days.

3.3. Interaction

United Nations survey defined it as the interaction between citizens, government organizations, public, and elected officials (Nations, 2014). The social media sites provide a new way of interactions between the government and their citizens. These websites allow the citizen to contact directly with the government and get information easily and fast. This is more important, as social media provides new, additional avenues for the delivery of government's information and other public services. For this study to check the government interactions we have sent a question ({Hello, I have a question. Can I contact you through this page? Or is there another way to communicate? Thanks) to all the governmental pages or accounts and wait for the whole period that we conducted this paper and see how many of the institutions respond to check the interaction.

Finally, as a summary, this process went through four main steps:

Step 1: check all the 52 institutions websites trying to find any links or tools for the three selected social media websites (Facebook, Twitter, and YouTube) (presence) .

Step 2: scan the three selected social media websites trying to find an appearance for the governmental institutions by writing the name of the institution in both languages (English-Arabic) (presence).

Step 3: analyze the social media platforms content and check the information that institutions have published if it is up to date or not (within 10 working days) (up to date).

Step 4: Finally, send a question for the institutions who have existence on social media and wait for their response (from Jun until the end of December 2019) to check the level of interactions (interaction).

4. Results

After the two months of content analyses for the social media websites applying the four research steps that we described in the last section, we created a table to show the results. As we can see below, we used the following scoring method. Number one (1) if the institution has fulfilled the indicator criteria or number zero (0) if not and the last column for the sum for each institution.

	Jordanian governmental institutions	Presence*			UTD **	Interaction ***	Sum
		Facebook	Twitter	YouTube			
1	General Intelligence Department	0	0	0	0	0	0
2	The Audit Bureau of Jordan	1	0	0	0	0	1
3	Civil Service Bureau	1	1	1	1	1	5
4	Legislation and Opinion Bureau	0	0	0	0	0	0
5	Jordan investment commission	1	1	0	1	1	4
6	Jordan Atomic Energy Commission	1	0	0	0	0	1
7	Media Commission	1	0	0	1	1	3
8	Integrity and Anti-Corruption Commission	1	1	1	1	1	5
9	Hashemite Commission for Military Casualties	0	0	0	0	0	0
10	Jordan Radio and Television Corporation	1	1	1	1	0	4
11	Greater Amman Municipality	1	1	1	1	1	5
12	Central Bank of Jordan	0	0	0	0	0	0
13	Petra Development Tourism Regional Authority	1	0	0	1	1	3
14	Jordan News Agency (Petra)	1	1	1	1	0	4
15	Jordan's Economic and Social Council (ESC)	1	1	1	1	1	5
16	Economic and social institution of military retirees	0	0	0	0	0	0
17	National Resources Investment and Development Corporation	0	0	0	0	0	0
18	Authorization Standards for Higher Education Institutions	1	0	0	1	1	3
19	National Center for Curriculum Development	0	0	0	0	0	0
20	Aqaba Special Economic Zone Authority	1	0	0	1	0	2
21	The Jordan Securities Commission	1	1	1	1	0	4
22	General Ifta' Department	1	1	1	1	0	4
23	Higher Council for the Right of Persons with disabilities	1	1	1	1	0	4
24	Jordanian Nursing Council	1	1	0	1	1	4
25	The Higher Council for Science and Technology	0	1	1	0	0	2
26	Energy and Minerals Regulatory Commission	1	0	0	1	0	2
27	The Jordanian Complex for Arabic Language	1	1	0	1	1	4
28	Ministry of Higher Education and Scientific Research	1	1	1	1	1	5
29	The Ministry of Finance	0	0	0	0	0	0
30	Ministry of Foreign Affairs and Expatriates	1	1	1	0	0	3
31	The Ministry of Industry, Trade, and Supply	1	1	0	1	0	3
32	Ministry of Interior	1	1	0	1	1	4
33	The Ministry of Justice	1	1	0	1	1	4

34	The Ministry of Municipal Affairs	0	0	0	0	0	0
35	Ministry of Planning and International Cooperation	1	1	1	1	0	4
36	Ministry of Public Works and Housing	0	0	0	0	0	0
37	Ministry of Social Development	1	1	1	1	1	5
38	Ministry of Tourism	1	1	0	1	0	3
39	Ministry of Transport	1	0	0	0	0	1
40	Ministry of Water and Irrigation	0	0	0	0	0	0
41	Ministry of Work	0	1	1	0	0	2
42	Ministry of Health	1	1	0	1	0	3
43	Ministry of Agriculture	0	0	0	0	0	0
44	Ministry of Islamic Awqaf Affairs	1	1	1	1	0	4
45	Ministry of Information & Communications	1	1	1	1	1	5
46	Ministry of Culture	1	1	1	1	0	4
47	Ministry of Energy and Mineral Resources	1	1	1	1	1	5
48	Ministry of Education	1	1	1	1	1	5
49	Ministry of Environment	1	1	1	1	1	5
50	Ministry of Public Sector Development	1	1	0	1	1	4
51	Ministry of political and parliamentary Affairs	1	0	1	1	1	4
52	Ministry of Youth	1	0	1	1	1	4

Table 3: The selected 52 governmental institutions and the three indicators (presence, UTD, and interaction).
Source: Prepared by the authors

* The institution has any presence (page, account or channel) on one of the social media platforms.
** The institution's information on social media platforms are within 10 days or less.
*** The institution on social media platforms answered the researcher's question within the research time.

5. Discussion

From the results in Table 1 above we can conclude three main results according to the three indicators as the following:

5.1. Presence

As we can see in the results above, we found most of the governmental institutions have existence on the three social media websites; just 12 out of 52 institutions did not have any existence on any of the social media platforms and that is the 23% of all the institutions. (see Figure 1)
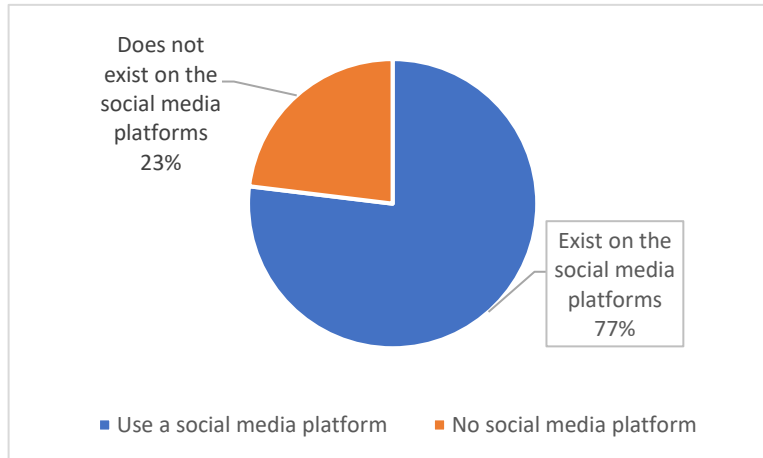
Figure 1: The selected governmental institutions' presence on social media platforms
Source: Prepared by the authors

As we have seen 77% of the institutions have at least one presence on one of the three websites and this is a significant indication that the Jordanian government is aware of the importance of these websites and seek to be present on these platforms. Moreover, from the results, we can see how the governmental institutions' presence distributed between the three social media platforms selected for this study (Figure 2.).

Figure .2 shows clearly that from the three social media platforms Facebook is the most common used by Jordanian institutions with 41% comparing with the other two websites.
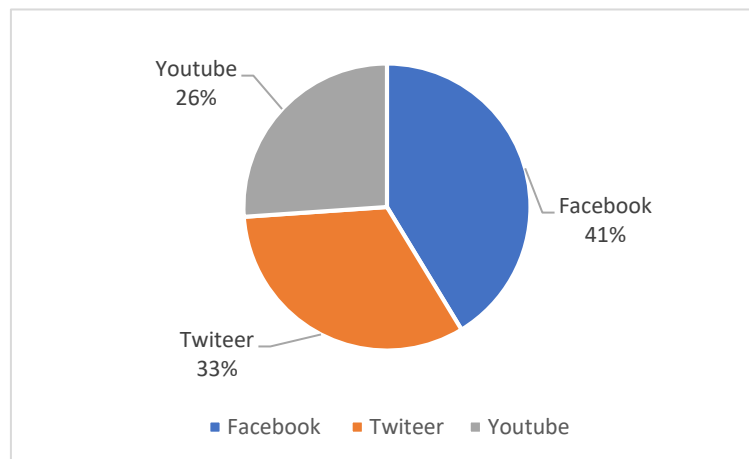
Figure 2: The selected governmental institutions' presence on Facebook, Twitter, and YouTube
Source: Prepared by the authors

5.2. Up to date information (UTD)

After the social media content has analyzed and checked out if the information published on the institutions' pages and accounts were new information or not, as we mentioned in the methods section before.

The result in the table above shows that most of the governmental institution's social media platforms information (35 institutions) are up to date and always show new information for the citizens, and

that showed that the Jordanian government knows how important always to publish new information for the citizens and also showed that there is someone or a department who check these platforms and update the information on them. Finally the results showed that only 17 institutions out of 52 are not updating their content regularly as you can see in Figure 3.
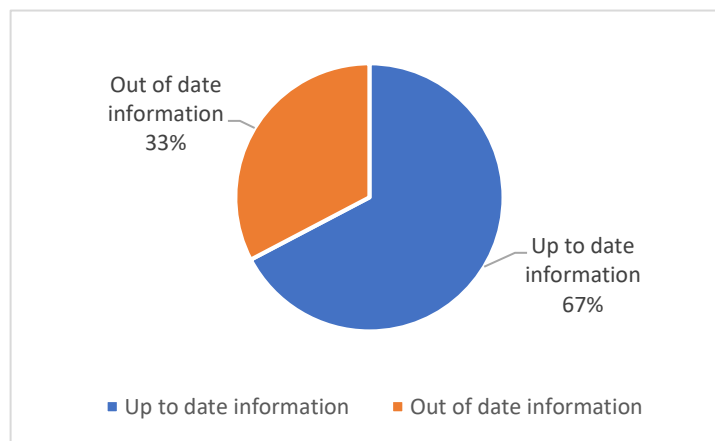
Figure 3: The selected governmental institutions' information up to date
Source: Prepared by the authors

5.3. Interaction

As we described above, social interaction plays a vital role in government-citizens relationships. To check this criterion as we mentioned before, a question has been sent to their pages and account on social media platforms to check who is going to reply on this question and check the level of interaction.

From the results above we can see that most of the institutions on social media platforms are not so interactive (Figure 4.) and their pages on social media are considered as a one-way information source.
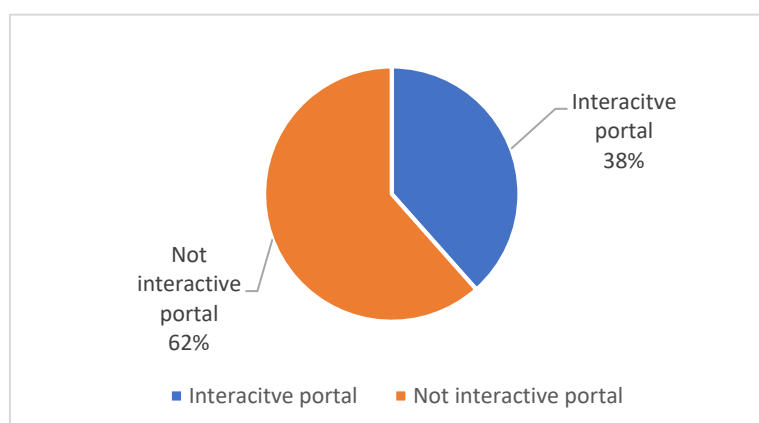
Figure 4: The selected governmental institutions' interaction
Source: Prepared by the authors

And finally, we must mention that only 9 institutions out of 52 (the last column in the results table) have fulfilled all the criteria and got 5, which is full presence on the three social media websites, up

to date information on their platforms and finally interact with the citizens on their platforms and these institutions are (Civil Service Bureau, Integrity and Anti-Corruption Commission, Greater Amman Municipality, Jordan's Economic and Social Council (ESC), Ministry of Higher Education and Scientific Research, Ministry of Social Development, Ministry of Energy and Mineral Resources, Ministry of Information & Communications, Ministry of Education and finally Ministry of Environment)

6. Conclusion

In conclusion, social media platforms offer a new way for governments to contact their citizens. All the governments around the world, as well as the Jordanian government, try to use these platforms. This paper checked how the Jordanian government uses and deals with the most popular social media platforms (Facebook, Twitter, and YouTube).

After a comprehensive review of the previous literature on this topic in 2 of the largest databases (Scopus and web of science), most of the previous studies indicated the importance of the government's use of social media, due to its positive impact in increasing the E-participation, level of transparency and trust in the government. Some previous studies mentioned some challenges such as the access to the Internet and the technological culture. some Studies have mentioned some challenges for this use, such as the lack of the legal framework, the government's inability to control these platforms, and finally, some studies mentioned some risks related to the effects on privacy and recommended more research on these risks.

The research paper concluded three basic levels of government use of social media, namely presence, updating information and interaction. This paper adopted these three levels and conducted a comprehensive survey of the Jordanian government's use of social media platforms.

From the results, we found that the Jordanian government exists on social media platforms and most institutions (40 out of 52) have a presence on at least one of the three social media websites. Moreover, most of the governmental institutions are updating their pages and accounts and always publish new information (35 out of 52). On the other hand, the interactions with the citizens on these social media platforms are still below the expectations and need to be enhanced (only 20 out of 52), and only 9 governmental institutions fulfilled all the criteria, full presence, up to date information and interaction.

Despite the fact that these platforms exist to offer two-way transactions and contact, the Jordanian institutions are still using these social media platforms as one-way delivery information. Moreover, they still don't have the mechanism to deal with these platforms in the best way to interact with citizens on these platforms and make them more involved in its policies. We can highlight that the Jordanian officials must pay more attention to these important platforms and that this may lead to more success in e-government implications.

Finally, there were limitations in this research and could lead to more future research in this field like taking more criteria into account (technical factors, trust, privacy, etc.), moreover to consider the demand side (the citizens) opinions about the government performance on social media platforms could lead to better understanding.

7. References

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eGovernment in Local Communities

eSERVICES AS A CHALLENGE FOR SMALL MUNICIPALITIES – SLOVAK REPUBLIC EXPERIENCES

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Abstract

Cities are using smart city and eGovernment solutions as modern trends also to enhance the management of the city and to get the citizens and entrepreneurs more engaged. Cities in the Slovak Republic are thus introducing ICT based services in order to cope with legal state obligations and also as a natural decision based on specific needs of the municipality. eGovernment developed and introduced on the national level by the state, combined with eServices at the municipality level, mutually lead to a modern, smart and better functioning city. The article is focused on current Slovak Republic's experiences in the field of eGovernment, more concretely on the provision of eServices in small municipalities, which make up the majority of the entire municipalities in the Slovak Republic.

Keywords: eGovernment, Smart City, Slovak Republic, Municipalities, Municipality Data Centre

1. Introduction

The increasing use of modern information communication technologies (ICT) in the public sector, especially in the contact between public authorities with citizens and entrepreneurs has led to modernisation of governmental system, processes, management, decision making processes, what we are referring to as eGovernment [16, 33, 6]. eGovernment has to find ways to use ICT in order to allow an interaction between the government and citizens in a way that such an interaction can be considered as equal participation and not only as one-way provision of information [18]. eGovernment can be seen as a system, which allows governments to improve in the areas of transparency, democratic participation, service orientation, productivity and for the local governments to provide seamless services [6]. eGovernment is understood as a platform interconnecting public administration institutions, employees, citizens, businesses, administration, whilst connecting these different subjects within well-known interactions as Government to Employee, Government to Government, Government to Citizen, Government to Business, Government to Administration [15]. The traditional government structure is due to eGovernment changing into a system of a greater citizen involvement, in line with the New Public Management paradigm [18].

eGovernment and eServices need to be distinguished between, what also Sainz de Abajo, B. S. et al. [34] has highlighted. According to different services, which eGovernment incorporates, eServices are only a partial element, together with eManagement, eDemocracy and ePolicy [34]. In the following text we will refer to eServices as to a service fully provided by using electronic means, with the ability

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to receive the result of the service also electronically. eGovernment will be seen as an entire system, which the eServices are a part of.

Municipalities have had naturally the tendency to take over these modern trends in order to enhance their own interorganizational functioning, but also and mainly in order to enhance the provision of services to the inhabitants and entrepreneurs living, residing in their territory. Sometimes these activities of the municipalities have the tendency to be declared as an effort to become a smart city. Otherwise the intention is limited only to the provision of municipality services by using ICT based modern technologies, and thus providing eServices. The distinction between the application of smart city concepts and application of ICT based tools in order to provide services reflecting a particular level of eGovernment, has to be taken into consideration.

eServices are designed through ICT [17] and establishing interface between the citizen and governments with the result of creating a value to someone [21]. eServices using electronic means, internet or any other ICT are applicable in the private, commerce sector as e-commerce and also in the public sector within the eGovernment [20]. More than often it is the public sector, which follows the trends well established in the private, commerce sector. If we are focusing on the public sector though, including state governmental level and self-government municipal or regional level, the intention to use eServices is mainly with the focus to "make our lives easier, more efficient, and bring less bureaucracy" [20] and also to increase the engagement of citizens and entrepreneurs [16]. More engaged community in a municipality, a municipality which is effectively using smart city solutions and which is able to mediate its eServices in a form near to the end user (citizen and entrepreneur mainly), can lead to a better functioning, effective, smart municipality which takes into account the needs of the local community and which makes use of modern ICT based technologies in a good way.

eGovernment in general is not seen as a challenge anymore. In the EU Member States it is well established and has become a daily routine of the public administration. In order for the eGovernment to be implemented, components and preconditions have to be fulfilled. The Digital Economy and Society Index (DESI) highlighted connectivity, human capital, use of internet services, integration of digital technology, digital public services as the main areas, which are considered and evaluated within the index dealing with different capabilities of the EU member states in the area of eGovernment [14]. Similar factors, as for example interaction of the population, societal pressure, measures and projects carried out by the government, ICT development, good management, gradual design, involvement of different parties, qualified and experienced team have been also concluded by Sainz de Abajo et al. [34], which can be considered as success factors of eGovernment use. The ability to fulfil different factors, criteria and components, consequently indicates how eGovernment is realised in concrete conditions.

The article is focused on the experiences of the Slovak Republic in the field of eGovernment, with a special emphasis drawn onto the self-government level and the provision of eServices by the municipalities. The intention won't be to present and to propose new approaches in the eGovernment, but to highlight experiences of the Slovak Republic in eGovernment, especially how small municipalities practically solve issues with regards to the provision of eServices, considering the factors, limits and preconditions they have in place. The aim will be to present organisational, administrative and legislative background of eGovernment and provision of eServices in the Slovak Republic, with the main orientation on the practice of provision eServices by the municipalities in the Slovak Republic. The Municipality Data Centre, as the tool for provision of eServices at the municipality level used by the vast majority of municipalities in the Slovak Republic will be in the foreground of the practice-oriented explanations.

Activities in the area of eGovernment in the Slovak Republic started in 2001 by adopting the Policy for the Development of the Information Society in the Slovak Republic [13] followed by several steps, activities and measures in the field of eGovernment which have been gradually implemented. Our intention here will not be to present an in dept analysis of the history of eGovernment in the Slovak Republic, this topic is not any new. eGovernment in the Slovak Republic is according to the Digital Economy and Society Index (DESI) [14] scoring below the EU average, and it cannot be expected that the achieved results will be a presentation of highly innovative eGovernment approaches. The aim of the article is thus to evaluate the use and the applications of eServices as a part of the eGovernment in today's Slovak Republic's practice.

2. eGovernment and eServices in the Slovak Republic's legislation and practice

The competences, tasks and coordinating activities in the area of eGovernment and provision of eServices by the state government offices or self-government offices are distributed between different authorities in the Slovak Republic. The Office of the Deputy Prime Minister of the Slovak Republic for Investments and Informatization is the main state authority responsible for managing and coordinating of the informatization of the society including eGovernment [35]. Partially, leading state authorities in selected tasks are also the Ministry of Interior of the Slovak Republic with regards to the public administration, local state government and self-government, and the Ministry of Economy of the Slovak Republic with regards to innovations, supporting businesses using eServices and smart cities support [23, 24].

Organizational background of the state government offices is in the area of eGovernment supported by several legislation acts, from which the Act no. 305/2013 on the electronic form of provision of powers of public authority bodies and on amendments to certain acts (the eGovernment Act) is the main legislation determining eGovernment and provision of eServices by the state government and self-government authorities, including municipalities [1]. The Decree of the Ministry of Finance of the Slovak Republic no. 55/2014 about the standards for public administration information systems stated six levels of public administration electronic services, based on the level of electronisation. The 0 – Off line level means, that the electronic service is not available. Next step is the 1 – Informative level, characterized by the electronic availability of information needed for the service, but the service itself, nor the form are provided electronically. One-way electronic communication, as the essence of the 2 – One-way interaction level means, that the form can be downloaded electronically, but the submission is only available physically. The 3 – Bidirectional interaction level contains the use of electronic means when providing a service, but the results of the service need to be take over physically or in paper form. Fully electronically available provision of services is achieved at the 4 – Transaction level, including taking over decisions and making necessary payments. The final 5 – Proactive level makes the functionalities of level 3 and level 4 available, including the possibility of a personalized and automated provision of a service [7].

The decentralization and deconcentration of public administration in the past decades in the Slovak Republic has led to a very complex system of competences, which the municipalities have to deal with. The municipalities in the Slovak Republic fulfil two kinds of competences, the original competences and the transferred competences. The original competences are the expression of tasks naturally connected to the provision of services for the inhabitants and dealing with everyday life in the municipality, focusing on the versatile development of the territory and on the needs of the inhabitants [2]. The provision of transferred competences is possible only based on a special legislative regulation, whereby the state government level transfers the provision of specific state government services onto the municipalities, controls this provision and finances it [3].

According to the Statistical Office of the Slovak Republic the entire population of the Slovak Republic amounting 5,4 million people lived in 2018 in 2890 municipalities. The majority of these municipalities, as shown in the Table 1 were small municipalities. This shows, that the settlement structure of the Slovak Republic is very fragmented [36, 37]. In combination with the same amount of self-government and transferred competences regardless of the size of a municipality, the small municipalities face big challenges in the provision of their services, especially of the eServices. Thus, the provision of services by electronic means can be considered as a challenge for small municipalities but also as a solution to cope with number of competences.

Size group according to the number of inhabitants	Number of municipalities
99 or less	404
200 – 499	720
500 – 999	760
1 000 – 1 999	570
2 000 – 4 999	301
5 000 – 9 999	63
10 000 – 19 999	34
20 000 – 49 999	28
50 000 – 99 999	8
100 000 and more	2

Table 1: Size groups of municipalities in the Slovak Republic (2018)
Source: [37]

According to the eGovernment Act, public authorities, including municipalities regardless of their size were obliged to provide eServices starting from November 1st 2016 [1]. The exact form and specific electronic solutions weren't prescribed though. This has led to different solutions in different municipalities, taking into account the ability of a particular municipality to develop electronic solutions using its own potential or using market ready solutions, which the municipality is using as a service from a third party. Municipalities have not been reliant to discover appropriate solutions on themselves, but they coordinated activities within existing associations. The municipalities in the Slovak Republic are grouped into two main associations, the Association of Towns and Communities of Slovakia and the City Union. The goal of both organisations is to help municipalities and cities and also to offer and suggest solutions for the realisation of eGovernment at the local level.

The Association of Towns and Communities of Slovakia was established as a non-governmental organisation in 1990 and since then it associates municipalities and cities in the Slovak Republic focusing on common problems, challenges, tasks and needs of members. Altogether 2784 municipalities, including 131 cities in the Slovak Republic are currently members of the Association of Towns and Communities of Slovakia [4]. The City Union was established in 1994 with the focus to group cities in their common effort to protect the rights and interests of the cities, to present the importance of cities as regional centres and to support financial, institutional and tax sovereignty of cities. Altogether 48 cities in the Slovak Republic are currently members of the City Union [8].

Regardless of their size, financial strength or personal and organisational background, municipalities had to find appropriate solutions for providing eServices. The combination of municipality's effort and coordination of some activities within associating organizations resulted into different ways of coping with legislative obligations in the area of eServices.

3. eServices in Municipalities in the Slovak Republic

Municipalities in the Slovak Republic are considered as public authorities in the sense of the eGovernment Act and thus, the necessity to provide services as eServices is fully applicable to every municipality, whereby the legislation doesn't differentiate between the size of a municipality. This means, that the capital city and also the smallest municipality in the Slovak Republic (the smallest municipality being the municipality Príkra with 12 inhabitants), have the same obligations to provide services by electronic means. The same obligations of the municipalities are facing not the same potential of the municipalities, whereby the bigger cities with bigger budgets and better organisational, financial, personal background are able to develop own solutions and to provide eServices more effectively. Small municipalities tend to move towards the usage of market ready solutions, which they are using as a service. The Municipality Data Centre is one of the readymade solutions for the municipalities, which is not the only one in the Slovak Republic, but which the vast majority of the municipalities are using.

The Municipality Data Centre is a cloud computing based solution, which was in 2011 supported as a joint project of the Ministry of Finance of the Slovak Republic and of the Digitalization Data Centre of Local and Regional Governments of Slovakia, which was created as an association of legal persons by the Ministry of Finance of the Slovak Republic and by the Association of Towns and Communities of Slovakia (as mentioned in the section 2, the association groups together the majority of all municipalities). The Municipality Data Centre aimed to provide a service for the municipalities, which allowed them to cope with necessary legislative obligations in provision of eServices, provide eServices in the field of original competences, manage eServices agenda interorganisationally and interact electronically with the government [9, 28, 31].
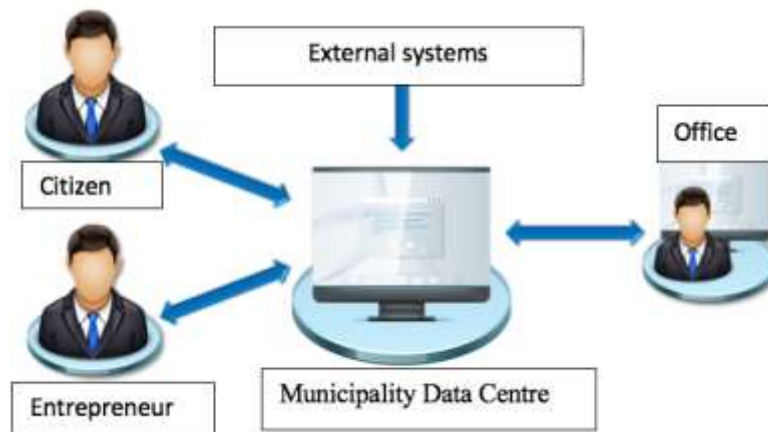
Figure 1: Complexity of interactions in the Municipality Data Centre
Source: [30]

The Municipality Data Centre was designed as a complex system, which interconnects all relevant subjects and other existing government information systems, as shown in the Figure 1. The citizens and entrepreneurs have the access to eServices of a particular municipality within the original competences, with the possibility not only to send a submission, but also to receive the result. The Municipality Data Centre was created taking existing electronic solutions of the municipalities into consideration, which have been integrated into the new platform. The Municipality Data Centre also connects the municipality with existing state registries and information systems, as for example the register of natural persons, register of corporate entities, register of addresses, vehicle registry,

property registry, etc., what takes away the need of a citizen, entrepreneur or the municipality to demand necessary information from another state government office [27, 30].

Altogether 138 eServices within the original municipality competences are provided using the Municipality Data Centre. Fully operational is the provision of eServices for citizens for example in the field of real estate tax, fees for municipal waste and minor construction waste, dog registration, voter ID card. Entrepreneurs have the possibility to use the Municipality Data Centre for example with regards to the payment of local taxes, processing of tax on the entry and stay of motor vehicles in a historical part of a town, issuing of parking cards, public procurement, permission process of specific operating hours [26, 27]. Based on the economic analysis it was assumed, that the Municipality Data Centre would be most suitable for smaller municipalities, up to 5 000 inhabitants [32]. The municipalities are according to the accession agreement obliged to pay 1 Euro, for 1 inhabitant of the municipality, for 1 year [25]. This model of payment has been also one of the key economic factors, why especially small municipalities joint Municipality Data Centre. Bigger cities would have been obliged to pay an yearly amount, which would financially justify to consider financing own information systems. In 2018 the Municipality Data Centre was used by 2 100 municipalities, what represented 71% of all municipalities, and altogether 2.25 million inhabitants had access to eServices. The Municipality Data Centre recorded 10 thousand users in 2018, with 600 hundred thousand submissions from the users and 1.1 million decisions send only for the year 2018 [9]. Fragmented spatial structure of the Slovak Republic with a big number of small municipalities resulted in the preference of a readymade solution for provision of municipality eServices in the form of the Municipality Data Centre.

The usage of the Municipality Data Centre brought several benefits to different subjects. Citizens and entrepreneurs benefited mainly from the 24/7 availability of the services, the submission can be made from whatever place and at whatever time, municipalities are obliged to cope with electronically received submissions and to respond also by using electronic means, the overall administrative procedures have been reduced, saving time with the reduction of physical visits of the local municipality office. The municipalities itself responded to the use of the Municipality Data Centre not only as a needed tool to cope with legislative obligations, but also as means for their own interorganizational effectiveness. Municipalities are benefiting from the availability of a software solution, without the need to deal with its development, administration and management. Municipalities got also a technical support from the provider, made use of a call centre in case of emergency or any questions regarding the operation, interconnection of existing registries and migration of data from previously used information systems were made possible, and further on, the benefits were also in effective workflows and interorganizational task management [28, 29].

As we pointed out, the Municipality Data Centre is not the only solution for provision of eServices, which the municipalities in the Slovak Republic are using. Lomtec company offered a product called ESMAO, which should provide a comprehensive solution for cities and municipalities in the area of eServices provision. ESMAO is offering 104 basic services, integration and interconnection to some central government registries (register of physical person, register of addresses, register of legal entities, central spatial information register), is offering mobile app support and is designed to support the existing information systems within the particular municipality, not to replace them [22, 10, 11]. The capital city of the Slovak Republic Bratislava and the second biggest city of the Slovak Republic Košice, have been among the first to implement solutions based on ESMAO [10]. Currently altogether 156 cities in the Slovak Republic, besides Košice and Bratislava, are using and have implemented the ESMAO solution for provision of eServices [12].

Bratislava and Košice are offering two types of services within their portals for eServices based on ESMAO, which are electronic submissions and electronic info services. Bratislava offers altogether 141 service, of which are 105 services offered as electronic services [5]. Košice offers altogether 101 services, from which are 60 electronic submission services [19]. We understand the electronic submission services as those, which comply with the essence of the eService described in the introduction of this paper, that means a service offering an output, result for the citizen, and not only an information available electronically.

4. Conclusion

Municipalities in the Slovak Republic took on the trend of adopting modern ICT based tools and solutions into their own activities and provision of their services. The reason of doing so was on the one hand and in the case of some municipalities a natural decision and on the other hand a need to cope with legislative obligations, which imposed every municipality to provide their services by electronic means. Municipalities, which are trying to naturally incorporate ICT based solutions in order to improve their management, processes, provision of services and to enhance the quality of life of the inhabitants doesn't need legislative obligations to be bound of doing something in this regard. The government of the Slovak Republic didn't rely only on naturally expressed tendencies and that's why legislative changes implying obligations in the field of provision of eServices came to place. The push of the legislator resulted in the necessity of every municipality in the Slovak Republic, regardless of the size and number of inhabitants, to provide services fully by using electronic means. This provision of eServices meant, that if the municipality receives a submission from a citizen or from an entrepreneur online, the result, output or the reply should be also done by the particular municipality online. For a service to be understood as an eService, real outputs, real values should be created in the form of a provided service, which solves an issue, issues a decision, and not only provides an electronically available information about the service.

The Municipality Data Centre has become the most widespread system for municipalities in provision of eServices in the field of original municipality competences. It was developed with a direct influence of the Association of Towns and Communities of Slovakia, which groups the majority of municipalities in the Slovak Republic. Taking the big number of small municipalities in the Slovak Republic into consideration, the Municipality Data Centre was a solution to be adopted for the majority of municipalities, because they couldn't be able to develop own and unique technical solutions within their own potential and "in house". At the same time, by using the Municipality Data Centre, the municipalities could fulfil the necessary legislative obligations. To provide eServices was a big challenge for the small municipalities. By using the Municipality Data Centre this challenge can result into a benefit, because also the smallest municipality can better manage complex and broad competences more effectively and to the benefit of the end users, the citizens and entrepreneurs.

5. References

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EVALUATION OF BUSINESS MODELS OF URBAN IOT-APPLICATIONS FOR A MEDIUM SIZED CITY

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Abstract
Digitalization of the public sector is being driven by a number of factors. In particular, the concept of "Smart Cities" has become an important driver of this development. This relies heavily on an intelligent infrastructure including the Internet of Things (IoT). But does it make sense for small and medium-sized municipalities to develop this? Is it justified to invest in IoT? (How) can a medium-sized city benefit from it? This paper presents the application of an evaluation scheme for business models of urban IoT applications to answer these questions. The research question focuses on how best practices of urban IoT applications in general and in particular can be evaluated. In order to establish a concrete practical reference we evaluated ten chosen IoT applications for the German city of Herrenberg.

1. Smart Cities and the Case of medium-sized Cities

The urbanization of the world has reached an astonishing pace. In Germany, around 77% of the population already live in densely populated areas. This means that our communities are facing new challenges in all urban areas such as urban development and housing, security, transport and pollution, economic growth, social interaction, food and health etc. Resources are already scarce, from raw materials to drinking water and clean air. Our living spaces have become smaller. As a result, growing cities place more complex and dynamic demands on government and administration than traditional communities. Local governments will have to manage this growth and it will put severe strain on municipal finances [1]. Therefore, the concept of smart City is important and city planning gets more and more critical [17].

According to a meta study by the International Telecommunication Union [15], the center of a smart city is the use of modern information and communication technologies (ICT), with the help of which the quality of life in the city, the efficiency of administrative action and the competitiveness should be increased. The Internet of Things plays a central role in this [10]. As part of a large-scale ranking of medium-sized smart cities, GIFFINGER et al. [8] define six properties that intelligent networked cities share: Smart Economy, Smart People, Smart Governance, Smart Mobility, Smart Environment, Smart Living. COHEN [2] has further developed this classification and illustrated it in the so-called Smart City Wheel.

But cities of today face increasing challenges when it comes to providing public services with innovative technologies. Local authorities often have great difficulty in driving forward the urgently needed developments towards a Smart City. Tight budgets and a lack of skilled workers also make it

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more difficult to invest in innovative municipal IoT applications and benefit from them in the long term [7].

This is where the concept of business models comes in handy. It offers the opportunity to evaluate new business ideas in detail, to review existing activities, and to then make coordinated changes to business activities, strategies and structures through systematic simplification [16].

But does it make sense for small and medium-sized municipalities to develop this? Is it justified to invest in IoT? (How) Can a medium-sized city benefit from it?

Therefore, best-practice business models of selected municipal IoT applications were systematically analyzed and described to be able to evaluate them, answering the question:

Which IoT applications are suitable for a medium-sized city?

This paper presents the application of an evaluation scheme for business models of urban IoT applications to answer this question.

2. Background

2.1. IoT in the Public Sector

FLÜGGE/FROMM [6] classify IoT in the public sector as (I) the Public Internet of Things and (II) the Internet of Public Things.

They speak of Public Internet of Things when the state acts both as a regulator and a shaper, firstly by setting and enforcing binding rules secondly by providing the necessary public IoT infrastructure for consumer and industrial IoT.

The Internet of Public Things includes activities of the public sector when the public sector itself becomes a user of IoT. Things under state sovereignty can also be digitally identified or networked, which has great potential for efficiency and effectiveness of administrative action. Sensors that record, for example, the structural condition of public buildings, environmental parameters in public spaces or flood levels are already in use today. This also includes the area of services of general interest, where the state or local authorities have a guarantee responsibility. Even though tasks such as supply or public transport are often performed by the private sector, this area can also be assigned to the Internet of Public Things because of its great importance for the public.

For this paper applications of the Internet of Public Things were investigated.

2.2. Business Models

The business model approach is a management concept for increasing success [16]. A business model shows the logical relationships of a business activity in a simplified form [9]. It therefore depicts the essence of the business activity in order to present even complex interrelationships in a comprehensible way [16].

The business model perspective is useful in three respects: new business ideas can be evaluated in a well-founded way, previous entrepreneurial activities can be put to the test and existing business activities can be changed in a coordinated manner if necessary [16].

The concept of the business model had its breakthrough in the era of the New Economy. With the success of the Internet, fundamentally new opportunities for value creation arose, and the value proposition increasingly became the focus of entrepreneurial activity. Companies operated in a highly complex and volatile market, and the management of business models provided an answer to how companies could succeed in such an uncertain environment [16].

The situation in which the start-ups of the New Economy found themselves has certain parallels with the current situation of local government. In the world of VUCA, they are looking for clues as to how a transformation to a Smart City can succeed in the long term. Technological developments lead to new ways in which local governments can create value. New business models are needed to benefit from this in the long term [3].

OSTERWALDER [12] created a framework that covers the four areas of a business (also based on the balanced scorecard approach): the product, the customer interface, infrastructure management and finance. He divided these areas into nine components, which OSTERWALDER/PIGNEUR [11] illustrated clearly in the so-called Business Model Canvas. For non-profit or government organizations, the authors recommend expanding the nine components to include social and ecological considerations. The so-called Business Model Canvas for non-profit organizations is created. Therefore, this approach was chosen for the present paper (see figure 1).
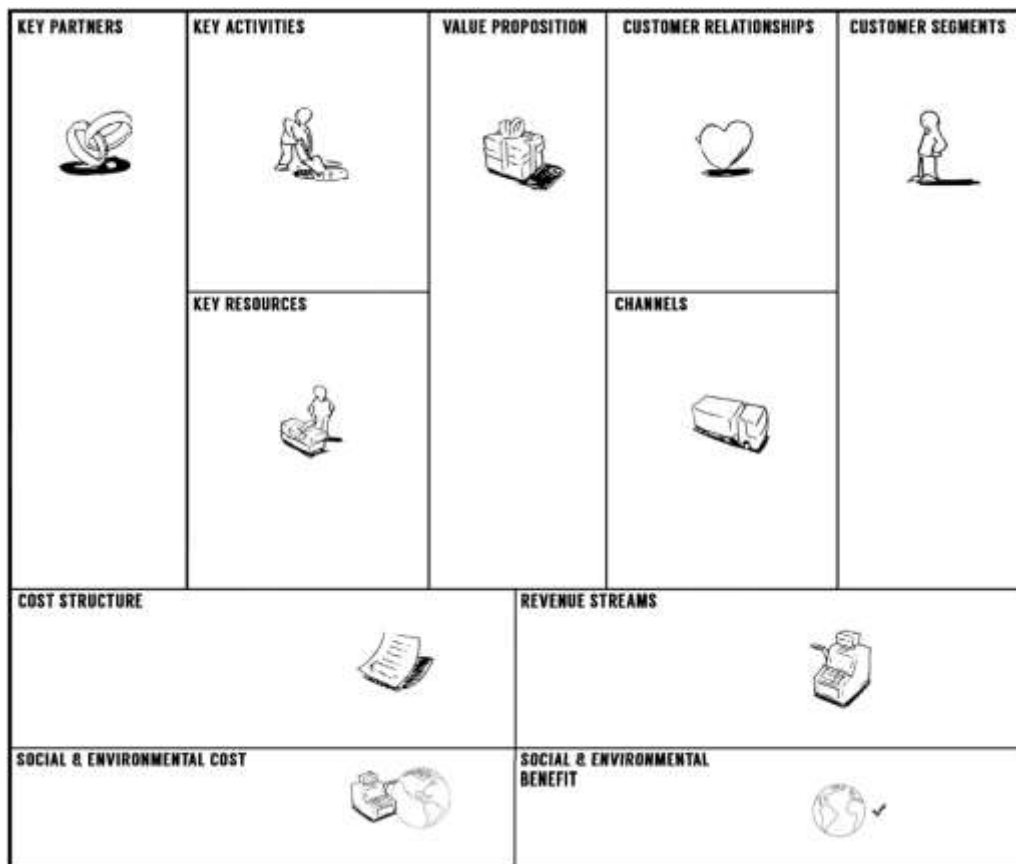
Figure 1: The Business Model Canvas for Non-Profit-Organizations by Osterwalder/Pigneur [11]

2.3. Business Model Evaluation

To evaluate business models of a smart City DÍAZ-DÍAZ/MUÑOZ/PÉREZ-GONZÁLEZ [4] presented the so-called Business Model Evaluation Tool for Smart Cities, which is the basis of this work. This clearly structured evaluation scheme is based on the business model approach by OSTERWALDER/PIGNEUR [11]. With the help of this evaluation matrix it is possible to evaluate the collected and described business models and to transfer them to the city of Herrenberg. A points system allows the comparability of the business models. Consisting of six categories, each of which can be evaluated with up to five points, the following parameters are assessed: cost structure, revenue streams, social and environmental costs, social and environmental benefits, value proposition and the customer segment.

The following formula is used to calculate the respective Value of the Business Model:

$$VBM = (CE + RE - SEC + SEB + VP) * CS$$

VBM = Value of the Business Model
CE = Cost Structure
RE = Revenue Streams
SEC = Social and Environmental Costs
SEB = Social and Environmental Benefits
VP = Value Proposition
CS = Customer Segment

There are a total of 29 questions, which can be found in detail in the sample evaluation matrix in the appendix.

3. Methodology

In order to define the scientific frame of reference, an in-depth literature search was completed on approaches of the Business Model Canvas for municipalities or with reference to IoT applications. Looking for best practices a broad literature search was conducted to find suitable municipal IoT applications. The search was limited to the European area and to cities with less than 200,000 inhabitants in order to avoid too great structural differences in the evaluation of the business models for a medium-sized city. Another criterion for the selection of IoT applications was that they should be established services (no pilot projects) in order to obtain reliable information.

In order to establish a concrete practical reference, the found business model canvas is related to Herrenberg, a medium-sized town in Baden-Württemberg.

The city of Herrenberg is a small medium-sized city (31,500 inhabitants) in the suburban area of the Stuttgart metropolitan region, which has already started activities in the field of Smart City and launched the first municipal IoT applications. For this purpose, a city-owned LoRaWan (Long Range Wide Area Network) has been set up, which will in future network sensors throughout the city. Already established are the large-scale collection of municipal waste containers or sensor-based support for winter road maintenance services. There is a consensus within the city administration that further applications should follow.

The following municipal IoT applications were selected:

(1)   Bad Hersfeld, Germany: Smart City Cockpit, sensor-based parking space management, citizens app for noise measurement, integrated street lightning

(2)   Darmstadt, Germany: Web app for traffic information, Green phase prediction service, Open traffic data

(3)   Santander, Spain: Smart street lighting, Gardens and parks irrigation with IoT, Water supply with IoT

To obtain information about the business models of the selected IoT applications, in addition to an in-depth literature search, two telephone interviews with experts were conducted using partly standardized guidelines. The interview partners were recruited from "Smart Cities" known in Germany: Bad Hersfeld and Darmstadt.

Santander served as a European example. Here, extensive scientific literature could be referred to.

In order to evaluate the business models for the city of Herrenberg, the current state of the city in relation to the examined IoT applications was firstly determined. For this purpose, an expert interview was conducted with the head of the Office for Technology, Environment, Green of the City of Herrenberg. This was also a partially standardized guideline interview.

4. Results

The results can be seen in the following table:

	IoT-Application	CE	RE	SEC	SEB	VP	CS	VBM
Bad Hersfeld, Germany	Smart City Cockpit	-	-	0	3,5	2	5	**27,5**
	Sensor-based parking space management	-	0	-1	2,5	4	5	**27,5**
	Citizens app for noise measurement	3	0	0	2	3,5	3	**25,5**
	Integrated street lightning	3	0	0	2	4	2	**18**
Darmstadt, Germany	Web app for traffic information	0	-	0	3	3	5	**30**
	Green phase prediction service	-	-	0	2,5	3,5	5	**30**
	Open traffic data	0	0	0	2,5	2	5	**22,5**
Santander, Spain	Smart street lighting	2	0	0	1,5	3	5	**32,5**
	Gardens and parks irrigation with IoT	2	0	0	1,5	2,5	5	**30**
	Water supply with IoT	1	0	0	1,5	2,5	5	**25**

Table 1: Results of the application of the Business Model Evaluation Tool by DÍAZ-DÍAZ/MUÑOZ/PÉREZ-GONZÁLEZ [4]

For those business models for which no information on their cost structure could be collected, a sensitivity analysis was carried out under VBM = 0. It was determined how high the costs of the services could be, in order to ensure that the business models continue to have a positive value. As shown in table 2, a critical value of -5.5 and -6 was found for the cost structure. These values are both below the minimum possible value of the cost structure within the valuation scheme (min = -5). This means that even with a cost maximum of the IoT applications (in relation to the valuation scheme) the value of their business model (CBM) would be positive and the service would therefore be fundamentally recommendable. A balancing factor is therefore not necessary.

IoT-Application	Critical value of CE (under VBM = 0)
Smart City Cockpit	-5,5
Sensor-based parking space management	-5,5
Web app for traffic information	-6
Green phase prediction service	-6

Table 2: Critical values of CE under VBM = 0

The results are presented using an example of one of the selected IoT applications - the Smart City Cockpit of Bad Hersfeld [14]: The Hessian district town of Bad Hersfeld has already set up several municipal IoT applications. This makes it a prime example of how smaller towns can also benefit from the "Smart City" concept. The city administration is pursuing a holistic approach in the transformation to a Smart City: all urban data and Smart City projects in the city are bundled via a central platform. The so-called Smart City Cockpit is a web-based application that attractively visualizes all existing city data and provides a quick overview of the city's condition. In addition, the Smart City projects in the city are to be brought closer to the population in order to create a basis for citizen participation.

In addition to informing the population, visitor groups and the city administration about the current state of the city, the value proposition also includes the provision of historical sensor data in open and machine-readable CSV format. The Smart City Cockpit can thus be regarded as an open data portal of the Internet of Things in the City. There are no access restrictions and there are no fees to be paid.

Key Partners	Key Activities	Value Proposition	Customer Relationship	Customer Segment
Urban Software Institute GmbH (Data platform, Web application)	➢ Operation of the data platform ➢ Visualization of the data on the web ➢ Provision of historical sensor data	➢ Information of the population, visitor groups, and municipal administration about the state of the municipality and its smart city projects ➢ Supply of historical sensor data	self service (the customer is only provided with all necessary means without direct interaction)	➢ Whole city population and visitor groups with access to the internet ➢ municipal administration
	Key Resources ➢ Data platform ➢ Web application ➢ Human Resources		**Channels** ➢ web based: anytime, anywhere and end device independent ➢ through public announcements, media reports, etc.	

Cost Structure	Revenue Streams
➢ Operation data platform (*Urban Software Institute GmbH*) ➢ Development and operation of web applications (*Urban Software Institute GmbH*) ➢ Human Resource costs	none. However, it is planned to sell urban real-time data to third parties in the future to refinance the platform.

Social and Environmental Costs	Social and Environmental Benefits
not relevant	➢ Increased transparency ➢ Relief of the municipal administration ➢ Basis for citizen participation and digitalization ➢ Raising environmental awareness ➢ Increasing innovation

Figure 2: Business Model Canvas of the Smart City Cockpit, Bad Hersfeld [5]

The cockpit can be accessed online by anyone, regardless of location, time or terminal device, so the business model appeals to the population and visitors with Internet access as well as local companies or the city administration itself. The customer relationship is based on the principle of self-service, as the customer is only provided with all necessary resources without direct interaction.

The parameters of the cost structure and the sources of income are evaluated in the evaluation matrix by comparison with the traditional service provision. However, such a comparison does not exist in the case of the Smart City Cockpit, since only the use of IoT makes such an application possible in the first place. Cost structure and sources of income are therefore not assessable.

Revenues are not generated by the Smart City Cockpit. In principle, however, it would be conceivable to make the use of valuable real-time data available to private companies for a fee.

Considerable social and ecological costs – i.e. negative effects on the city's strategic goals – would not arise if the service were introduced in Herrenberg. 0 points are awarded.

Rather, the service would have social and ecological advantages, i.e. it would serve strategic goals of the city of Herrenberg: The city would come closer to its goal of becoming a "Bürgerkommune" (high citizen participation) by informing its residents comprehensively about the activities of the Smart City and thus create the basis for impulses from the population. Especially in the context of Smart City, the participation of all stakeholders is crucial for the success of the transformation [7].

The introduction of the Smart City Cockpit would also help to achieve Herrenberg's mobility goals by publishing information on parking space occupancy: The population could obtain online information about the current parking situation before entering the city. This would help to reduce the search for parking spaces, which on average accounts for about 30% of all inner city traffic [13]. Air and noise pollution as well as congestion should be reduced.

The cockpit would contribute to environmental protection. By informing the population about environmental data such as particulate matter or noise pollution in the city, the environmental awareness of the inhabitants can be raised and their behavior positively influenced.

It is also expected that the position of Herrenberg as a business location will be slightly strengthened. The open-data offer of the cockpit would increase Herrenberg's innovative strength. Open data can be used by private (hobby) developers to create new innovative applications. Overall, the social and ecological benefits are rated with 3.5 points.

The value proposition of the Smart City Cockpit can be evaluated as follows: The service would fulfil the information needs of the municipal administration and the inhabitants of Herrenberg. Their quality of life would not be directly increased by the bundling of data. In Bad Hersfeld the service is used by its inhabitants. There are no reliable reasons to assume that this could be different in Herrenberg. Both the quality and the price of the service compared to other alternatives are not comparable to any other application and therefore cannot be evaluated. A total of 2 points are awarded for the value proposition.

When assessing the customer segment, it depends on how many people in the city would benefit or suffer from the service. Due to the wide range of available data and open access, the service is beneficial for over 50% of the city's population. The Herrenberg population would not be harmed by the service. The customer segment is rated with 5 points.

By using the valuation formula, the value of the business model (VBM) for the Smart City Cockpit from Bad Hersfeld is 27.5.

$$VBM = (CE + RE - SEC + SEB + VP) * CS$$
$$VBM = (X + X - 0 + 3{,}5 + 2) * 5$$
$$VBM = 27{,}5$$

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5. Discussion

To return to our hypotheses put forward in the introductory section, we can now clarify them. The application of the Business Model Evaluation Tool for Smart Cities by DÍAZ-DÍAZ/MUÑOZ/PÉREZ-GONZÁLEZ [4] resulted in a positive rating (between 18 and 32.5 points) for all ten business models examined. This means that all examined IoT applications could be recommended in principle to the city of Herrenberg. In the following, however, the results of the individual business models will be discussed critically and limitations will be pointed out.

5.1. Recommendations for the City of Herrenberg

In order to answer the question of which IoT applications are suitable for a medium-sized city using the example of the city of Herrenberg, Germany, we have categorized the results into recommendable, recommendable but not urgent and not recommendable. The assessment of the urgency is a personal judgment of the authors based on a critical appraisal of the results. This is shown in the following table:

	IoT-Application	VBM	Remarks	Recommendable?
Bad Hersfeld, Germany	Smart City Cockpit	27,5	Very good rating is justified.	**Yes.**
	Sensor-based parking space management	27,5	The issue is sensitive to urban policy.	**No.**
	Citizens app for noise measurement	25,5	Data quality cannot be guaranteed, risk of distortion of noise mapping by biased users	**No.**
	Integrated street lighting	18	Not suitable for city-wide use, in Herrenberg no restriction of the user group possible.	**No.**
Darmstadt, Germany	Web app for traffic information	30	Very good rating is justified.	**Yes.**
	Green phase prediction service	30	Application too young. Has to be observed.	**Yes, but not urgent.**
	Open traffic data	22,5	Good is rating justified.	**Yes.**
Santander, Spain	Smart street lighting	32,5	Very good rating is justified.	**Yes.**
	Gardens and parks irrigation with IoT	30	Good rating is justified. Application is not yet necessary.	**Yes, but not urgent.**
	Water supply with IoT	25	Good rating is justified. Application is not yet necessary.	**Yes, but not urgent.**

Table 3: Recommendations to the City of Herrenberg, Germany [5]

5.2. General limitations

In most cases, meaningful results have been achieved by applying the Business Model Evaluation Tool for Smart Cities by DÍAZ-DÍAZ/MUÑOZ/PÉREZ-GONZÁLEZ [4]. However, in some cases restrictions had to be accepted: The evaluation scheme only provides for a comparison with traditional service provision in order to assess the parameters of cost structure and revenue sources. For business models of municipal IoT applications that pursue a previously unknown value proposition and thus do not include traditional service provision, these parameters were therefore not included in the evaluation. In some cases it was also found that neither the existing literature nor discussions with municipal experts provided reliable information on the cost structure. This may also lead to distortions in the assessment.

6. Conclusions

At the very beginning there was the question of whether it is sensible and justified for small and medium-sized communities to invest in the Internet of Things, and also the question of whether and how they can benefit from it. The application of the Business Model Evaluation Tool for Smart Cities by DÍAZ-DÍAZ/MUÑOZ/PÉREZ-GONZÁLEZ [4] has shown that these questions can be answered for a medium-sized city like Herrenberg. As the ten selected and evaluated IoT applications show, it is worthwhile for small and medium-sized as well as for large municipalities. Whether and how small and medium-sized municipalities should join forces to drive forward the development of a Smart City, possibly in a network, would be a question that could tie in with this work. This is because cost structures can change advantageously with a scale-up and the benefits could be further increased.

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DIGITALIZATION IN THE DECISION-MAKING PROCESS IN THE LOCAL GOVERNMENT IN THE REPUBLIC OF MOLDOVA

(The electronic control of local acts)

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Abstract

The article contains reflections on the needs of the processes and reforms in progress in the Republic of Moldova. Many external and internal factors such as globalization, informatization and communication, democratization and opening of the society, international benchmarking of the governance performance, increase pressure for more responsive and accountable governance around the world, by requesting more transparency, accountability, efficiency or delivery of quality public services and tangible results. These requests have steadily influenced traditional behavior of administration in many developing countries. Formal reports on PA functioning have been gradually replaced with reports that reveal more evidence on wider community benefits, generated as a result of good governance performance. The traditional, implementation-based approach could not answer the question whether implemented reforms have also produced intended results. At the same time the government needs such feedback to assess outcomes and impact and then to feed this information back into the decision- making procedures.

Keywords: informational resource, electronic register, legality control, transparency, decision-making process

1. Introduction

The policy documents are elaborated for the purpose of describing and analyzing the existing problems, identifying the objectives related to the problem concerned, defining the state and society. In order to achieve them, the Strategy for the reform of the public administration for the years 2016-2020 has been elaborated and implemented. Through its activity program for the period 2016-2018, the Government of the Republic of Moldova has undertaken to continue to make the public administration more efficient in order to provide citizens with services at the highest level in accordance with the practices of European democracies [1]. Given that the purpose of public administration reform is to strengthen public administration by applying European Union standards and rules, the principles underlying the implementation of this Strategy reflect the principles of good governance recognized and applied at European Union level by the White Paper on Governance and the Guidance on the quality of public administration, both documents approved by the European Commission, and the principles for local governance, recommended by the Council of Europe. [6]

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According to the component regarding the accountability of the public administration, transparency in the decision-making process has become a desire of the government under the terms of the rule of law. Accordingly, as stated by the Strategy, decisions must be formulated, approved and implemented following clear rules and procedures. All public information is accessible. Information on decisions, policy implementation and results is available to the general public, so that any citizen has the opportunity to supervise and contribute to the activity of central and local public authorities. Namely, for this purpose and by virtue of it, the State Register of Local Acts was elaborated.

In order to execute the provisions of Law no. 161/2016 for the modification and completion of some legislative acts [2], by the Government Decision of the Republic of Moldova no. 672/2017 for the approval of the regulations regarding the State Register of Local Acts, the Regulation on the way of keeping the State Register of Local Acts and the Regulation regarding the record of the documents subject to administrative control of legality was approved [5].

Informational resource "The State Register of Local Acts" (hereafter RSAL) was created exclusively for the purpose of establishing an efficient mechanism of transparency of the decision-making process and its result. The elaboration of this unique instrument ensured the involvement of citizens in good governance (an integral part of it).

RSAL, whose owner is the state, represents a state information resource, which contains the electronic texts of the documents of the local public administration authorities and their related materials, which ensures the centralized recording, preservation and recording of the acts of the local public administration authorities and of the materials related to them, which is created in order to ensure the access of natural and legal persons to the documents issued / adopted by the local public administration authorities. The State Chancellery also manages the State Register of Controls and the Register of Public Functions and Civil Servants.

2. Research goal

The study represents a theoretical research with reference to the use of the information system "The State Register of Local Acts". The research contains information from RSAL, in the years 2018-2019, including information presented by the Territorial Offices of the State Chancellery for year 2017, on paper, normative regulations, and aims to identify the place of this resource in the national information system "e-government".

In the research process, the RSAL was taken as reference, with the information included in the period that became mandatory, according to the legal framework, 28.10.2019. Starting with 28.10.2019, the inclusion of documents in the RSAL is mandatory. Another time frame, which cannot be neglected is the period between 28.10.2018 until 28.10.2019, i.e. the "transitional period", in which the local public authorities presented the documents for legality check, both on paper and electronically, including them afterward in the electronic Register. As of 28.10.2019, the acts that are not included in the RSAL, do not have legal power, do not enter into force and remain only projects of administrative acts.

The concrete data show that in 2017, according to the summary of the State Chancellery [7], the local public administration authorities submitted 174,464 administrative acts for legality check, and 213,261 acts were registered. There is a huge difference, respectively. Or, in this case, it can be stated that the local public administration authorities did not submit for verification all the documents, some of them being concealed, and implemented without a legality check.

Thus, in the circumstances invoked, the question arises why the local public authorities did not include all of the acts in the information system, even if they risked being sanctioned contraventionaly.

During the reference period 28.10.2018-28.10.2019, 215,368 documents were included in the RSAL for legality control, and in-between 28.10.2019-26.01.2020, 57,291 documents were registered. As noted, there is a considerable increase in the number of acts included in the information system. This is probably due to a complex of factors that contributed to these achievements.

An important factor is the need to include the draft administrative act in the Register in order to become effective and to produce legal effects, as well as in order to be implemented. Or, only administrative documents issued / adopted and included in the RSAL have the status of administrative act to be implemented.

In the complex of factors mentioned, the serious emphasis is on the sanctions / fines applied due to the non-observance of the provisions of Law no. 436/2006, by not consulting the draft normative act, omitting the term, preventing access to the meeting room, including in the Register a text different from the published one. The coercive accountability of responsible and authorized persons by the legislator has also led to an increase in the number of acts included in the RSAL.

The third factor would be the empowerment of the public administration authorities and the increase of interest in order to make the decision-making process transparent and the need for the active involvement of citizens at local level.

Compared to other states in the world, it is important to mention that such a Registry is not commonplace. The legality control procedure is performed otherwise, either on paper, the case of Romania, or the legality control is exercised only of the administrative acts with normative character, but also on request, as is the case of Estonia.

A special case refers to Romania, where according to the normative acts on this dimension, the control is exercised by the prefect, on paper.

In spite of the legal regulations, the question arises, if the elaborated system will be able to ensure transparency in the decision-making process at local level?

Or, if the punitive method (e.g., contraventional sanctions) provided by the legislation will ensure the necessary element of the rule of law, i.e., the transparency of the decision-making process.

The Tables below comprise the analysis of the statistical data that are of particular interest to the subject, presented in quarterly and annual reports of the Territorial Offices of the State Chancellery. The information from the 2018 report is much more comprehensive than the information presented in all the quarterly reports for 2019. Because of this, the type of data available for 2018 and for 2019 differ, being incomplete for the previous year (2019).

However, the existing data allow us a quite detailed and conclusive analysis – the following 2 tables summarize the results of ex-ante control carried out by the Territorial Offices of the State Chancellery in 2018-2019.

The most complete and relevant data are in Table 1 which shows the number of administrative acts for 2018, in total and in structure, subject to ex-ante control, obligatory or optional, the number of documents notified to the local authorities as being with problems and the number of new actions brought in administrative litigation.

	Administrative acts subject to ex-ante control				Administrative acts subject to obligatory control				Administrative acts subject to legality control and notified				Actions in administrative litigation
	Total	Acts of deliberative authorities	Acts of executive authorities	Procurement and tender contracts	Total	Acts of deliberative authorities	Acts of executive authorities	Procurement and tender contracts	total	Acts of deliberative authorities	Acts of executive authorities	Procurement and tender contracts	
	175.992	63.997	106.684	5.311	170.721	63.997	101.413	5.311	1.860	1.405	431	24	407
Percent structure	100%	36,36%	60,62%	3,02%	100%	37,49%	59,40%	3,11%	100%	75,54%	23,17%	1,29%	
Percent notification, from obligatory									1,09%	1,39%	0,42%	0,45%	
Percent notification, per categories									1,06%	1,32%	0,40%	0,45%	
Percent actions in administrative litigation from notification													21,88%

Table 1: 2018, synthesis of results from ex-ante control

First of all it is observed that in the structure of the acts subject to ex-ante control (especially under the category "obligatory"), dominates the category of administrative acts issued by the executive authorities (various provisions of the mayor or the chairman of the district council) - over 60%, and the weight of the contracts for the procurement and tenders is low - 3.02%. The weight of the acts subject to optional ex-ante control is very low. Furthermore, the small number of acts notified as problematic – i.e., violating the legislation – represents only a surprising 1% of the total, with a significant differentiation: from the total of the documents issued by the deliberative authorities (local and district councils) about 1.3% -1, 4% are notified as legally problematic, while out of the total number of documents issued by the executive authorities only about 0.4% (i.e., a 3 times smaller percentage). In this context it also must be taken into account that the volume of documents issued

by the executive authorities represents about 60% of the total percentage - thus the most important share by far. It should be mentioned that in the case of procurement and tender contracts the share of notified acts is very small and similar to that of the executive authorities - 0.45%

	Administrative acts subject to ex-ante control				Administrative acts subject to obligatory control				Administrative acts subject to legality control and notified				Actions in administrative litigation
	total	Acts of deliberative	Acts of executive	Procurement and tender contracts	total	Acts of deliberative	Acts of executive	Procurement and tender contracts	total	Acts of deliberative	Acts of executive	Procurement and tender contracts	
	199.126								2.126				372
Percent structure													
Percent notification, from obligatory, per categories									1,07%				0,19%
Percent actions in administrative litigation from notification													

Table 2: 2019, synthesis of results from ex-ante control

The incomplete data for 2019 from Table 2 confirm only the very small share of the notified acts out of total verified administrative acts - about 1% which makes us suppose that in the structure, the situation for year 2019 does not differ significantly from that of 2018, due to the fact that the information system was being in the transition period.

3. Legal regulations and procedure

The data entered in the Register will be accessible to the following actors:

1) State Chancellery;
2) Territorial Offices of the State Chancellery;
3) local public administration authorities of both levels, including within the Gagauz autonomous territorial unit with special legal status;
4) central public administration authorities;
5) interested / targeted persons.

In the Register will be mandatory the inclusion of:

1) the decisions of the local councils of both levels;
2) the provisions of the mayor and of the district chairman;
3) other acts of the local public authorities that are subject to the legality control, under the provisions of Law no. 436/2006 on local public administration [3];
4) the materials related to the administrative acts that were the basis for their adoption / issuance, including the minutes of the meetings of the local councils, tenders, acquisitions, which are placed in a separate file in the Register.

When the documents are included, the system will automatically generate a number of records.

Depending on the access rights that users will have, they will be classified in the following categories:

Level A - the authorized employees, the executive authorities of the local public administration of the first and second levels;
Level B - State Chancellery (holder, designating a specialized Directorate);
Level C - PI "Information Technology and Cyber Security Service", with responsibilities for ensuring the continuity and functionality of the system, in accordance with the activities established under the contract (technical administrator);
Level D - the central public administration authorities that have the attribution of viewing the administrative documents issued / adopted by the local public administration authorities from the Registry;
Level E - interested persons / the general public / citizens with the possibility of viewing the documents of the local public authorities, except for the personal and individual acts, which can be accessed in compliance with the provisions of Law no. 133/2011 on the protection of personal data [4].

According to point 5 of the Regulation on the way of maintaining the State Register of local acts, approved by the Government Decision no. 672/2017, the text of the administrative acts is included in the Register in the state language. The documents issued by the local public administration authorities within the territorial unit with special legal status are included in one of the languages established by the legislation on territorial unit, with special status, with the translation into the state language. Thus, the equality of linguistic rights of the inhabitants of the Gagauzian Territorial Autonomous Unit was ensured.

The State Chancellery, as the holder of the Registry, is exclusively obliged to ensure the creation and administration of the Registry and to undertake, with the technical support of the Information Technology and Cyber Security Service, the necessary measures to ensure the continuous functionality of the Registry.
Local public administration authorities of both levels, including the autonomous territorial unit with special legal status, as data providers regarding the acts of the local public administration authority, are obliged to ensure the provision of information in the Registry database, in the manner and within the deadlines established by the Regulation, carrying out actions to ensure information security and to process only the data strictly necessary for the fulfillment of their service duties

At the same time, the tasks established to the Information Technology and Cyber Security Service as technical administrator are stipulated by the legal norm, meant to take the necessary technical measures to ensure the functionality of the Registry.

In order to include the administrative documents in the RSAL, the local public administration authorities based on an issued administrative act, are obliged to designate the person responsible for the registration and publication of the administrative acts in the Registry, in accordance with the provisions of this Regulation. As a rule, this is the responsibility of the secretary of the district / municipal / local council.

Also, the legislator recommends to the executive authorities of the local public administration, including from the autonomous territorial unit Gagauzia, the concomitant appointment of the substitute person as an authorized employee for inclusion in the Register, according to the provisions of this Regulation, in case of absence of the secretary of the district / municipal /local council. In optimum / reasonable time, of 3 days from the signature date, the administrative deed of designation, is sent to the State Chancellery (on paper or electronically), which will assign the level of access to the Register to the authorized employee. The responsibilities for exercising this attribution are to be included in the job description of the designated official (on this dimension, starting with 28.10.2018, in the process of his activity the author / owner of the RSAL, identified some deficiencies influenced by the human factor, in particular the nature of the human relations within the authority of the local public administration. Consequently, in case of hostile personal relationships, political views, including different and shared religious culture, artificial impediments may occur in the use of RSAL by authorized persons).

In case of substitution of the authorized employee, the executive authority of the local public administration is obliged to immediately inform the State Chancellery about the change that occurred and the reasons for the substitution, with the issuance of a new act in order to designate another person who will be responsible for registering and publishing the acts in the Register. With the change of the authorized person, the local public authority can initiate the change of the level of access to the Register for the authorized employee. The responsibility for the continuous assurance of the exercise of the functional attributions by the authorized employees for inclusion in the Register is the respective local executive public authority.

Procedurally, the inclusion of administrative documents and related materials in the Register is compulsory in a scanned form, in PDF format, meeting the form conditions (signed / countersigned, stamp), according to the attributes defined by the system. In this chapter, training for each authority of the local public administration of level I and level II was held and will be provided throughout the year 2020, due to the fact that the local elections took place on October 20, 2019, when the RSAL was in transition process, provided by the legal framework.

The content of the administrative document, as the case may be, can be placed in the Register as text (in DOC or DOCX format). It will not be public and will be used by the search engine to identify the administrative document in the public portal of local documents. Files related to administrative documents attached to the Register (in DOC or DOCX format) are not public and can only be viewed by authorized persons.

In case of placing the administrative document (with individual character) that contains personal data, the authorized employee is obliged to respect the requirements of the provisions of Law no. 133/2011 (depersonalization of the act - by concealing personal data). The materials related to the administrative acts (the minutes of the meetings of the local council, the opinions of the specialized commissions, the annexes to the minutes and other related documents) will be files annexed to the administrative act.

The materials related to the administrative acts are included in the Register after the introduction of the administrative acts.

At the same time, the RSAL establishes the records of the documents subject to the administrative control of legality, the mode and the conditions of record of the administrative acts subject to the control of legality by the territorial offices of the State Chancellery in accordance with art. 64-72 of Law no. 436/2006. The records of the documents subject to the administrative control of legality by the territorial offices of the State Chancellery are made through the Register, the compartment "Administrative control", which is an integral and indispensable part of the Register and represents an internal informational resource of the State Chancellery. This compartment ensures the centralized registration, preservation and recording of information regarding the acts of the local public authorities of both levels subject to the legality control by the territorial offices of the State Chancellery.

The authorized employees of the State Chancellery and its territorial offices have access to the database of the "Administrative Control" compartment as participants in the State Register of local acts, for the purpose of providing and viewing the data.

In order to ensure the transparency of the administrative control, the RSAL allows, in the conditions of the normative framework, the public view of the information regarding the results of the administrative control of legality exercised by the territorial offices of the State Chancellery. In the same context, RSAL allows the provision of the following public data from the "Administrative Control" compartment, without restrictions:

1)   data regarding the submission of the administrative act to the legality control;
2)   data regarding the stages of the legality control of the administrative act;
3)   data regarding the result of the legality control.

According to the prohibitive nature of the norms of Law no. 133/2011 and in order to protect the personal data, the personal data from the "Administrative Control" compartment will not be publicly accessible or visible.

In order to secure and make more flexible the authentication and control of the access of the users in the information systems, for the authentication of the authorized users within the State Chancellery and the territorial offices of the State Chancellery the governmental electronic service of authentication and control of access (MPass) will be used. The modality for authenticated access will be established through the internal document of the State Chancellery.

4. Conclusions

In the Republic of Moldova through the implementation of the information platform RSAL has been able to achieve the initially proposed goal, namely ensuring transparency in the decision-making process, at local level. In case of non-observance of the procedure for inclusion of documents in the Register, the responsible persons bear a contraventional liability.

At the same time, civil society and the general public can view via the information system all the documents elaborated at local level, its control stage and the status of the administrative, legal or notified act (an important thing at the conclusion of the transactions).

To conclude, we will mention the following:

- the Register is a compulsory platform for the transparency of the decision-making process;
- the active involvement of the persons responsible for including the local acts in the Register in order to avoid the fines established by the contraceptional Code.
- the aspect of controlling the legality of individual administrative documents, which are depersonalized to be placed on the public interface, will be reviewed.

In this context, personal data protection takes place, but the general public does not view relevant information. Thus, in the context of the research the question arises should it not be the case to include the documents in question only for the control of legality to the territorial offices of the State Chancellery. The administrative acts are compulsorily brought to the notice of the persons concerned in those acts, under signature.

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Social Media II

EXIT/ENTRY, VOICE/NOISE, AND LOYALTY/APATHY IN THE ERA OF SOCIAL MEDIA
IMPACT OF SOCIAL MEDIA TO PUBLIC SECTOR

Hiroko Kudo[1]

Abstract

Use of Social Media in public life has changed the way how citizens relate to public sector. Modern communication tools, in particular Social Media, have made citizens easier to use their "voice" to mobilize. When citizens can easily mobilize, the cost of mobilization is low for them, while its impact can lead to a larger cost for the State. As the exit/entry cost of Social Media is very low or almost nothing, a virtual network has been substituting institutions, causing new issues to the State. This leads to the issue of loyalty: citizens now feel that they do not need institution like the State to belong to, as many networks substitute its function. This paper analyses the Social Media use by citizens and its impact on public sector through Albert Hirschman's classis "Exit, Voice, and Loyalty" and tries to address new aspects.

1. Introduction: Brexit as Fruit of Social Media

Use of Social Media in public life has changed the way how citizens relate to public sector. Modern communication tools, in particular Social Media, have made citizens easier to use their "voice" to mobilize. When citizens can easily mobilize, the cost of mobilization is low for them, while its impact can lead to a larger cost for the State. At the same time, use of Social Media has increased noises among the voices; however, these noises are often so well elaborated and inserted into the voices that are difficult to be identified. This again increases the cost for the State.

Social Networks enable people to be part of a system without being physically bounded to a certain geographical area, changing the exit/entry aspect. "Voices" of outsiders are noises for the State and cause problems, while the citizens can use this effect as a strategy. A modern citizen can now physically stay in a territory, while he or she can decide to "exit" from the system. As the exit/entry cost of Social Media is very low or almost nothing, a virtual network has been substituting institutions, causing new issues to the State. This leads to the issue of loyalty: citizens now feel that they do not need institution like the State to belong to, as many networks substitute its function.

It is well known that the Brexit Referendum can be interpreted as a fruit of social media. In order to map Twitter's info-sphere, and examine "Leave" (Eurosceptic) and "Remain" (pro-European) activity on Twitter in the run-up to the referendum, Hänska and Bauchowitz (2017) collected more than 7.5 million Brexit-related tweets in the month preceding the Referendum in 2016. They asked whether there was a relationship between Twitter activity and the actual vote, what kind of information was shared on Twitter, and whether Leavers and Remainers were confined to echo

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chambers, which kept feeding them information congenial to their views, or whether the two sides engaged openly with one another.

Their analysis showed Twitter users who supported leaving the EU were more numerous, and Eurosceptic users in general were more active (they tweeted more frequently) than Remain users (Hänska and Bauchowitz, 2017, p.29). They estimate Leave users were more numerous and more active on Twitter by a factor of 1.75-2.3. Other researchers examining Google search trends, Instagram posts and Facebook found similar patterns of Eurosceptic views being communicated with greater intensity by a greater number of users on those platforms (Herrman, 2016; Polonski 2016).

Hänska and Bauchowitz point out that local authority districts with a greater share of Twitter users supporting Leave tended to vote for leaving the EU, so Twitter activity correlated with voting in the Referendum (Hänska and Bauchowitz, 2017). This, of course, does not to mean that an analysis of Twitter activity could have predicted the Referendum. It is also not clear how the Leave margin on Twitter should have been interpreted prior to the Referendum, even with such a robust observation of more pronounced Eurosceptic activity. After all, the factor by which Leavers outnumbered and out-tweeted Remainers was much larger than the margin with which Leave won the vote.

The duo also analysed the nature of openness and homophily on Twitter, which crucially affords users the ability to interact and engage with each other. They examined the extent to which users who supported Leave and Remain interacted with each other, that is, for instance, whether a user who supported leaving the EU replied, quoted or retweeted a user who supported remaining in the EU. They found Leave users tended to be less open, and mostly engage with other Leave supporters, indicating important hallmarks of an echo-chamber. In contrast, Remain supporters were much more open. Specifically, 83 per cent of interactions initiated by Leave supporters were with other Leave supporters, while Remain supporters this figure drops to 46 per cent. Remainers replied to, retweeted or quoted Leavers 49, 39 and 50 per cent of the time, respectively. Contrast this with Leavers who replied to, retweeted or quoted Remainers only 19, 8 and 11 per cent of the time, respectively.

This tendency to interact only with the like-minded is also reflected in the URLs shared. Leave users tended to share Eurosceptic domains, including The Express, the Daily Mail, and Breitbart. Leave users also linked more frequently to Bloomberg and Reuters than Remainers. Remain users tended to share links to The Guardian, BBC, The Independent, and less frequently The Mirror, The Financial Times, and The Economist. Overall, the most frequently linked domains were The Guardian, YouTube, BBC, and The Express (Hänska and Bauchowitz, 2017, p.30). YouTube was the second most prominent domain linked, indicating the importance of video as a way of distributing information about the campaign.

Overall, Twitter users who supported leaving the EU were much more active and motivated in advancing their cause, than Remainers were in advocating continued EU membership. One possible explanation of the dominance Leavers achieved on Twitter may be that slogans such as 'vote Leave', 'take control', or even 'Brexit' were more suited to simple, soundbite messaging than the Remain campaign's slogans and arguments (which is particularly useful given the character constraints of a tweet). Press coverage of the Referendum also favoured leaving the EU. Weighted for circulation, 82 per cent of newspaper articles in the lead-up to the Referendum supported leaving the EU, as other contributors to this book have noted (Deacon 2016). The balance of Eurosceptic information, views and opinion on Twitter thus appear to be leaning in the same direction as the balance of information in the press, meaning both online and offline citizens were more likely to encounter Eurosceptic voices (Hänska and Bauchowitz, 2017, p.30).

The frequent and aggressive use of Twitter by Leavers during the Brexit Referendum campaign is quite interesting, considering the voting results by age groups. While 71% voters between 18 and 24 years old and 54% between 25 and 49 voted Remain, 60% voters between 50 and 64 and 64% over 65 voted Leave (YouGov, 2016), thus it is obvious that the younger the voters, they voted Remain and the older the voters, they voted Leave. Social media use is often strongly correlated to the age groups, making the younger generation more active user of social media. Indeed, a research by the London School of Economics and Political Science (2017) shows that the largest demographic group of Twitter users in UK are between the ages of 18 and 29 (37%) and 25% of users are between 30 and 49 years old. However, the analysis of Hänska and Bauchowitz shows that the Leavers were much aggressive in using Twitter.

The questions arising from this study are as follows: 1) those who aggressively used Twitter for Leave are the voters who actually voted for Leave?; 2) if so, is it possible to explain the frequent and aggressive use of Twitter by Leavers was mainly conducted by a rather small number of young Leavers?; 3) to which extent the aged Leavers were influenced by Twitter-transmitted messages?; 4) if the Leavers were not reading nor influenced by pro-Leave tweets, how can we explain the closed characteristics of Leaver tweets?; and 5) after all, as many media as well as researches suggested, can we still confirm that the result of Brexit Referendum was influenced by social media?

2. Methodology and Design of the Research

In order to respond to these questions in general term, not just on Brexit case, and to understand use of social media in public sector, this paper explores the characteristics of social media in public sector through literature review as well as an empirical study. Most of the literatures on the topic investigate, on one hand, in highly theoretical or conceptual manner, or, on the other hand, through empirical cases like the research on Brexit campaign in the introductory section (Hänska and Bauchowitz, 2017). However, the gap between theoretical/conceptual literatures and research on cases is so wide that it is not easy to understand the latter with theoretical framework and vice versa.

Thus the paper first explores several existing theories and concepts through literatures, and then analyses the case of UK government. Regarding the case study, which is a qualitative research, the author examined government documents, including policy papers, white papers, and national plans, while interviewing key actors. The author and her research partners conducted about 30 semi-structured interviews to the key actors from November 2018 to November 2019 period. The interviews were conducted without recording but with detailed transcriptions, in order to encourage interviewees to express freely their opinions and views.

The aim of this research is to investigate how social media impacts public policy making as well as social life. The research approach is a single case of the UK government (Yin 2014). Data were collected indeed from two sources: semi structured interviews to key actors and written documents available in the public domain. Case study research is appropriate for this research as it makes use of multiple sources of evidence in order to create a picture of the phenomenon under investigation and is methodologically appropriate when exploring complex issues, those that occur over an extended time period (Gratton & Jones, 2010) or when researchers have little or no influence on the event being studied (Yin, 2014) such as in this research.

Document analysis is appropriate in this case, as documents are a rich source of data and in this instance they provided valuable primary data. Documentary analysis of strategic plans, policy documents, and government reports contributed to the understanding of the case study in three ways.

First, the document analysis allowed the context for the case study to be understood, prior to the interviews. It also provided a historical account of the public policy in UK. Finally, using document analysis also allowed for triangulation of information obtained through the interviews.

Information used in this paper is based on the interviews conducted to the following, among others:

1)   Fliss Bennée, former Head of Data Governance, Department of Digital, Culture, Media, and Sport;
2)   Mark O'Neill, former Chief Digital Officer, Department of Education;
3)   Mike Rose, Head of Business Development, Open Data Institute;
4)   Sana Khareghani, Deputy Director, Head of Office for Artificial, Joint Unit; Department of Digital, Culture, Media, and Spot and Department for Business, Energy & Industrial Strategy.

The paper is part of the results of a research on "Improving operational efficiency in manufacturing and physical distribution sites through negotiations using AI", which is awarded by "2nd Cross-ministerial Strategic Innovation Promotion Program (SIP), Cyberspace fundamental technology utilizing big data and AI", a Japanese government project, and a research on Big Data and Open Data in relation to evidence-based policy making in the area of sport policy, a research project awarded by Japan Society for the Promotion of Science (JSPS) entitled "Research on sport policy making based on Big Data: Olympic Games as a trigger" (Research ID: 18H00819 2018-2023).

3. Social Media in Public Administration and Social Media for Public Policy: Theoretical background and concepts

Why social media has become important for public administration and in public policy making? Before answering to this question, some key concepts should be clarified.

Social media is the collective of online communication channels dedicated to community-based input, interaction, content-sharing and collaboration. Websites and applications dedicated to forums, microblogging, social networking, social bookmarking, social curation, and wikis are among the different types of social media. Social media has several characteristics, such as: 1) social media are interactive Web 2.0 Internet-based applications (Obar and Wildman, 2015; Kaplan and Haenlein, 2010); 2) user-generated content such as text posts or comments, digital photos or videos, and data generated through all online interactions, is the lifeblood of social media (Obar and Wildman, 2015; Kaplan and Haenlein, 2010); 3) users create service-specific profiles and identities for the website or app that are designed and maintained by the social media organization (Obar and Wildman, 2015; Boyd and Ellison, 2007); and 4) social media facilitate the development of online social networks by connecting a user's profile with those of other individuals or groups (Obar and Wildman, 2015; Boyd and Ellison, 2007).

Some examples of popular social media platforms are; Facebook, Twitter, YouTube, Instagram, LinkedIn, Reddit, Pinterest, and WhatsApp. As users engage with these services, they create highly interactive platforms through which individuals, communities, and organizations can share, co-create, discuss, participate and modify user-generated content or self-curated content posted online. Networks formed through social media change the way groups of people interact and communicate or stand with the votes. They "introduce substantial and pervasive changes to communication between organizations, communities, and individuals" (Kietzmann and Hermkens, 2011).

In business, social media has been used to market products, promote brands, connect to current customers and foster new business. In terms of customer feedback, social media makes it easy to tell a company and everyone else about their experiences with that company. The business can also respond quickly to feedback, attend to customer problems and maintain, regain or rebuild customer confidence. Social media is also often used for crowdsourcing. In ICT projects, crowdsourcing usually involves engaging and blending business and ICT services from a mix of internal and external providers, sometimes with input from customers and/or the general public. Other B2B applications of social media include social media analytics, the practice of gathering data from blogs and social media websites and analysing that data to make business decisions. The most common use of social media analytics is to mine customer sentiment to support marketing and customer service activities. Internally, social tools can help employees access information and resources they need to work together effectively and solve business problems. Externally, social media platforms help an organization stay close to their customers and make it easier to conduct research to improve business processes and operations. The integration of social media in business can also pose challenges. Social media policies are designed to set expectations for appropriate behaviour and ensure that an employee's posts will not expose the company to legal problems or public embarrassment. Such policies include directives for when an employee should identify himself or herself as a representative of the company on a social networking website, as well as rules for what types of information can be shared and this is applied to public institutions as well.

Social media deals with all types of data posted, shared, and analysed by its users. Data comprises facts, observations and raw information. Data are, indeed, forms of information. The concept of data is worthy of book-length explication (Borgman, 2016); however, in order to explore how data are created, used and understood, it might be enough to define it by examples, such as facts, numbers, letters, and symbols (National Research Council, 1999). Data itself has little meaning if it is not processed (Monino and Sedkaoui, 2016). Indeed, some interviewees confessed that data collected without clear design proved to be useless as information, because of this characteristic. Information, indeed, consists of interpreted data and has discernible meaning. It describes and answers to questions like "who?", "what?", "when?", and "how many?" (Monino and Sedkaoui, 2016).

Data posted, shared, and analysed on social media platforms are open. As members continuously create and exchange data on those platforms, they are, indeed, Big Data. Open Data refers to the principle according to which public data (gathered, maintained and used by government institutions) should be made available to be accessed and reused by citizens and businesses, while Big Data is used when the amount of data that an organization has to manage reaches a critical volume that requires new technological approaches in terms of storage, processing, and usage. Volume, speed, and variety are usually the three criteria used to qualify a database as "Big Data" (Monino and Sedkaoui, 2016). Openness is a trend, which have changed relationship among stakeholders in all sectors (Borgman, 2016). Open models of government, standards, data, services, and collaborative production of knowledge have contributed to this transformation. Openness is claimed to promote the flow of information, the modularity of systems and services, and interoperability (Borgman, 2016). As Open Government Data has become increasingly a set of policies that promotes transparency, accountability and value creation by making government data available to all (OECD, 2013; Ubaldi, 2013), use of social media has also become important to public bodies, although no so many institutions clearly and publicly mention the issue (Balcells et al., 2015; Bryer and Zavattaro, 2011; Karakiza, 2015; Taylor, 2017; Zavattaro, 2013). Their major concern is still Open Data. By making their datasets available, public institutions are believed to become more transparent and accountable to citizens. By encouraging the use, reuse and free distribution of datasets, governments are expected to promote business creation and innovative, citizen-centric services. Data governance constitutes a

framework of quality control for management and key information resource protection within an institution. Its mission is to ensure that the data is managed in accordance with values and convictions of the institution to oversee its quality and to put mechanism into place that monitor and maintain the quality. Data governance includes data management, oversight, quality evaluation, coherence, integrity and ICT resource security within an institution (Monino and Sedkaoui, 2016).

Use of social media in public sector, together with the promotion of Open Data and Open Government Data, has become important concepts in government institutions for the above mentioned, mostly empirical reasons (Hamm et al., 2014; Keles et al., 2020; Jukić and Merlak, 2017; Špaček, 2018). Theoretically, the importance of co-creation with citizen and/or user, can be explained from New Public Management (NPM) concept. Information and Communication Technology (ICT) is considered to be introduced in public administration along with other new managerial techniques, especially under the NPM concept in the Nineties. With NPM, the use of ICT started to focus on managerial process of public administration. Various managerial tools enabled by ICT were introduced to improve the speed and transparency of administrative procedure. Exchange of documents and elaboration through multiple actors became easier, thus improving interaction and collaboration among stakeholders. Not only the internal managerial issues, but also the public service delivery utilizing and benefitting from ICT, especially web-based technologies became popular (Kudo, 2018). Many former counter services were transformed into on-line services, making citizen possible to access directly to information as well as public services (Alford and O'Flynn, 2012). E-Government has been challenged with "digital era governance", which goes beyond the NPM (Dunleavy et al., 2006). In this view, all stakeholders are related in public governance network. The introduction of New Public Governance (NPG) in public service delivery is an important turning point as concept as well as practice. Citizens and communities are invited to participate not only in the decision-making process, but also the service delivery process, thus realizing co-design, co-creation, and co-production (Granier and Kuro, 2016; Kudo, 2018). They are redesigning the structure of service delivery.

Digital services of governments have become an importance aspect of technology and/or innovation driven public services. This concept as well as practice was enabled through various elements, including co-design and co-production with citizens and other stakeholders, digital technologies enabling data analytics, thus better designing services, based on data and evidences, NPG helped the realisation of co-production with citizens and other stakeholders, while NPG encouraged ICT to be an effective and efficient instrument of government (Kudo, 2018). Many of the digital services are not only a result of technological innovation and advancement, but also a product of institutional reform and revolution. ICT, per se, is not a solution, but could offer and become an opportunity.

In line with this theoretical evolution of public sector governance, Social Media, Open Data, and Open Government Data have become essential to government institutions, not only for their innovation but also for the possible realisation of co-design and co-production with citizens and other stakeholders. Indeed, the research focuses on this topic because of this very reason.

4. UK Approach to Social Media in Government

The UK government has committed to Open Government as well as use of Social Media. Regarding the first, the UK's fourth National Action Plan for 2018-2020 was launched in 2018 and was developed in collaboration with the UK Open Government Network (OGN), a coalition of active citizens and civil society organisations committed to making government and other powerful institutions work better for people through enhanced transparency, participation and accountability.

The NAP sets out various commitments in line with the Open Government Partnership values of access to information, civic participation, public accountability, and technology and innovation.

In terms of Social Media, the government is aware of the recent behaviour changes: almost every internet user can now be reached via social media; social media use continues to grow rapidly; all eyes turn to mobile-first social videos as 60% of internet users primarily use social sites to find entertainment; social media's role in the purchase journey expands; one in three minutes online is spent on social networking and this is an increase across all markets and major demographics; social overtakes search for 16–24 year olds and this demographic is turning to social as the preferred channel for brand discovery and research; social networks serve more ads, while consumers block them. The rise of ad blocking is a loud warning that citizens still resist and resent broadcast-style marketing tactics; and the future of online product research is visuals and voice, that pictures are substituting keywords (Hootsuite, 2018a).

Indeed, 64 percent of the UK population are active on social media, and they expect immediate access to information and real-time responses, even to the public institutions. With this in mind, the UK government is steadfast in its commitment to building a digital infrastructure to keep up with citizen expectations. "The Value of Social Media in the UK Government", a Hootsuite White Paper explores why governments need to adopt a citizen engagement and service delivery strategy that puts social media and digital first (Hootsuite, 2018b). The Paper analysis that, "the UK Digital Strategy 2017 policy paper (UK government, 2017) outlines a digital strategy for a digital economy, that will ensure the best digital connectivity for consumers and businesses alike; however, providing a seamless, efficient, and integrated online platform to better serve its citizens is only one part of the digital jigsaw for the UK government". Digital connectivity is now a utility and modern life in the digital age is becoming impossible without it. And nowhere is this relentless march towards digitisation epitomised better than in social media. Today's population has social media networks at their fingertips every minute of the day. This means there is a disconnect between traditional approaches and the expectations of today's hyper-connected, always-on citizens. UK government thus needs to expand its efforts, embracing a government wide citizen engagement and service delivery strategy with social media and mobility (Hootsuite, 2018b).

The White Paper analysis that never before has government had such a low-cost solution for engaging citizens. Maximising the investment in social media requires a strategic approach to social engagement. Government agencies that are doing it well have mastered a way to adopt a human-centric approach when engaging with citizens on social. But government is still perceived as being the most annoying industry on social media. Government organisations that are looking to embrace the power of social media have to adopt tools to ensure good outcomes. Social media management solutions can simplify social engagement and pay for themselves by providing operational efficiencies, streamlined service delivery, and improved citizen satisfaction with government interactions (Hootsuite, 2018b).

The Paper explores the value of social media as an agent to drive efficient, effective, and citizen-centric engagement within the UK government and suggests four pillars: 1) citizen engagement. Listening to citizens is the first step to learning what's happening within communities. Tweets and Facebook events, polls, lists, and livestreams can be used to gauge and monitor citizen engagement and community concerns. Indeed, the UK government takes public safety seriously, using social tools to promote good citizen behaviour, advocate safety, and address sensitive subjects; 2) government service delivery. Social media can play a role in helping to reduce the public-sector resources consumed in the delivery of citizen services. Services like tax payments, permit applications, and

license renewals, for instance, can be delivered as do-it-yourself services; 3) critical response communications. Social media can help spread the word quickly about a disaster or public emergency. Twitter and Facebook updates can alert citizens to power outages, terror alerts, and weather disasters in real time for immediacy and accuracy. First responders can monitor community activity to identify areas where citizen support is needed; and 4) government operations. Social media can create efficiencies in other areas of government operations. Social tools can attract and retain highly skilled workers where traditional recruitment fails. This can help enhance the employer brand of government agencies and help them compete against the private sector for fresh talent (Hootsuite, 2018b).

In order to use social media more effectively in government, the While Paper recommends the following points: 1) simplified social outreach. Social media engagement can be used to enhance agency outreach by delivering a unified communications strategy. A single platform for social management can centralise social outreach and engagement at the central and local levels for efficiency and ease of procurement; 2) consolidated social monitoring. Social listening helps agencies learn what's on the minds of constituents. Real time posts give governments insight into relevant discussions. Listening to these discussions sets up agencies to respond to messages and comments across social channels, helping them resolve problems; 3) solid metrics to prove value. Measurement of success is key to proving the value of social and increasing budget for social initiatives. To measure performance, agencies need to start by defining what success means to them. With a well-established definition of success in place, agencies can use social media management software to measure and demonstrate progress towards program objectives; 4) security and process. Few things can be more damaging to perception of an institution than a negative social post that turns viral. A centralized social media management platform makes it easy to recognise and address potentially damaging social content. Staff access can be managed across departments with secure logins, publishing approval workflows, and flexible permission levels. This allows for consistency across departments, agencies, and locations, and ensures that posts are reviewed, approved, and compliant.

The use of social media in government is aimed to: 1) advance public sector missions. An effective social media campaign to communicate the goals and benefits of government initiatives can help constituents understand public policies (UK government, 2015); 2) streamline agency operations. Social media management tools can speed up government responses to emergencies to safeguard constituents and communicate in a timely manner. Governments can post emergency alerts and instant updates across several social channels from a single dashboard while monitoring responses and inbound communications; 3) reduce cost of citizen outreach. A shared platform for social media campaigns can unify and speed up social interactions, reducing redundancies and making information more transparent and available for citizen and interagency consumption. Every government agency is at a different stage of the digital transformation. While social media is just one stage, it offers government agencies a relatively quick win in terms of enhancing the citizen experience. Government social media use satisfies citizen demand for real-time information, makes citizen engagement easier, and streamlines government operations. Using social media, governments can control costs, increase transparency, earn greater public trust, and create positive public sentiment. Effective social outreach requires that government users listen as much as they post, and that they respond quickly to comments and mentions.

"The State of Social Media in Government in 2018: Hootsuite's annual report on social media trends in government" (Hootsuite, 2018a) outlines five recommended areas of opportunity for social media in government; 1) drive government-wide efficiencies with social; 2) restore declining trust with peer influence; 3) combat brain drain with social-first recruitment; 4) rethink crisis communications in the wake of extreme weather conditions; and 5) build compliance into your social media strategy. It also

deals with how to streamline and coordinate social media across departments and agencies and how a centralised social media strategy can help control costs, increase transparency, earn greater citizen trust, and create positive public sentiment.

The question that arises is that if social media is such an almighty tool for government and public policy making as well as for the citizen, as it has been described as above and if it does have ant issues. Indeed, most of the interviewees, who were or have been directly involved in governmental digitalisation process and had experiences in dealing with citizen via social media, points out the following. First, as citizen mostly use social media for entertainment, there is still a strong hesitation for them to communicate with public institutions via social media, resulting that the voices to government via social media are not necessary reflecting the voices or majority and thus representing the population (Mellon and Prosser, 2017; Nseke, 2018). Second, similar to data, the quality of inputs via social media varies, making it difficult to evaluate and treat them. Third, as it is the characteristics of social media, only sensational topics are raised and discussed, leaving many ordinary issues untouched and/or ignored, thus, institutions are aware that following only the voices of social media cannot improve the public policy in general. Forth, institutions often do not know how to interpret voices on social media. They are aware of its importance; however, voices often are confused with noises, which sometimes are stronger then the first, or they cannot reflect meaningful voices into public policy (Sloan et al., 2013). Lastly, given the characteristics of public services, that have to reach to those who are in need, it is not easy to identify the silent needs of many, who are completely out of the social media, because of various reasons.

Some interviewees noted that, for several empirical cases, including park run and/or social prescribing, citizen engagement through social media has been vital to the projects. However, the successful cases are limited to those, where citizen participation are spontaneous and independent, and where only active and engaged participants use social media to reach their objectives. For disaster and crisis management, social media can be an important tool to identify the problems; however, in practice, many noises have caused problem during operations. So far, the use of social media in government remains theoretical framework, although public institutions are keen to utilise it.

5. Voice, Noise and Exit: Who's Cost?

Since the aim of the paper is to explore social media use by government in terms of Hirschman's theory, this section analyses theories and the case with the framework, slightly revise (Witt, 2011) from the original.

Social media is based on co-production with civil society and among institutions as many authors have explored. On this regard, social media enables public institutions to capture voices, even those, which traditional and conventional channel could not have captured, with rather small investment, as many authors proved. On the contrary to the initial hypothesis, indeed, social media in not only "cheap" tool to the citizen, but it is so to the government as well. However, one major issue is the representativeness of the voices (Nseke, 2018; Sloan et al., 2013) and the co-existence of noises, which, sometimes resemble voices, even according to the sophisticated analytical tools.

The often-cited example on healthcare services is definitely a good practice, as, for example, Social Prescribing attracts rather active and/or proactive citizens, who know the significance of preventive healthcare and are rather responsible for their own health condition. It is a good example of co-production of service with civil society and citizens, also heavily using social media. Thanks to these new tools, it provides citizen opportunities, in which they can learn about the possibilities and design

their own personalised solutions, i.e. "co-produce" their "social prescription" - so that people with social, emotional or practical needs are empowered to find solutions which will improve their health and wellbeing, often using services provided by the voluntary and community sector. It is considered to be an innovative solution, with the potential to reduce the financial burden on government. This has been, so far, possible, because the voices are from engaged citizens and public institutions do not have to deal with many noises and/or exit, which are unfortunately common in other fields. When we, however, consider the real vulnerable individuals in healthcare sector, i.e. aged, immigrants, and those with socio-economic difficulties, with poor health condition and/or poor digital literacy, their voices would never become voices, if public institutions rely heavily on social media communication. These are the shortfall of social media dependence; institutions cannot capture the real social needs, but will perceive only the virtual ones. Thus, the "cost" of those who fell out from the system is not considered, while the general cost cutting benefit has been stressed. This practice actually creates "forced" exit of citizens, in the name of popular voices and some noises as well. Can we discard voices from those who do not express their voices or who remain silent because they do not have means? Well, this is a further issue to be investigated, both theoretically as well as in practice.

Social policies were thought to benefit more from social media; however, besides healthcare, there are not so many good practices in other fields. Education policy was thought to have improved using social media, as the target demographic group is the most active social media users; however, it seems that it is difficult to use the input from social media in constructive way in this field.

6. Conclusion: Findings and limitations

This paper aims to explore the theories and current situation of social media use in public sector and for public policy through literature reviews and a case study in a particular framework, that of Hirschman's theory on voice and exit. Literature reviews show conceptual objects and benefits of social media in government; however, the real outcomes are, so far, mixed. Interviewees, also, pointed out the operational issues in using social media in government, which were easy to guess from the literatures, but are not easy to resolve.

Social media is becoming an integrated part of many citizens' social life; however, it is not yet universal and has several characteristics of its own, that have to be considered, before being used in public sphere. Interviews revealed that there are issues such as capacity development of public employees for using these inputs from social media into public policies.

The result from case study contributes to theoretical discussions, as they show empirical issues, many of which are not explored in existing literatures. The case also contributes to the theory of co-production of public service delivery discussion as well, since it is an example of it.

Given the limitation of one case study, the further research which will follow would be on several other governments, and compare those cases. Besides, some empirical examples of public policies using social media inputs could enrich the future research.

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SOCIAL MEDIA AS THE PLATFORM FOR POLITICAL MOBILIZATION: CASE STUDY OF KAZAKHSTAN

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Abstract

This paper focuses on the role of social media in the rise of the protest movements and political mobilization in Kazakhstan. The country has been seeing an increase in the social networks based civil activists since recently. I argue that the emergence of the Democratic Choice of Kazakhstan that operates only within the realm of social media platforms promoted political activism and civil protests in the country. Most importantly, I argue that in contrast to the conclusions of the Kazakhstani court's decision in March 2018, the movement leader's Facebook blog reveals no violence either towards the government or some specific political elite. Using text mining methods, I analyzed the texts of his Facebook posts from the announcement date in 2017 till the end of 2019: the rhetoric of the position of the Democratic Choice is informational, first, and protest calling, second. Also, the analysis of seven most popular political Youtube bloggers shows that the people's discontent with injustices and undemocratic polity manifested in the poignant interest towards the creator of this system, Mr. Nazarbayev and his closest circle. The SMM software allowed to find out the areas of Kazakhstani politics that are of most interest to the audience of Kazakhstani political activists.

1. Introduction

No doubt that Kazakhstan has recently joined the group of countries touched by the notion of "the networked social movements" propounded by Castells M. (2015). [2] Since 2013, a lot of Youtube and Facebook blogs started to emerge. Using social media blogs, political activists started to express their grievances and question the legitimacy of the political regime developed since the independence in 1990. Later, in April 2017, with the foundation of the only organized oppositional movement, Democratic Choice of Kazakhstan (DCK), which currently exists only on social media platforms people started to acquire alternative information encouraging each other to take their protests to the streets. No wonder that in March 2018 Kazakhstani court found the movement "extremist".

Although social movements and contentious politics are an integral part of political systems, autocratic regimes are inherently opposed to contentious collective actions because they facilitate the breakdown of such regimes. While, obviously, the goal of such regimes is to maintain power for as long as possible.

This study uses a Social Media Management software to analyze how social media is associated with the mobilization process, protest tactics and oppositional movement. Using SMM software LiveDunes I examined Youtube blogs of seven oppositional channels whose authors' identities are known. I collected data on their video-post statistics for the period 2015-2019 (or since their start).

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The Kazakhstani political online sphere exists in the form of personal blogs or accounts on Facebook, Youtube and Instagram. According to the social media statistics by StatCounter.com Pinterest (31.52%), Facebook (21.22%), and Youtube (16.13%) have the largest market share in Kazakhstan. While Vkontakte (Russian based), Instagram, and Twitter also had significant market shares in December 2019. [15] The DCK is represented on three social networks: Facebook, Youtube and Instagram by the accounts of the leader M. Ablyazov and the Channel 16/12.

The history of political mobilization in Kazakhstan can be divided into two periods before and after the foundation date of the social movement Democratic Choice of Kazakhstan was announced on Facebook page by its leader, M. Ablyazov, the dissident living in France (April 2017). [1] By assembling data on all contentious collective actions in the country during the period of five years, 2015-2019, I attempt to analyze how the protest activity has changed since the DCK.

I use text mining in R based on the textual data from Facebook posts of the leader of the DCK movement, M. Ablyazov, for the period 2017-2019. It allows to conclude on the main claims and grievances highlighted by the opposition. In-depth automated text analytics provided lots of reliable statistics. Most comprehensive was cluster analysis on texts. I argue that the oppositional movement DCK posts on Facebook do not imply any violence or use of illegal criminal methods in their protest rallies. Moreover, their channel bears mostly informational character. My conclusions on the effect of opposition movements working through social media and rendering results in public sphere provide the only positive glimpses for the growth of civil society in authoritarian state.

2. Defining political mobilization in modern authoritarian regimes

It is very important to distinguish politics in a non-democratic regime from the politics in a democratic one. Since 2006 democratic recession started to show its signs: number of electoral and liberal democracies started to decline and then halted. [5, 99] These trends automatically imply the rise of authoritarianism. In addition, modern non-democratic regimes acquired new features: "illiberal leaders have managed to concentrate power without cutting their countries off from global markets, imposing exotic social philosophies, or resorting to mass murder. Many of these new-style autocrats have come to office in elections and managed to preserve a democratic facade while covertly subverting political institutions." [8, 100] In spite of the democratic façade, political institutions in the hybrid-autocratic regimes not only do not fulfil their functions but also discourage people from the participation in public life and decision making. Charles Tilly referring to the non-democratic regimes claimed that the political participation "consists of voting, party work, holding office and communicating with legislators: people whose problems these procedures won't solve tend to withdraw or to act outside the political system." [16, 3-10] That is why after the major Internet social networks appeared around 2010's (Facebook and Youtube), the political activism in the authoritarian regimes has moved on these platforms. Since the traditional media are usually controlled by the government or political elites, communication and information dissemination are skewed in favor of those controlling them. Thus, social networks as the fastest tool of the information dissemination pose serious threats to the ruling elites in the authoritarian countries by reducing the knowledge gap which made ruling elites seriously concerned with the internet control: "Social media serves as a tactical tool (a means to disseminate information, coordinate action, and publicize the cause) as well as an emotional conduit (a place to develop identity, share emotions, and symbolically construct a sense of togetherness among activists)". [12, 2] Due to these factors, social media facilitate the mobilizational processes in society. In non-democratic regimes, they become the only available tool for mobilization. Numerous studies on the Arab spring events confirm these trends. One of the most famous studies on the Egypt Revolution by Tufekci & Wilson [17, 363] based on the comprehensive survey proved

empirically that Facebook significantly contributed to the increase of participants in Tahrir square uprisings and the likelihood of success of the revolution.

However, there is an alternative pessimistic view: some scholars like Morozov [13] view the internet as a support for the authoritarianism calling it "net delusion" because of the increasing control over the internet and new surveillance technologies.

3. Political regime of Kazakhstan

No doubt, since 1991 after the establishment of the independent Republic of Kazakhstan, a political regime with distinct autocratic characteristics developed. The confirmation of the autocratic nature of the country's regime can be found in the reports by international research centers. Freedom House country report concludes that Kazakhstan is "not free" with the score 22 (the range is from 0 as least free to 100 as most free nations). [6] In May 2019 the study of Pew Research based on the data from Polity IV project Kazakhstan was described as an autocracy. [4]

Executive power in Kazakhstan consists of *the first president "Leader of the Nation" (also, the lifelong Chairman of the Security Council, Nazarbayev), the president (Tokayev)* and *the cabinet* (government). The first president, Nazarbayev, has been president from 1990 till 2019. In spite of the change of the incumbent last year, legislation and separation of powers is structured in such a way that the first president (which is an official title and status) keeps overwhelming competences in state governance: all major public policy decisions are made by him.

Taking into account the current political institutes, executive-legislative disbalance and other factors, I associate a political regime in Kazakhstan with the sultanistic regime propounded by Linz in his seminal books. [10], [11] Also, Geddes [7] classification with its personalist authoritarian type is adequately applicable to the Kazakhstani regime. Linz actually developed the sultanistic regimes out of the patrimonialism concept elaborated on by Max Weber. [3, 4] It is very interesting to observe how theoretical conclusions realize practically almost 50 years after the first mentioning of sultanistic regimes as separate from the authoritarian and totalitarian regimes.

Strong single party rule of Soviet times transformed into the single person dictatorship of the sultanistic character. The presence of democratic institutions is not uncommon to the sultanistic regimes: elected president, parliament and even multi-party system. As Linz noticed „Sultanistic rulers also often turn to plebiscites to prove their democratic legitimacy; needless to say, they never lose one. Plebiscites are part of the democratic facade that sultanistic rulers like to erect, but they also create the image of a charismatic leader who rules by popular acclamation." [3, 19]

The main features of the sultanistic regimes are relevant to Kazakhstani system: strong neopatrimonialism, high corruption rates, pronounced personality cult and dynasticism (invention of new titles for the ruler), weak links with civil society, the absence of secure private property rights, arbitrariness in the judiciary system, oppositional activity is concentrated abroad, exile opposition.

Besides the earlier mentioned opposition leader, the leader of the movement DCK, there are several political activists in Ukraine who were previously prosecuted in Kazakhstan and fled to Ukraine.
Also, the political system of Kazakhstan as the majority of modern authoritarian regimes is an *informational autocracy* (term by Guriev and Treisman). [8, 112] The informational autocracies are characterized by the fact that due to the propaganda through the state-controlled media, there is a gap in the political knowledge between the intellectuals with the higher education and the general public.

[8, 101] The highly educated or "informed elite" are more critical to the current political situation than the general public in modern autocracies because of less susceptibility to the propaganda by state-controlled media. [8, 101] This is one more factor against political pluralism in such countries.

There are two arguments confirming the absence of political pluralism and the functioning civil society. Firstly, three parties are represented in the parliament. The propresidential party takes 84 seats out of 98 (82%), other two parties – 7 seats each one (7%). Besides, these parties are purely propresidential and progovernmental ones.

The second argument against pluralism is the complicated registration process of political parties. The requirement of 40 000 members for a party to be registered by the Ministry of Justice is considered to be untenable and hardly realizable. Civil society organizations have often been suppressed throughout the history of independent Kazakhstan. They haven't been able to grow enough to form a political party and be registered as a party. In 21st century Kazakhstani government implements new methods of repressions (as a typical informational autocracy): "Rather than jailing thousands, they target opposition activists, harassing and humiliating them, accusing them of fabricated crimes, and encouraging them to emigrate. When these autocrats kill, they seek to conceal their responsibility." [8, 100]

The regime has been uprooting such political and civil movements from the very start of the country, in 1990's. The protests and uprisings of more than 1000 participants have been a rare phenomenon in the history of the independent Kazakhstan. Basically, the first mass protest counting to several thousand participants took place in 2016. People protested against the land reform which allowed foreign citizen to take land for long-term lease.

4. Social media as the platform for political mobilization in Kazakhstan

In the conditions of the absence of political pluralism and civil society, social media have become the heart of the grassroots advocacy and alternative political views. Virtual space of the internet has provided new opportunities for social and political grievances to be expressed. The online political sphere lives in the form of personal and public blogs on Youtube, Facebook, and Instagrame. Significant advantage was an increasing coverage of the internet connection. The share of the people with the internet was around 14 million people (77%) in 2017 and 17.148 million in 2019 according to the official data by the Ministry of Information and Communication. [9]

Top seven Youtube blogs of political critics and opposition activists that I analyzed are relatively young – started between 2015-2019. Oppositional channels BASE and the Channel 16/12 are 20th and 31st most popular blogs on Youtube in Kazakhstan. [14] The social media accounts discussing social and political life of the country, public policies and the corrupted political elites are increasing steadily. Thus, people's thirst to the alternative "truths" is reflected in the popularity of the Youtube accounts and Facebook pages of the critics and oppositional activists in comparison with the pages of the propresidential party.

Youtube and Instagram accounts can be compared in terms of the number of subscribers. DCK is an absolute champion on Youtube in comparison with the propresidental party of Kazakhstan and the president's press office. (See Table 1 below) Ablyazov has 138 times more subscribers on Youtube than Nur Otan and 63 times more subscribers than the president press office. On Instagram the DCK leader has more subscribers than the party Nur Otan and less than the president's press office. So, no doubt, the movement is of high interest to the general public in Kazakhstan. Considering the threat

of official prosecution for being subscribed to the DCK and liking their posts, which cases are numerous, the registered number of people interested could be much more.

Organization	Description	Facebook (January 2020)	Youtube (January 2020)	Instagram (January 2020)
Nur Otan Leader: First president, N. Nazarbayev	Propresidential party, 84 seats out of 98 elected seats in the Parliament.	16 478 followers	2,200 subscribers, 590,965 views (Official Youtube-channel of the Party "Nur Otan", joined June 2013)	169,000 subscribers, 3,441 posts
Official page of Ak Orda	The press-service of the president of the Republic of Kazakhstan)	42,676 followers	4,380 subscribers, 1,182,747 views (joined July 2012)	345,000 subscribers, 1,361 posts
Mukhtar Ablyazov (DCK)	Democratic Choice of Kazakhstan leader	Private account, information on friends and fans is closed.	276,000 subscribers 77,372,662 views (joined June 2017)	228,000 subscribers, 3,914 posts
Information Channel "16/12"	Belong to DCK	1020 followers	539,000 subscribers, 151,995,617 views (joined June 2013)	114,000 subscribers, 2,841 posts

Table 1: Comparison of social media accounts of the DCK movement, propresidential party and the president's press office account
Source: own materials

The social media management software is extremely useful in the analysis of social media impact on the political socialization processes. One of the handy tools is the statistics and analysis of the content in the SMM. The analysis of the statistics of seven most popular political Youtube bloggers-activists or oppositional channels with known authorship shows the most viewed content. (See Figure 1) It is worth noting that four out of these seven channels' authors reside outside of Kazakhstan: France, Ukraine.
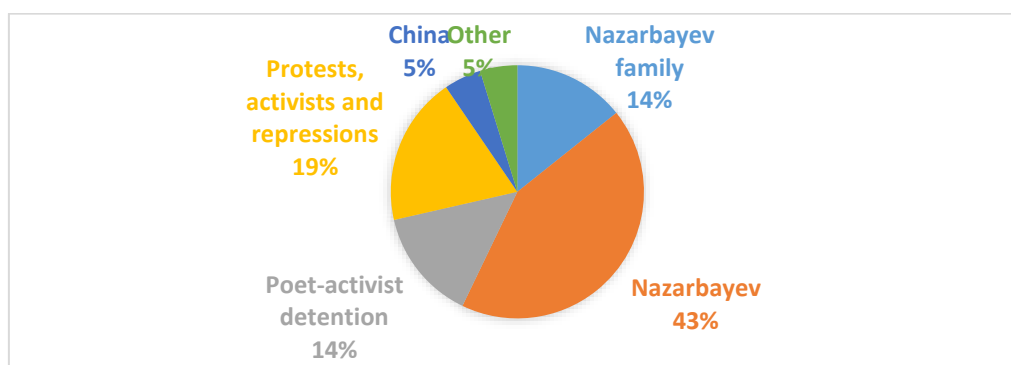
Figure 1: Most popular videos of seven oppositional Youtube channels, 2015-2019 (BASE, Channel 16/12, LIFE KZ, Yermek Narymbay, Yerzhan Turgumbay, Azamat Baikenov, Askar Shaigumarov)
Source: own materials based on data from LiveDunes

In the last five years the posts that caused most interest among their audience were dedicated to the following topics: the first president, Nazarbayev, and his family; protests and civil activists; the detention of the Kazakh poet, R.Zayitov, for participating in protests and, finally, the Chinese expansion in Kazakhstan. The Nazarbayev personality, forecasts for his future presidential tenure and

his family members in the higher state positions constitute an absolute majority of the most viewed videos (57%, see the chart below). I suggest that people are hungry for alternative truths about the ruling elites of the country. That is why they are curious about truth revealing channels.

No doubt that the main oppositional power is concentrated in the hands of the political dissident and businessman, Mukhtar Ablyazov. In April 2017 Kazakhstani businessman M.Ablyazov founded the social movement the Democratic Choice of Kazakhstan (DCK) which he announced on his Facebook page. [1] Substantively, it was a revival because his oppositional movement started in early 2000's but was interfered with political repressions and multiple imprisonments. Lastly, in december 2016 Ablyazov was released and granted political asylum in France in 2016.

Undoubtedly, the practice of the DCK has paved the way for new political movements. Today, besdies DCK, there are four social movements/non-governmental organizations located in Kazakhstan which make political claims and inform about human rights situation: Qaharman (Hero), Oyan,Kazakhstan!, Respublika, Men Azamat (I am a citizen). These four movements appeared in 2019 as a result of the increasing number of the protests organized by the DCK and political activists. The distinctive features: they are leaderless and are organized by groups of young people, thus, represent the grassroots activity. Among officially registered NGOs only the International Bureau of Human Rights and Rule of Law in Kazakhstan works out and expresses political complaints and informs about human rights violations in the country. The civil rights and political movements have never been able to grow enough to be able to exert any influence on the government. So, the emergence of four civil movements in one year is a big step towards political socialization. That is why, I suggest that with the emergence of the first Facebook and Youtube-based oppositional social movement, Democratic Choice of Kazakhstan in 2017, the process of political socialization has started.

Protest actions statistics during the last five years, 2015-2019, in Kazakhstan is represented in the table 2 below. Using independent foreign news agencies reports, particularly Radio Freedom, Sputniknews and KazTag Agency, I collected data on the kind of protest, estimates of the participants and detainees.

In short, there are three forms of contentious actions present: strikes (mostly of oil mining, ore mining and coal mining industries), mass protests (with social and political claims and grievances) and single pickets.

My conclusion about the strong mobilizational power of social media is based on several arguments. Firstly, the oppositional movement DCK exists only in social media. Its leader does not take part in any activities in Kazakhstan because he lives in France. Secondly, for the first time in the history of almost 30 years of independence protest rallies took place in more than two cities of Kazakhstan, usually 5-cities simultaneously. So, DCK was the major organizer of the largest mass protest since independence which took place on the presidential election day, June 9-10, 2019, with over 5 000 participants and around 4 000 detainees. Active participants of this movement avoid admitting their involvement with the movement. In spite of this fact, since their first organized rally in May 2018, their protests are held systematically and extend to multiple cities of Kazakhstan simultaneously. The movement is well organized: since its foundation in April 2017, the leader made his program of reforms available to all those interested.

The nature of the protest actions has changed. Traditionally, civil activity was very low in the country. Only strikes of oil and mining industries were more or less common feature. Year 2011 is memorable for a series of ongoing strikes in the Western region through the whole year and the bloodiest one in

December with around 17 workers killed. But strikes never spilled over one region. In the last two years the number of strikes and their tension decreased.

In the last two years a general social unrest became the boiling point: number of the mass protests with economic, political and social grievances as the main focus, increased, particularly in 2019. Since the start of the activity of the DCK, number of protests of more than 100 participants increased considerably. Most importantly, these rallies took place in at least five big cities of Kazakhstan.

It should be highlighted that protests and uprisings at all levels take place in spite of tightening control over freedom of expression and freedom of association: more and more activists are detained, arrested and fined; social media and internet started to experience blockages and massive shutdowns. The third outstanding feature is that all organized protests extend to multiple cities. The first organized protest movement which took place in May 2018 expanded to eight cities.

Form of collective action	2015	2016	2017	2018	2019
Strikes, total:	5	4	6	2	2
Strikes, <100 participants	3	2	4	2	2
Strikes: >100 participants	2	2	2	0	1
Protests, total:	14	14	8	>13	>18
Protests >1000 participants	0	2	0	0	1
Protests (100;1000)	2	2	0	4	8
Single pickets	3	6	9	8	>15

Table 2: Forms of contentious collective actions present in Kazakhstan, 2015-2019
Source: own materials, data collected by the author

Besides of the quantitative characteristics of protest actions, the qualitative part deserves even more attention. The data extracted by the SMM platform LiveDune allowed me to summarize data on the Youtube posts of the leader of DCK, Ablyazov, based on *the speed of receiving likes*. So, three videos that caused the highest immediate interest among people were concerned with the catastrophic event, the presidential elections of 2019 and the promising reform of credit amnesty:

1. Video in the aftermath of the explosion of military ammunition dump which resulted in the evacuation of the whole city of around 100 000 people (June 24, 2019, 1,138,351 views);

2. Video on the organization of mass protests in the aftermath of the presidential elections and on the day of inauguration day (June 12, 2019; 964,508 views);

3. Video on the credit amnesty promised by the president Tokayev (June 26, 2019).

The statistics of the Youtube posts of the opposition leader demonstrates that people are eager to find out the perspective of Mr. Ablyazov on the most notable events: the explosion catastrophe, unexpected political changes or social events. Also, the statistics on view counts during 2017-2019 shows that the peaks of views correspond with the mass protests periods. Each peak of views quantity can be explained by the mass protest actions taken place in this period. It means that the general public are interested in the fate of protests and protesters.
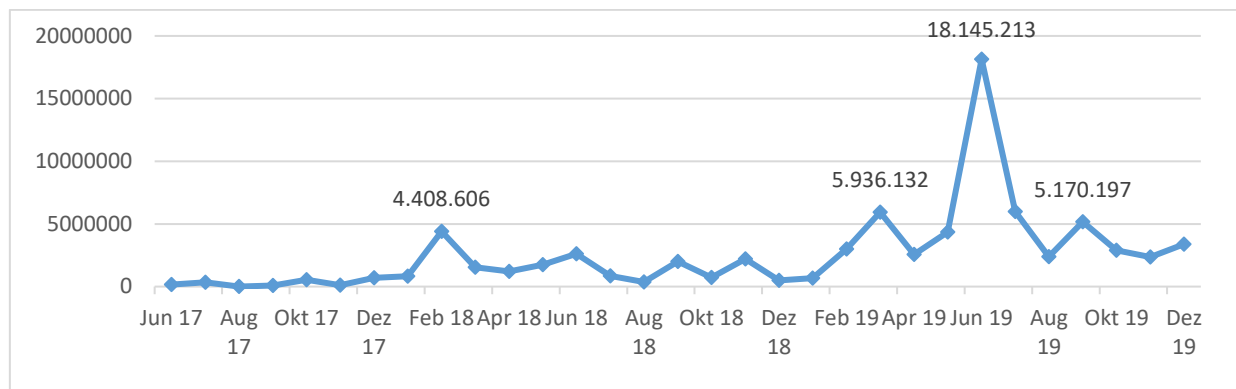
Figure 2: Views count of Ablyazov's Youtube channel, June 2017-December 2019
Source: data extracted from LiveDunes software

Text mining methods extract the substance of the protest movements organized by the DCK. Using the Microsoft Word translator for translating the leader of the DCK movement Facebook posts from Russian into English, I made corrections to the texts to reach the systematical translation of the same meaning words. Also, text data was cleaned and stemmed. So, the words in figures and tables are shown in stemmed versions.

Mr. Nazarbayev is not only intensively discussed by Ablyazov but also most *extensively*. The next table shows the "count" as the total number of occurrences of the term in the corpus of texts and the "support" as the number of texts containing the term. In general, all major public policy issues discussed in the opposition's posts converge to the Nazarbayev's activity and regime.

No	term	count	support
1	nazarbayev	1469	1126
2	Countri	1169	872
3	Will	1165	812
4	People	933	708
5	Kazakhstan	843	693

Table 3: Most frequent terms met in most texts in Ablyazov Facebook posts.
Source: own materials.

To delve deeper into what statements are made about Nazarbayev in Ablyazov's posts I provide the following data. Firstly, R statistics show that the closest correlation with "Nazarbayev" is with the word "billion" (with correlation 0.31): in text it refers the amounts of billion dollars stolen from the budget by Nazarbayev and his elite.

Secondly, I extracted two, three and five words that most frequently go together: half of the most frequents pairs are something about Nazarbayev, the rest are human rights, democratic choice, supporters of DCK, etc. (See Table 4 below)

term	count	support	term	count	support
Nazarbayev regime	126	124	Democratic choice	51	51
Human right	121	97	Whole countri	49	47
Nursultan Nazarbayev	56	54	Support DCK	51	46
People Kazakhstan	56	54	Nazarbayev will	49	46
Old man	52	52	Nazarbayev famili	47	46

Table 4: Most frequent two-word terms met in most texts in Ablyazov Facebook posts.
Source: own materials.

The data of the most frequent mentions accompanying 'Nazarbayev' term shows the following: 'Nazarbayev regime', 'Nazarbayev family', 'Nazarbayev said', 'Nazarbayev plans', 'Nazarbayev entourage'. Not a single word includes a violent emotion or call for criminal action towards this person. He is discussed in terms of his deeds during the presidency, his supposedly multi-billion wealth, his plans for the future and the entourage related to the personality cult.

Text cluster analysis provides most wholesome picture of the social movement DCK. Using agglomerative hierarchical clustering with Ward's method as the merge rule, based on the dendrogram I clustered the Facebook posts of Ablyazov into 11 clusters. The cluster analysis confirms that the main subject of the opposition's posts is Mr. Nazarbayev: three clusters are related to the first president and his family, his personalist ruling and venalities, the personal enrichment. (Clusters 2, 4, 9) Two clusters are devoted to the activity and tactics of the DCK: how to increase the numbers of supporters of the DCK, how to join ranks of the DCK and how to defend human rights, particularly, of the activists. (Clusters 5, 11) The first is the largest cluster which covers all public policy issues, the current president Tokayev, politics towards political prisoners and protesters, Kazakhstan's relationships with China and Russia.

Cluster analysis reveals another important aspect of the DCK movement leader activity, that is informational and analytical and his attempts to deliver his perspectives on the current public policy issues that Kazakhstan has been facing.

N	Cluster size	Top words
1.	4570	kazakhstan, protest, prison, day, tokayev, action, astana, kazakh, china, russia
2.	139	bank, teng, billion, dollar, nazarbayev, budget, month, million, averag, salari
3.	391	orevoir, vpn, diakovski, vyacheslav, jezcazgan, casin, esimov, samruk, gennadigon, hralyam
4.	41	old, man, gone, youth, new, elixir, away, quot, invent, sign
5.	206	dck, support, party, activist, rank, join, peopl, leaflet, cell, member
6.	125	elect, presid, kosanov, candid, parliamentari, power, presidenti, parliament, vote, fair
7.	61	right, human, kazakhstani, know, defend, freedom, law, court, countri, world
8.	47	million, oil, dubai, produc, ton, total, region, emir, atyrau, per
9.	23	nazarbayeva, dariga, hanstv, man, billion, presid, horr, kulyakh, atom
10.	45	chang, will, need, survey, realiz, power, push, respond, abl, system
11.	24	free, kazakhstan, will, protest, dck, eugen, man, kravet, schoolchildren, evgeni

Table 5: Cluster analysis results.
Source: own materials.

The tactics of the Democratic Choice of Kazakhstan encompasses peaceful protest rallies, information dissemination and attracting more supporters. The main goal of the movement is to change current political regime of Nazarbayev. The closest correlation with the "DCK" is "support/supporters" term (correlation 0.41): Ablyazov insists on increasing numbers of supporters. He believes that the only way to change the current political regime is by attracting more supporters of the DCK and organize protests of several thousands of people so that police were unable to intimidate and repress activists. Power is in numbers. Non-violent nature of the protests organized by the DCK is supported by the

argument that "protest" comes only with adjectives *peaceful, lite* and *mass* ("peace" and "lite")[2]. No harsh language is introduced in the oppositional posts. It should be noted that the court's decision was made in March 2018 on the basis of the social media accounts of the movement DCK, thus, before the massive protest rallies of 2019. The largest protest rally took place in June 2019 during the presidential elections: more than 4000 detainees were reported. At the same time news channels reported no damages towards private property. However, three policemen were reported to have minor injuries in the capital city. However, no reports on the injured civilians were made. In general, by now the political activism in Kazakhstan is surely far from either violent or destructive. One of the possible reasons is the fear of the ordinary citizens of the overwhelming power of authorities and their competences to use force. Obviously, harsh critique and calls for change of the current political regime could not have gone unnoticed by the dictatorial authorities.

5. Conclusion

The analysis of social media accounts of the social movement leader produces indirect evidence of the real current political, economic and social situation. Not only content touched upon by the political activists, but also the reaction of social media users and viewers demonstrate the topical issues in the country. Social media is extremely important alternative channel of information in modern authoritarian countries.

First, I situated Kazakhstan as being a representative of the sultanistic regime in Linz (2000), personalist authoritarian in Geddes (1999) and informational autocracy in Guriev and Treisman (2019). The role of specific individuals is highly important on Kazakhstan's online political sphere. There are a lot of personal accounts and informational channels on Youtube with political content and political claims and critique. While the government does not have necessary technologies to censure and control the internet social networks directly, it is authorized to it legally. That is why many activists and bloggers are targeted and jailed as it does happen in the informational autocracies. Several popular political bloggers are located outside of Kazakhstan. They are the ones who produce the harshest critique and call for mass protests setting the dates for ordinary people.

The cluster analysis and data mining techniques confirm that the DCK leader's account is focused on revealing information, alternative truths, about the activities of the long-lasting president and his ruling elites to the masses. The analysis of the Youtube channels of political activists confirms that the audience is most interested in the topic "Nazarbayev and his family". These facts add to the argument for the autocratic personalist rulership of the country.

The main message of the social media-based movement leader is that the standard political participation intrinsic to democratic nations is not viable in the current political regime because of rigged elections and widespread corruption. That is why he concludes that the parliamentary form of government with the complete removal of the position of president should replace the current regime. This can only be realized through the "lite protests" (no weapons) with several thousand participants. No doubt, there is no violence towards the first president mentioned.

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[2] List of terms with "protest": "go protest", "protest protest", "mass protest", "peac protest", "hold protest", "liber protest", "come protest", "organ protest", "held protest", "lite protest".

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SOCIAL MEDIA USE TO ENABLE BETTER RESEARCH VISIBILITY

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Abstract
Research visibility is a synthetic characteristic, defining the level of dissemination, accessibility, recognition and impact of the scientific output of a community. It has been influenced tremendously by the rapid development of ICT and took full advantage of the plethora of ICT tools. The paradigm of Open Science has organically emerged during the last years, advocating for extending the principles of openness to the whole research cycle, fostering sharing and collaboration as early as possible. The use of various ICT-based tools enables the entire research cycle - from literature search and review, reference management, research data processing, publication and peer-review to dissemination of results and outreach within the global academic community. The availability of various customisable online services for researchers, especially social media, contributes significantly to the increase of their presence and visibility in the scientific communities at national, regional and global levels. This paper aims to present an overview of the possibilities afforded to researchers by social media and social networking, its benefits and potential drawbacks, as well as its implications for the future of scholarly communication and research evaluation, the reasons and motivations why researchers are engaging in social media or not.

1. Introduction

Some of the traditional scholarly communication means are not very supportive of the researcher in sharing their findings, and the end user in taking in this knowledge. This automatically delays the potential for research to influence practice and policy. Citations usually fail to capture the impact of the research on the wider knowledge transfer to the consumer who needs it most. Societal or real-world influence is inherently difficult to assess [16]. To maximize research impact, traditional academic communication channels and researchers should embrace digital technology, and the opportunities it affords. The availability of various customisable online services for researchers, especially social media, contributes significantly to the increase of their presence and visibility in the scientific communities at national, regional and global levels.

These new tools and techniques complement the traditional article format by including blog posts, interactive graphics and videos, informal scholarly conversations move to Twitter, networking, collaboration and career development happen on ResearchGate, LinkedIn or Facebook. The adoption of techniques to generate engagement and impact will inevitably have a learning curve, with some tools proving more beneficial than others. Some of the benefits of using social media in academia, include promoting research and increasing its visibility, building networks, reaching new audiences (both within and outside academia), sharing information and keeping up-date with the latest news and

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developments [28]. Some argue that a transition from 'publish or perish' to 'get visible or vanish' is inevitable in the academic world. [4]

This paper aims to present an overview of the possibilities afforded to researchers by social media and social networking, based mainly on literature review. It explores benefits and potential drawbacks of social media, as well as its implications for the future of scholarly communication and research evaluation, the reasons and motivations why researchers are engaging in social media or not.

2. Research visibility

Research visibility is a synthetic characteristic, defining the level of dissemination, accessibility, recognition and impact of the scientific output of a community. It has been influenced tremendously by the rapid development of ICT and took full advantage of the plethora of ICT tools.

The exponential growth of the scientific literature during the last decades makes it particularly complicated for researchers to produce publications, that will be noticed by the community - be visible - and generate a scientific, social, economic or other types of impact. No database can cover this huge volume of scientific output. The use of various ICT-based tools facilitates a wide variety of tasks - from searching for relevant scientific information, processing research data, publishing scientific papers, reviewing them, and then disseminating and promoting them within the global academic community. Thus, the existence of personalized web services for the needs of the researchers, contributes significantly to the increase of their presence and visibility in the scientific communities at national, regional and global level.

At the same time, visibility is one of the important aspects, which is taken into account in the evaluation process, whether it is of individual researchers, research groups, institutions or even national R&D systems. Figure 1 shows four important dimensions of research evaluation (including, for example, citation analysis). These issues are highly interrelated and interdependent. Research evaluation should be conducted in particular to determine the strengths and weaknesses of productivity, visibility, reputation and impact of researchers or scientific organizations.
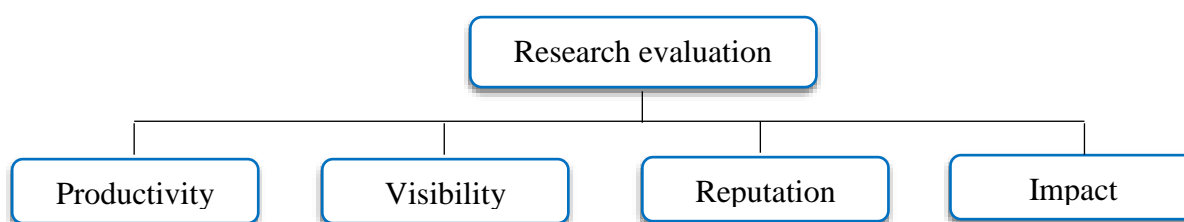
Figure 1: Dimensions of research evaluation
Source: [23]

Visibility in the pre-internet era referred mainly to indicators, such as the number of books sold, the impact of journals or publications depending on the place of publication of an article or presentations at prestigious conferences with high participation. Visibility also referred to references in newspapers, radio or TV, although these were not typical for ordinary researchers. On the other hand, the web offers visibility and the ability to overcome the boundaries of traditional scholarly communication.

Web 2.0, or the social web, offers the means to generate metrics relevant to estimating the scientific reputation, based on the behavior of users online. It refers to social bookmarks (social tagging),

recommendations, microblogging, references written by users, blogs, social networks, repositories of scientific data. All these methods are based on web users to view, tag, comment, download, share or store scientific results on the web, and the indicators regarding these activities can be generated in real time. Potential benefits relate to faster feedback and a broader assessment of the impact on the public. However, this "public" may not be a valid or authoritative one. In terms of webometric analysis, reputation, recognition and prestige are closely correlated. These refer to the number or rank of sites that mention the scientific activity of a researcher. Although the total number of links or mentions indicates the level of visibility or accessibility of a scientific output, recognition by recognized researchers and prestigious institutions is still a measure of scientific value [22].

3. Open Science paradigm

Currently there is a systemic change in the modus operandi of science and research affecting the whole research cycle and its stakeholders and that is Open Science (OS). Being driven by new technologies and data, the increasing demand in society to address the societal challenges of our times and the readiness of citizens to participate in research, this is a new approach to how scientific research is conducted and organized, it is based on cooperation and new ways of knowledge dissemination using digital technologies and new collaborative tools [19]. The paradigm of Open Science has emerged during the last years, advocating for extending the principles of openness to the whole research cycle, fostering sharing and collaboration as early as possible. The use of various ICT-based tools enables the entire research cycle - from literature search and review, reference management, research data processing, publication and peer-review to dissemination of results and outreach within the global academic community.

Being adopted as one of the 3 strategic priorities of the European Commission in 2015, in September 2017, the G7 Ministers recognized that technological and societal developments are transforming research towards paradigms of Open Science. They stressed the importance of incentivising and rewarding Open Science activities and providing global research infrastructures, to underpin it [10]. One of the key dimensions of Open Science is Open Evaluation. In an Open Evaluation environment, there are written peer reviews, bibliographies, numerical ratings, usage statistics, social web information and citations in combination with other usage or participatory elements from social media. The altmetrics movement is currently developing a range of novel indicators to assess impact [17].

"Altmetrics" is used as an umbrella term which condenses ideas on how to combine social media with aspects of traditional scholarly practice (Priem et al., 2010) and is considered a subset of webometrics, although using new data sources and methods. The aim of altmetrics is to expand our views on impact, by considering new data sources and metrics. Altmetrics considers all stages and products of scholarly research (from "social" literature search via Facebook to discussion of published results with readers via Twitter), including any impact a publication or an author may have on other people, e.g., retweeting a tweet, downloading or bookmarking an article, sharing a blog post in social networks, or following the author. As such, the altmetrics approach offers new ways to measure impact of authors and publications which may complement rather than replace traditional indicators for research evaluation [3]. The combination of traditional and alternative metrics for research evaluation will provide more complete author or article profiles as it captures more dimensions of scientific practice.

Open Science (OS) is a term that mainly evokes a deep change in the scientific environment on both knowledge creation and dissemination towards a public funded science to be more open, accessible, global, transparent, integral, reliable, collaborative, and closer to citizens. This is inherently good for the quality of science and for improving the efficiency of the R&I systems [19]. Open science has the

potential to increase the quality and benefits of science, bringing significant opportunities such as increased visibility and transferability of scientific knowledge.

4. Social media in academia: reasons and motivations for engagement

Recently, both scientists and science communicators have issued numerous calls to the scientific community to engage in social media to both connect with other scientists (inreach) and to connect with the public (outreach) [15]. The benefits of social media stem from active participation and the generation of new attractive content from an individual. Research is about producing new information and knowledge and social media offers unique opportunities to present new content. As of December 2019 there were about 7.8 billion people in the world, of which 3.725 billion were active social media users. Moreover, there are almost 1 mil new users to some form of social media every day or a new user every 10 seconds [26].

Social media are user-centred internet-based tools that foster online collaboration, sharing, communication, participation and creation of user-generated content [14]. Categories of social media services include social networking (e.g., Facebook, LinkedIn), microblogging (e.g., Twitter), blogging, photo sharing (e.g., Instagram, Pinterest), video sharing (e.g., YouTube), and crowdsourcing. *Social network sites* are defined as web based services that allow individuals to (1) construct a public or semi-public profile within a bounded system, (2) articulate a list of other users with whom they share a connection, and (3) view and traverse their list of connections and those made by others within the system [5].

Scholars are increasingly incorporating social media into their scholarly practice. Increasing pressure on researchers by funding agencies, organisations and universities to engage in the broader social field and demonstrate societal impact has led scholars to turn to online environments to produce, consume and disseminate information. This has in turn enabled the incorporation of online activities into scientific evaluations [8]. Besides maintaining existing connections and making new ones, researchers use social media to increase their visibility and that of their work as well as to expand the reach of events, such as conferences, meetings and workshops.

Citation counts are established in author evaluation, but they reflect only half the truth: they just capture the author's impact on other authors, while the impact on pure readers is missed. Moreover, authors create "footprints" via profiles in social networks, homepages, or publication lists to make themselves and their work more visible. These aspects of scholarly behavior are also not acknowledged by citation counts. With social media, new platforms come into play which provide alternatives to gain a holistic view on the visibility and impact of authors [3].

Researcher profiles are strategic and selective "digital representations" [18] of researchers and their research. As stated by Cheek & Øby (2019), the increasing display and use of altmetrics has lead to an increasing proliferation of online guides about how to establish a high-profile online presence or researcher self, aiming to improve the online visibility of the researcher and of his or her research — put another way, by making these "much more googleable" [6].

The reasons of engaging in social media are quite diverse, according to Jaring & Back (2017): some of the researchers had started to use social media out of social pressure from peers, some out of curiosity, and some because they were involved in projects that required being present in social media. The majority of researchers use social media to find information and stay up-to-date with the latest developments, as well as share their findings [13]. Sharing findings leads to the end user in taking in

new knowledge. Otherwise the potential for research to influence practice and policy is significantly delayed (e.g. it takes 17 years for just 14% of medical research to be implemented into everyday practice [12]). To maximize research impact, journals and researchers should embrace digital technology and the opportunities it affords.

This could also help ensure that more scientists would enjoy the professional benefits of social media use. Although, it has yet to be widely adopted, still the scientists in a variety of disciplines use these platforms to exchange scientific knowledge, generally via either Twitter, Facebook, LinkedIn or blogs, perceiving numerous potential advantages to using social media in the workplace [7].

Among these, Twitter has emerged as a key outlet. The brevity of 'tweets', and the capacity to include images and videos, means that scientists can go through a lot of information at a glance, with the option to dig deeper if they wish. The constant stream of posts can be filtered to match the user's interests through the creation of lists. Live-tweeting from conferences has become common and offers many benefits, such as allowing attendees and non-attendees alike to receive messages about talks and participate in discussions [27]. According to a critical evaluation of science outreach via social media by McClain & Neeley (2014), there also appears to be an overall positive correlation between the number of citations and number of Twitter followers among scientists [15].

The recent study by French & Fagan (2019) suggests that faculty with more academic social network profiles were more visible in search engines and faculty with authority records (such as ORCID) ranked more highly in Google. Therefore, it is no surprise that increasing numbers of academic publishers and funders are requiring authors to use identifiers such as ORCID, and librarians are incorporating the topic of identity management into their outreach to faculty. A variety of academic social networks (ASN) are available to researchers for creating and managing their online scholarly identities: Academia, Google Scholar, ResearchGate, ORCID etc. [9]. Table 1 presents a brief overview of these 4 ASNs.

ORCID	ORCID is a nonprofit organization dedicated to ensuring that "all who participate in research, scholarship and innovation are uniquely identified and connected to their contributions and affiliations" [20]. It is primarily an identifier system that also provides a web platform where researchers can link their publications to their ORCID and enter profile information.
Google Scholar	Google Scholar is the most familiar and most used ASN site, according to a 2014 Nature survey [29]. The platform presents itself primarily as a search engine for scholarly articles with an added profile feature. Google Scholar provides links to publications on a variety of commercial, open access, and personal websites, provided the content is scholarly in nature and includes an abstract or full text [11].
Academia.edu	Academia describes itself as "a platform for academics to share research papers" and its mission is "to make every scholarly and scientific paper available for free on the internet and to enhance academic discussion and collaboration" [2]. Users can create a profile, upload their work, and use social networking features to connect with other researchers.
ResearchGate	ResearchGate's mission is "to connect the world of science and make research open to all," and the for-profit company describes itself as "the professional network for scientists and researchers" [24]. The Innovations in Scholarly Communication global survey found that ResearchGate was used by twice as many published scholars as Academia.

Table 1: Overview of academic social networks
Source: [9]

5. Benefits vs drawbacks of social media for research

Social media is seen as a good source of new information and contacts, and it is suitable for promoting awareness of research services and results. The results of a recent study on social media use by researchers by Jaring & Back (2017) show that the speed and intensity of social media present challenges for researchers, but by being active in posting content and participating in discussions, researchers can derive benefits and enhance their personal reputations.

Researchers presumably report benefitting from using social media in different ways [13]:

- gaining professional visibility and credibility;
- networking: it is easier to go to talk to people or call them when you are following them on social media;
- event information: finding out about interesting events and following events if participating was not possible;
- finding information about project calls, projects, new trends and ideas;
- following professionally relevant news anywhere and anytime through mobile;
- gaining an idea of someone's personality by following their social media activities.

Despite the professional benefits of social media, many scientists are reluctant to use them for work. Developing a useful digital footprint is time-consuming and many scientists struggle to fit this into their already heavy schedules. Moreover, the ubiquity of social media and its ability to break geographical barriers means that its use may blur the line between work and personal life. Stepping into any type of public forum also requires caution, such as in issues of confidentiality [27]. Also, ongoing concerns exist regarding social media use alignment to academic rigour as Barton & Merolli

(2019) argue, including: reputability of information, accuracy of content, privacy of individuals and professional obligations for use [4].

At the same time, there are challenges associated to using social media in academia, according to the study by Jaring & Back (2017). The amount of information in social media and the task of following, as well as the speed and culture of social media pose challenges to researchers. Writing concise, smart, and interesting posts takes time, at least at the beginning. If using social media is part of the researcher's current project, being regularly active in social media is not a challenge, but without such a project, finding the time can be difficult. For instance, some of the top reasons why scientists are reluctant to use Twitter included a general lack of knowledge and a perceived lack of time (Twitter viewed as time consuming practice). Further linked themes emerged around the suggestion that Twitter lacks scientific content and is not a scientifically "rigorous enough media" to support professional scientific debate. [13]

Some studies, such as the one by Rowlands et al (2011) suggest that a lack of time, lack of clarity of the exact benefits of social media, and general uncertainty act as a barrier to social media use in the workplace [25]. Of note, time constraints is also cited as the biggest obstacle to outreach for scientists [1].

But one should be aware, as Cheek & Øby (2019) duly note, that reluctance to engage with scholarly social media may cause a misrepresentation of a researcher's academic achievements and may come with unforeseen consequences. These include having a profile generated for oneself by search engines and other sites, and not knowing it, thereby not being aware of inaccuracies in aspects of one's "incidental" online researcher self being constructed and presented online automatically by search engines, such as Google Scholar. [6]

6. Conclusions

There is nothing new in researchers needing to profile themselves and their research, as scholarly reputation and discoverability of research have always been a top priority for scientists. They are constantly asked to profile their researcher selves and research outputs in CVs, job applications, and tenure applications, on institutional marketing sites, and in biographies that accompany research articles, chapters, or books they write [6]. What is new is the form and instant reach of a digitally based research profile, and the ways that the content of that profile is used to position researchers and their research in the contemporary research environment.

Building one's professional reputation seems to require active content creation and sharing both through social media and traditional media channels. Given that the amount of content in social media is huge and there is lot of competition for getting attention, gaining visibility and strengthening one's reputation requires active participation [13]. As Priem [21] urges - it is time to embrace the Web's power to disseminate and filter scholarship more broadly and meaningfully.

Most universities and research institutes use social media to some extent, but its true potential is unclear. Close collaboration between a research institute, its researchers, and industry is important also for the society, because the quicker the research results are commercialized, the bigger the benefits are to the companies and the society. Therefore, increasing understanding of how social media can be used efficiently is worth researching.

Balancing the pros and cons, it is up to the individual scientists to decide upon using social media [27]. But once they decide to participate it is important to have a clear idea of what they would like to achieve from their online interactions, and to decide which platforms would best serve this purpose.

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eGovernance

TEN YEARS OF LIQUID DEMOCRACY RESEARCH AN OVERVIEW

Alois Paulin[1]

Abstract

Ten years have passed since in 2009 two independent technical systems pioneered liquid democracy (LD): Župa, a system developed for the Student Organisation of FIS in Slovenia, followed closely by LiquidFeedback, which served the Pirate Party in Berlin, Germany. First academic papers appeared in 2010 targeting the e-democracy research community, and later followed by researchers from artificial intelligence. This paper provides an overview of the scholarly discussions that developed in the past decade, and the technical implementations and initiatives that emerged.

1. Introduction

Liquid democracy (LD) is a way of making collective decisions, which does not depend on electing representatives. Instead, each member of a group can delegate its power including all power delegated to them to another member and withdraw it again at any time.

Paulin [35, 39] explains LD by following example: "Let us assume a group of six members – Ann, Bob, Carl, Dan, Eve, and Franck. Let us further assume that each member of the group has an equal share in making a common decision: hence, each has one vote of equal value. Ann has delegated her power to Bob, Bob and Carl to Dan, and Dan to Eve; Franck has not delegated his vote to anyone. Given these delegations, the distribution of power in the group would be as follows: Eve would hold 5/6 votes (hers + Dan's + the delegations Dan received from Bob and Carl + the delegation Bob received from Ann), and Franck would hold 1/6 of all votes. This distribution could change any moment: If Bob would delegate his power to Franck, then Franck would hold 3/6 of all votes (his own + Bob's + the power Ann delegated to Bob), and Eve the remaining 3/6."

Blum & Zuber [4] attempted to define LD as a model: "All members of a political community that satisfy a set of reasonable participatory criteria (adulthood, baseline rationality) are entitled to: (I) directly vote on all policy issues (*direct democratic component*); (II) delegate their votes to a representative to vote on their behalf on (1) a singular policy issue, or (2) all policy issues in one or more policy areas, or (3) all policy issues in all policy areas (*flexible delegation component*); (III) delegate those votes they have received via delegation to another representative (*meta-delegation component*); (IV) terminate the delegation of their votes at any time (*instant recall component*)."

This *liquidity* of fluctuation of power, which is a combination of Blum & Zuber's *flexible delegation component*, *meta-delegation component*, and *instant recall component* is what gives LD its name.

The *liquidity* of LD is something that cannot be achieved in no other way than by means of information technology (IT) solutions that store and manage the network that represents the relations

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between the members of the group. First such known solutions appeared around 2007 – 2009. The first system known to provide LD capabilities was Michael Allen's Votorola [51]. The first technical LD system that was made available to a concrete organisation was Paulin's Župa [41, 42], which brought LD to the *Student Union of the Faculty of Information Studies in Novo mesto*. Slightly later LiquidFeedback [2, 46] was released for use by the *German Pirate Party*. Several other LD initiatives emerged independently in the years that followed, such as *Civicracy* [21], *GoogleVotes* [22], or *Sovereign* [45].

Scholarly activities emerged, which discussed the pros and cons of LD [4], or sought for new domains to which LD could be applied, such as public governance [39], music recommendation [6], public financing [38], or blockchain [18]. Furthermore, the artificial intelligence scholarly community became interested in utilizing LD, which resulted in a separate stream of research [12, 13, 20, 25].

This paper aims to sum up the decade that followed the pioneering applications of LD. Section 2 aims to give an overview of the known technical systems developed so far. In section 3 we shall discuss the different perspectives on LD taken by the involved researchers and LD enthusiasts. A summary of the findings shall be provided in section 4.

2. Known initiatives and systems

Some early e-participation systems designed for LD have been documented by Thomas von der Elbe [17], who identified two systems that feature both delegation of power to proxies as required for delegated voting, as well as the spontaneous withdrawal of delegated power, which is crucial for the characteristic liquidity of LD. These two systems were Votorola and LiquidFeedback.

Von der Elbe's [17] comparison of then-available systems is focused on systems for e-participation. To compare the systems, he devised a set of ten criteria as follows:

1. Can the voters vote on any local, national and global topic that concerns them?
2. Can the voters vote at any time - i.e. 24/7?
3. Can the voters put their own proposals to vote?
4. Can the voters delegate their voting power, and all received delegations to others?
5. Can the voters change their vote or opinion?
6. Can the voters choose between different voting tools and have their opinion / vote be presented in all other tools as well?
7. Can the voters filter votes, by e.g. nationality, age, etc.?
8. Can the voters verify the results of a vote?
9. Can some voters maintain their own voting tool that would be independent from governments or institutions, but would still be connected to other voters?
10. Maturity of development.

By von der Elbe's comparison criteria, a system can be considered to enable LD if it scores in the criteria 4 (transient delegation of power) and 5 (ability to change opinion / vote – i.e., "liquidity"). Also Blum & Zuber [4], independently, defined criteria for LD that overlap with those by von der Elbe: according to their definition LD is characterized by direct democracy, flexible delegation (equals von der Elbe's crit. 4), meta-delegation, and instant recall (von der Elbe's crit. 5).

According to von der Elbe, Votorola reached full score in both criteria 4 and 5. LiquidFeedback received full score for criteria 4 (transient delegations) and only 3/10 for criteria 5 (liquidity). A third

system, Adhocracy, scored fully for delegations, but failed to exhibit liquidity. As the other criteria are targeting e-participation systems, they are of no relevance to LD systems in general.

Other LD systems have been mentioned by Paulin [35], who lists six LD instantiations known by 2016: Župa, LiquidFeedback, Civicracy, Polly, democratia2.ru, and GoogleVotes. In 2017 a new system, Sovereign, appeared.

For some of these and other systems no documentation can be found in support of their categorization as systems that would enable LD. Polly [16] for example, is associated with LD only by a brief mentioning on their Github page, with no further justification as to whether or not Polly would indeed offer both delegated voting as well as the required liquidity. Also for democratia2.ru, which is being considered as a variation of LD by Velikanov [48], no source can be found that would justify its categorization as a LD system.

Another system that is often associated with LD is Adhocracy. The reason why it is associated with LD is that the organisation that developed it is called Liquid Democracy e.V. However, Adhocracy has been identified by von der Elbe [17] as a system that is capable only of delegated voting without the liquidity necessary to qualify as a system for LD. Further confusion is added by scholarly publications such as the one by Harraß [23], whose title implies that LD was being used in an e-participation pilot of the German Bundestag's (parliament) Commission of Enquiry "The Internet and the Digital Society". Also Ramos [43] implies LD being used in this e-participation pilot making use of Adhocracy. Said e-participation pilot however merely involved the partnership of Liquid Democracy e.V., which provided a modified version of Adhocracy that attracted about 3.250 users to participate in online deliberations on the theme at stake [19]. Despite an abundance of publications, neither use of transitive vote delegation, nor the use of any "liquid" features are reported.

Several peer-reviewed scholarly publications falsely claim that further organisations have made use of LD. Thus, Christoff & Grossi [12] mention the former Swedish political party Demoex having used LD, which is wrong. Demoex was merely a so-called proxy party [7], which aimed to score by giving their party base direct-democratic access to define how Demoex's representatives (if any) would have voted in city council or parliament. They also mention the US campaign Make Your Laws, but also for that no indication exists that they would have made use of LD. According to the description of the principles of Make Your Laws [32] the idea was likewise that of establishing a proxy party.

Claims of LD being used or intended to be used are occasionally made by organisations and individuals from politics. Such claims mushroom in form of news articles, blog posts or similar. Thus for example, according to the online magazine TechCrunch [28], the Australian political party Flux Party aimed for providing LD in 2016 (but apparently failed), and so did David Ernst, a political candidate in California who aimed to score by promising LD, but apparently failed as well.

False credit on the use of LD is also given to the European research project WeGovNow [5], for which e.g. Bloembergen &al. [3] or Brill [8] imply that it had used LD. Alas, when studying the deliverables of the project, one finds that all that has been done in the project was to integrate LiquidFeedback into a WeGovNow platform prototype [1]. No evidence of any conducted pilots that would have made use of LD or at least delegated voting has been published, nor is obtainable on request [40].

This section aims to provide a comprehensive overview of the known LD systems considering the available knowledge on their features, status, and fate. As of 2020, the known systems for which enough evidence exists that they implemented both transient power delegation as well as liquidity of power delegation are: Votorola, Župa, LiquidFeedback, Google Votes, Civicracy, and Sovereign.

2.1. Votorola

The earliest known project to design a system for LD is Votorola, which Michael Allan began developing in 2007 [51, 52], later joined by Thomas von der Elbe and Christian Weilbach [14]. Votorola remained under experimental development until 2014 [50] and reached alpha-level maturity. The German Pirate Party considered Votorola as a tool for their inner-party decision-making procedures [29], but did not decide to use it in the end. No applied use of Votorola has been documented.

2.2. Župa

Župa has been developed by Alois Paulin between 2008-2009 and is the first LD system that has been adopted for use by a real-world organisation, the Student Union of the Faculty of Information Studies in Novo mesto - ŠOFIŠ [41, 42]. ŠOFIŠ was established in 2010 with Župa being an integral part of the organisation's statute.

In Župa, power could be transiently delegated to others in the community and withdrawn at any time. Digitally signed proposals to the community (for, e.g. funding of projects) were published anywhere on the WWW in form of meta data stored in a Web page (HTML document), which were detected and visualized by a browser plug-in. Votes on these proposals could be published publicly online in form of meta data stored in any HTML document or cast anonymously. Web crawlers would crawl the WWW to extract this meta data, and thus gather information on published proposals and public votes. The Web crawlers would make this information available on a central Web page. Once a proposal would have gathered support beyond a certain threshold (e.g. the support of 51% or 75% of all members of the community), the proposal could be enacted.

Župa however never reached past the stage of a proof-of-concept (TRL 3-4), as ŠOFIŠ failed to commit to using LD even before Župa could be tested in a real environment [35].

2.3. LiquidFeedback (LQFB)

The German Pirate Party used LD through their system LQFB [2] during the period of May 2010 to May 2015 [27] as a method of allowing their party base to elect non-binding guidelines on opinions on matters to be represented by the party. However, due to constraints of German law whatever has been decided online through LQFB was not binding (ibid.). Also, the party leadership actively refused to follow these decisions [39], which led to an erosion of relevance of the LD tool. According to the data presented by Kling &al. [26] a sharp decline of user activity in their LQFB system could be observed towards the end of 2013. LQFB reached TRL 7-8.

The case of the German Pirate Party's use of LQFB is by far the most prominent and best studied case in which LD had been used in practice. It also is the only documented case of a LD system actually in use over a relevant period of time. Several scholarly publications have appeared describing the extent to which LD had been used by the German Pirate Party. Thus, Jabbusch's [24] graduate thesis [cf. 35] describes the story of the introduction of LD to the German Pirate Party; Kling &al. [26]

provide the only available data-based insights in voting behaviour within any LD system known; Korthagen &al. [27] provide a description of and some reasons for the decline of LD in this party; Bullwinkel & Probst [10] give insights into the implemented rules of voting and the dynamics of voting in LQFB as used by the German Pirate Party; Buck [9], Zolleis &al. [53], and others [4, 31, 35, 49] described and discussed the use of LD through LQFB in the German Pirate Party during its period of increased popularity and exposure to the public.

Another use of LQFB has been described in detail by De Cindio & Stortone [15]. This was *ProposteAmbrosoli2013,* a LQFB pilot conducted in 2013 to promote a political candidate in occasion of the regional elections in the Italian region Lombardy. The pilot attracted 1.120 registrations, out of 46% never conducted any action, out of the remaining 609 nearly half conducted only one single action; only three users indicated that they had used the delegation feature of LQFB.

Further examples mentioned by De Cindio & Stortone [15] of LQFB being used or piloted are Liquid Friesland [30], the civil society organisation "Slow Food Germany", the Italian Pirate Party, and several local groups of the Italian political movement "MoVimento 5 Stelle". Although the use of LQFB implies the possibility of delegating votes, for none of these cases reports of any actual use of vote delegation can be found. Two trials that took place in Italy in 2012 - one taking place in occasion of the 2012 Sicilian regional elections (attracted 315 registrations [15]), another as part of the TV show *Servizio Pubblico,* failed to reach levels of significance that would allow testing "the possibility for LQBF to enable purposeful and extensive initiatives of civic participation" (ibid.). Use of LD by Liquid Friesland, Slow Food Germany, and the German company Synaxon AG has been also mentioned by Ramos [43], who also fails to substantiate his claim.

2.4. Civicracy

Civicracy was a system developed by Madl & Hainisch in 2012 at the Vienna University of Technology [21]. The system was born out of a research initiative and reached TRL 3-4.

The objectives of Civicracy differed slightly from those of Župa or those of LiquidFeedback: Civicracy aimed to use LD to constitute councils of representatives that would represent a larger group of members. The membership in these councils would fluctuate according to the principles of LD, thus the council members would not be fixed, but whoever would be holding an amount of delegated trust that would surpass a certain threshold would be member of the council. Furthermore, a dampening mechanism was built into the algorithm that would prevent impulsive action, thus making the "liquidity" of the delegations slightly more viscous.

The concept of the system was tested through simulations, and efforts were undertaken to convince the student union of the university to use the system for their operation. However, the student union showed no interest in using LD, so an experiment never materialized [35]. Another attempt was made to pilot the system at schools, but only about 20 students out of a required ca. 250 could be motivated to participate in the experiment [21].

2.5. Google Votes

From March 2012 to February 2015 Google ran a LD experiment, Google Votes, amongst its employees [22]. According to Hardt & Lopes [22] the LD system was coupled to Google's internal social corporate network Google+, which was used for publication and dissemination of proposals. Google Votes attracted 15.000 employees to cast votes, out of which 3,6% were delegated votes.

2.6. Sovereign

Most recent to appear on the stage of LD systems was the Democracy Earth Foundation, which claims to have pioneered digital democracy by having authored "some of the most prominent open source democracy software as ranked by the GitHub community" [47]. Their claim is to have "founded the first digital political party in the Americas, the Partido de la Red (Peers Party) that ran for its first election in the city of Buenos Aires in 2013. In 2014 [they] shared [their] experience in TED Talks reaching over 1.2 million viewers. During 2015 and 2016, Silicon Valley's Y Combinator and Fast Forward founded [their] efforts to start the Democracy Earth Foundation". (ibid.)

Democracy Earth Foundation is developing the system Sovereign [45], which according to Siri et al. [47] provides all features expected from a system that would enable LD. Thus, delegation of voting power, both topic-based ("tag limited delegation") as well as general, is possible, as are transitive delegations, and overriding of votes made by delegates on one's behalf; voting is possible both public as well as secret. Besides the LD module, a deliberation module, Agora, is available. Sovereign is a successor to DemocracyOS, "a simple direct democracy project [they] created in 2012" [47], which the Argentinian Partido de la Red aimed to use in an effort to attract votes as a so-called proxy party [33].

No data on any actual use of the software however is available so far. The organisation claims to have piloted the platform "in a digital plebiscite enacting a symbolic vote among the diaspora of ~6 million expatriate citizens" [47], however no information is available on the details of this pilot, such as e.g. the number of participants, the utilisation of LD features, the length of the pilot, etc.

3. Varying perspectives on liquid democracy

If a group wants to arrive at a collective decision or decides to empower somebody to act on behalf of the group, then it had traditionally two possibilities: it could elect some of its members as representatives to arrive at the decision on behalf of the group, or all of its members could arrive at the decision collectively by some form of voting. Both these traditional options involve some kind of expression of will by its members. This can be done through e.g. election, voting, or perhaps a mandate expressed in written form as for example power given to an attorney. Variations of these traditional methods are then applied in bodies of state governance (parliaments, city councils, elective assemblies, etc.), corporate governance (executive boards, shareholder meetings), or e.g. in situations of class action lawsuits.

With its characteristic *liquidity* LD goes beyond being an advanced voting mechanism. In their attempt towards establishing a thorough theory base for understanding LD, Reichert & Panek [44] distinguish between the delegated voting feature, LD as an elaborate form of enabling participation of citizens in affairs of the state, and LD as a new form of a democracy in which democracy is seen a way of making public governance a responsibility of society, rather than a service provided by the state through its government. This section shall briefly outline this *trinity* of LD.

3.1. A voting mechanism

Liquid democracy (LD) is an alternative way for groups to arrive at collective decisions. In contrast to voting, elections, or written delegation of power, which all involve a one-time expression of will by each member of the respective group, the LD concept enables each member of the group to delegate its power to another member (who can delegate it further), and withdraw it again at any time. Traditional voting is a single event: the group can vote on something, like for example what law will rule them, how their budget will be distributed, or who will represent them. LD on the other hand is a living network that describes the power relations within the group. Traditional voting is a process: when the process finishes, the group has arrived at a collective decision. Power distribution within LD on the other hand is a temporary state of the network –once a collective decision is to be made, those members that jointly hold enough power to decide on behalf of the group can make the decision virtually instantly. To this end, LD is first and foremost a novel mechanism.

The mechanism of LD described above is predestined for a novel form of voting. If thought of as a voting mechanism, LD is limited to delegating trust by electing representatives, or voting on preferences of a group on certain matters of public interest (such as for example policies or opinions). Accordingly, LD in terms of a voting mechanism can be easily applied to existing political systems, or for internal policy forming of political parties.

LD as a form of voting on non-binding policies has been implemented by the German Pirate Party [2, 24, 26]. LD as a way to vote for members of a council of representatives was the objective behind the system Civicracy [21]. The LD system Župa aimed to serve a student union to elect its officials in a LD way, and to vote on which projects to fund [41, 42]. Google Votes, an internal LD experiment of Google used LD to vote on the available food in their staff kitchens, logotypes of projects, and so on [22].

3.2. An evolution of participatory democracy

Political organisations that embraced LD perceived it predominantly as an evolved form of e-participation. Thus, the German Pirate Party deployed LQFB as a tool to source the view of the party base on which directions the party should take [9, 10, 24, 27, 39]. LQFB has been designed as a LD tool for trust delegation and delegated voting, but not for discussions. The system Sovereign, on the other hand, which the Argentinian Partido de la Red aimed to rely on, offers also a debating component called Agora [47]. Other political parties such as the Italian Pirate Party, the MoVimento 5 Stelle movement, the ProposteAmbrosoli2013 candidacy, as well as regional initiatives such as Liquid Friesland, all aimed at offering citizens LD as an evolved form of e-participation.

A major reason for Blum & Zuber's conclusion that LD is superior to representative democracy was that LD has "a greater capacity for mobilizing policy area expertise than its counterpart [in terms of that] it allows for policy area specific representation" [4]. This way, LD allows for instant fine-grained participation on matters that each citizen considers of interest to themselves, while exercising their interest in participating on shaping policy.

This view of LD being used for participation in policy-shaping has been adopted also by Caragiannis & Micha [11], who see "the main idea of [LD being] to allow citizens to be involved actively in everyday decision making within society". From this perspective, they aim to assess "how effectively [LD] is in discovering the truth", whereby by *truth* they imply the existence of a *ground truth / correct answer* to any voting situation a community would face. Unlike Blum & Zuber who consider LD

being better suited for mobilizing expertise, Caragiannis & Micha conclude that LD is "very ineffective in discovering the ground truth".

Also Reichert & Panek [44] see LD as a warrant for the inclusion of stakeholders into the political discourse by allowing them to express their opinions in a way they would do in other participatory processes. As such, they consider that it is a main objective of LD to structure discourse on policy in a way to reduce the barriers to participation in such discourse as far as possible.

3.3. A new form of democracy

Some scholars use the term liquid democracy to stand more generally for a form of democracy. Ramos [43] for example emphasises that LD "represents the need for a new political contract that cannot simply be resolved within existing systems (representative, autocratic, or oligarchic)", pointing out that a transition to a LD as a new form of democracy would entail "political and social mobilisations and struggles that force a shift in the core rules of the game, much like the *Magna Carta* in England altered the landscape of social expectations in the exercise of power." (ibid.)

Blum & Zuber [4] take the perspective of LD standing for a new form of democracy, when they compare LD to representative democracy and direct democracy. Comparing LD to representative democracy as the best systemic alternative, their conclusion is that LD "is more epistemically reliable and more egalitarian than representative democracy" (ibid.). Under such novel form of democracy, Blum & Zuber see further research questions to be addressed in order to provide a full picture of the liquid democracy: "Should the executive consist of a president with an appointed cabinet? How exactly would a budgeting system work under liquid democracy? How should the agenda-setting process be structured? How should the reputation and ranking system be designed?" (ibid.)

Some of these questions posed by Blum & Zuber have been addressed by Paulin. Budgeting in a liquid democracy is featured in the proposed "Quantum Budget", a model aimed to provide public funding by means of LD [38]. Some considerations how to empower executive roles in a liquid democracy have been made in the course of the LD systems Župa [41, 42] and Civicracy [21], as well as in more detail in Paulin's nonmediated governance concept [34, 36, 37, 39], in which he describes a liquid democracy in that executive roles as well as policies are assigned by means of LD.

4. Summary

This paper aimed to establish an overview of state of the art of research on and development towards liquid democracy (LD). To this end, the paper first defined LD based on the publications by Paulin [35] and Blum & Zuber [4], then described the known technical systems based on the characteristics defined by von der Elbe [17], and finally discussed the *trinity* of LD by following the works of Reichert & Panek [44] and others.

We found that while many organisations boast about using LD or intending to use LD, only few have actually used it, or developed systems capable of providing the functionality required for LD. Such LD-capable systems for which sufficient documentation exists are Votorola, Župa, LiquidFeedback, Google Votes, Civicracy, and Sovereign. Out of these systems, documentation exists only for LiquidFeedback and Google Votes that confirms that the systems were tested at least as pilots.

Having established a deep overview of published literature on LD, we found that LD is being a topic in two separate research communities: democracy researchers and researchers interested in artificial

intelligence. The community of democracy researchers is interested in the developments of LD as a novel form of democracy, the artificial intelligence research community on the other hand is predominantly occupied with exploring LD as an advanced way of decision making.

The reviewed papers exposed a *trinity* of LD in terms of three different perspectives of the concept: From the first perspective, LD is an advanced way for communities to arrive at decisions beyond the traditional voting. From the second perspective, LD is a way of participation, in terms that it allows members of a society participate in matters of public interest, such as policy forming, budget allocation, and so on. From the third perspective, LD is a new form of democracy, in which public governance is a matter of the society, rather than a responsibility of the state [cf. 37].

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SMART CITY GOVERNANCE FROM BELOW: HOW HUNGARIAN TOWNS RESPOND TO THE NEED FOR INSTITUTIONAL DESIGN AND DIGITAL CAPACITY BUILDING

Tamás Kaiser[1]

Abstract

One of the most important focal points of the complex processes taking place in the world has been created by highly diverse urbanisation zones, which all face similar problems. At the same time, for historical, economic and cultural geopolitical reasons, each town needs an approach that is tailored to its specific characteristics and needs. However, relatively little attention has been paid to developing the elements of a supportive environment, the process of planning and capacity-building needed to manage a smart city, and exploring concrete cases and best practices. This study examines initiatives supporting the conditions for smart city governance within the framework of the Digital Welfare Programme (DWP) launched in Hungary, with particular focus on the development of a marketplace as an info-communication platform to support the planning process.

1. Introduction

Today, around 55% of the world's population, over 3.5 billion people, lives in towns. This figure is expected to rise to 66% by 2050, while the number and size of towns are also growing: while 83 towns had more than 1 million inhabitants in the 1950s, this number rose to 512 by 2016 [23]. The importance of urban areas is also demonstrated by the fact that the urban built environment accounts for only 3% of the world's total land, while it accounts for 60-80% of the world's energy consumption and 75% of its carbon dioxide emissions and use of natural resources [22]. As a major consequence of the above, twice as much energy will be needed by 2050, but at the same time, CO_2 emissions should be cut by 50 percent to avoid dramatic climate change and its consequences. At the same time, besides general problems, it is evident – for historical, economic, cultural geopolitical reasons – that each town needs an approach that is tailored to its specific characteristics and needs. It is for this reason that the concept of a 'smart city' has recently received special attention. Although there is no uniform definition, it is interpreted in the extremely rich international and ever-growing domestic literature as the development and local application of innovative solutions, the efficient and sustainable use of towns' resources and cooperation with citizens. [12] [15].

So it is no exaggeration to claim that urban management has become one of the major development challenges of the 21st century. So the smart city does not simply mean the introduction of digital technologies, but it also includes the development of a collaborative digital ecosystem based on the active involvement of stakeholders and citizens. The leading role of large towns is obvious, but small

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and medium-sized towns have little or no resources, capacities and capabilities to address these challenges. Critical regional inequalities at both global and nation-state levels can be further exacerbated by varying degrees of digital maturity, the effects of which can be felt in economic, social and political dimensions [16] [18]. In order to address this problem, operation under changed conditions requires the introduction of new governance and management structures that are suited to the size and capabilities of towns, as well as the introduction of digital technologies. A growing body of literature on smart cities addresses different aspects of governance and management based on the mix of technology- and human driven approach [6] [9]. However, relatively little attention has been paid to developing the elements of a supportive environment, the process of planning and capacity-building needed to manage a smart city, and the exploration of concrete cases and best practices.

This paper seeks to examine the initiatives that support the conditions of smart city governance within the Digital Welfare Programme (DWP) launched in Hungary. The starting point is that smart city governance is a multi-level system that combines traditional institutional structures, stakeholder coordination platforms and elements of operational management. However, this is the result of longer institutional design and digital capacity-building, in which regional developmental differences, cultural factors and the extent of a 'digital gap' play a crucial role. The main aim of the paper is to outline the basis and directions for a forthcoming comprehensive research project. In this initial phase, the methods used include, in addition to an overview of the relevant literature, an analysis of DWP's regulatory environment, its strategic documents and pilot projects.

The paper is divided into three sections. First, based on an overview of the literature, we summarise the key elements of the smart city phenomenon, and in the second section, we examine the needs and capabilities needed to build a supportive environment for smart city governance. In the third section, we address the practical applicability of the theoretical model thus developed in one of the pilot programmes, and the creation of a marketplace implemented under the Digital Welfare Programme.

2. The smart city as a phenomenon

At present, *smart city* cannot be regarded as a theory or concept. However, there are many definitions, which can be grouped into three major types of smart city: some cities use smart technology (technology focus); others rely on smart people (human resources focus); yet others focus on smart collaboration (governance focus), or a combination of these three types, where appropriate [12]. Whichever definition we choose, the smart city is inextricably linked to economic, institutional, technological and cultural innovation taken in a broad sense.

Experience in practical implementation gained so far shows that the expansion of ICT-based technology and big data is a necessary but not a sufficient condition for a smart city to operate effectively, as there are many other factors and challenges that influence the life of urban communities, in addition to actually measurable values arising from economic development. For a town to be truly 'smart', its entire fabric needs to be explored, and the results need to be analysed, making it the subject of comprehensive social dialogue and discussion. In other words, in order for a town to attain digital transformation, it is first necessary to fully understand how it works and create a supportive environment for smart city operations.

Based on the above, the characteristics and measurability of a smart city are summarized below:

Dimensions	Measurable factors
Smart economy – *competitiveness*	innovative solutions, entrepreneurship, economic image and branding, productivity, flexible labour market, international embeddedness, smart specialization
Smart mobility – *transport and ICT technology*	local accessibility, national and international accessibility, availability of ICT-based infrastructure instruments, innovative and secure transport systems
Smart Governance – *forms of participation*	multi-level institutional and management structure, citizen and corporate participation, information transfer, developing forms of co-design and co-creation based on a supportive environment
Smart environment – *natural resources*	attractive natural conditions, environmental protection, sustainable resource management
Smart lifestyle – *quality of life*	cultural institutions, health conditions, individual safety, housing quality, educational institutions, tourist attractions, social cohesion
Smart people – *social and human capital*	level of education, willingness for lifelong learning, social and ethnic pluralism, flexibility, creativity, openness, engagement in public life

Table 1: Exploring the nature of smart cities
Source: Own contribution with additions based on GIFFINGER et al. 2007 [8]

This is, of course, a very comprehensive overview, in which categories can be quantitatively measured and evaluated using various variables, but each factor can also provide a basis for qualitative research [4]. In what follows, we examine the background and potential elements of building a supportive environment from the dimension of smart governance focusing particularly on the emerging role of platforms, business models and market places as elements of participation and active contribution.

3. Prerequisites for smart governance: developing a supportive environment

In recent years, cities have become 'smart' not only in the sense that they are now able to automate routine functions that serve, on the one hand, individuals, buildings and transport systems, and, on the other hand, provide opportunities for monitoring, analysing, and ultimately understanding and planning the everyday lives of cities. In any case, the experience gained so far has shown that there are no 'one-size-fits-all' solutions for 'becoming smart', and that pioneering cities have largely adopted strategies and action plans that are tailored to their own situations and capabilities [10] [17]. In addition to this diversity, however, three principles can be identified as the key pillars for building a *supportive environment*: an integrated approach to economic development and public service planning, creating the conditions for the practical, feasible and financially sound selection of investment projects, and ensuring the participation and active contribution of stakeholders (private sector, citizens, academics, government).

This requires also a 'digital elite' (entrepreneurs, managers, media professionals), whose attraction and retention is one of the most important tasks. However, the success of becoming a real smart environment depends on a dynamic and stimulating culture that active participation and commitment of the people can be created, along with the development of a sense of 'ownership' in regard to joint planning and development projects. This also means that, in practice, a smart city is based on the network of actors involved and the cooperation among stakeholders based on mutual benefits [11] [14].

This highly complex system is subdivided into further thematic units, such as infrastructure, energy, transport, water management, services and building management, which have their own communication systems, data, platforms and applications, but in separate organizational structures (silos), limiting access to data and their use. Today, a vast amount of data can only meet specific needs, but are essentially lost for common good. Therefore, linking different standards and integrating them into complex *info-communication platforms* are an essential element of moving forward [2] [3].

The platform relies on the basic infrastructure available, but constantly upgrades it with state-of-the-art technology to match demand and supply, such as the quick and easy collection and delivery of publicly available spatial data, area codes, demographic, tourism and economic data. The platforms take advantage of opportunities provided by the town, while requiring the least amount of investment from the service provider. The common basis for this is reconsideration of urban governance, creating new forms of institutional and partnership agreement based on digitalisation, management techniques and the necessary human capacity. In addition, new instruments supporting design and decision-making are needed to build a *business model* that can be applied across the public sector by showing how to create and capture value [13] [19].Business models provide a tool for stimulation and testing the innovative ideas as well as serve as an appropriate tool to explore and understand the role, attitude and motivation of different stakeholders at territorial and urban level [1] [20] [21].

Building a business model, a *marketplace,* is one of the most important instruments for planning and management in the development of smart cities. The marketplace is an open info-communication platform that connects government actors and investors with vendors of new technologies. The platform will help towns find comparable information on products, validated results of previous investments and peer reviews. As for vendors, they can offer their products and related smart solutions, as well as showcase their previously successful innovations, focusing on types of towns and technologies. The key function of the smart city marketplace is therefore to facilitate, as well as simplify and accelerate, the process of matching supply and demand, and to confirm and validate new technologies and the conditions for their application. An important element of the viability and sustainability of the marketplace is the spill-over effect, as a result of which new cities, data, information and feedback are constantly added.

The European Innovation Partnership on Smart Cities and Communities (EIP-SCC), which aims to bring together cities, industrial companies, small and medium-sized enterprises, banks, researchers and all stakeholders involved in smart city investments, is crucial among European examples [7]. The EIP-SCC is actually an information and communication hub, which is used to communicate the latest news, events, documents, partnerships and development results. The platform makes it possible to find partners with appropriate expertise and experience in joint development projects, provides insight into completed or ongoing projects, evaluates the obstacles and opportunities arising during implementation, and benefits from inspirational results. Similarly, the platform can be used to present and promote a particular project and enhance its visibility, thus attracting new investors. Last but not least, EIP-SCC assists in exploring funding opportunities and information on current EU grant opportunities.

EIP-SCC also acts as a forum for discussion. It is suitable for initiating a dialogue on a specific issue, discussing the best ways to overcome obstacles and achieve results. It engages public and private actors and stakeholders in a discourse on smart city development across Europe. One of the initiatives ids the EIP-SCC's action cluster on Business Models, Financing and Procurement for Smart Cities (AC BM), lead by the EUROCITIES, a city network of over 140 European cities. The AC BM organizes expert-level discussions has proved to be an ongoing platform to promote and share ideas.

Another key initiative is the Matchmaking activity which supports city project promoters with financing by bringing smart city projects closer to investors with the aim of developing better quality projects from the viewpoint of financing.

Marketplace-type planning instruments are already available in several countries, allowing for flexible adaptation to local needs and opportunities and taking into account the particular level and spatial distribution of digital maturity. In the next section, we will present a marketplace toolkit within the DWP launched by the Hungarian government in 2017 that focuses on the needs and opportunities of small and medium-sized towns.

4. The marketplace as an open platform and digital stimulus: an opportunity for small and medium-sized towns in Hungary

In 2015, the Hungarian Government began a comprehensive digital development strategy with DWP 1.0. In the first phase, measures were introduced into the public administration system (e.g. free Wi-Fi in town centres and creation of a public data cadastre). [2] The second phase, which began in 2017 (DWP 2.0), defined the areas of development by chapter and coordinated implementation within the governmental organisation[3] Currently the implementation of the strategy has been managed by the Ministry of Innovation and Technology – with interdepartmental competence[4]. 'DWP Points' (1,500 in place at the end of 2019) assist smart city projects throughout the country, though mainly in smaller settlements. They are designed to provide scope for digital literacy development and electronic administration. These specific tasks are aided by a 100-person mentoring network.

The four pillars of the DWP are digital infrastructure, digital competencies, the digital state and the creation of a digital economy. The pillars are supported by horizontal themes, and in this area we find the smart city development fields fall into three interrelated subfields. The three subfields are as follows: professional training in digital regional development, smart city pilot programmes and a smart city marketplace. According to Article 3 of Government Decree 56/2017 (III.20.), cited above, a "Smart city means a city (or town) that develops and implements its integrated urban development strategy on the basis of a smart city methodology, a town or group of towns that develops its natural and built environment, its digital infrastructure and the quality and economic efficiency of its services using modern and innovative information technologies in a sustainable manner, with the increased involvement of the population." The horizontal nature of smart city development is also reflected in the fact that its implementation is supported by the main pillars. The *digital state* in and of itself entails the digital renovation of public administration, including the support of the online presence of local governments and the creation of a level playing field for the Hungarian digital industry. The digital competencies pillar encompasses Hungary's digital education strategy and digital competency development. Among other things, the digital economy pillar contains Hungary's digital start-up strategy.

In order to reach the scale and scope of the emerging supportive environment, Government Decree No. 252/2018 (XII. 17.) on the Establishment and Operation of Smart City Central Platform Services appointed the Lechner Knowledge Centre as the provider of the centralised public service of the Geographic Information System Platform for Settlements and designated the city of Monor as the local government that is currently connected to the smart city central platform service; subsequently,

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[2] See: Government Decree 2012/2015 (XII.19.) DWP 1.0
[3] See: Government Decree 1456/2017 (VII.19.) DWP 2.0
[4] See: Government Decree 94/2018 (V.22.)

other cities will follow suit. The essence of the platform is that a central "standard package" will be developed, open for other settlements to join, and they will need to deal only with those developments that serve specific local needs. In addition the Lechner Knowledge Centre develops Smart City Methodologies. Based on the requirements of Hungarian cities and the guidance of the European Union, the methodologies contain proposals that may ensure the systemic implementation of certain smart city development models. The Inventory of the Smart City Methodologies already contains 234 projects in Hungary, and 900 in the world in total. In Hungary, it monitors projects implementing smart city developments in roughly 66 settlements[5].

From 2017 onwards, the marketplace element of the smart city component of the DWP strategy has been constantly evolving as a complex software solution - in a form of an info-communication platform - for developers and suppliers to present their smart city products and buyers to learn about the detailed features of the products. The platform established contains legally, technically and economically validated and quality-assured suppliers and products and makes them available primarily to local governments, state and municipal institutions and business associations. One of the most important aspects of the marketplace is that the services provide financing options and return calculations, which greatly facilitate the work of municipal decision-makers considering smart urban developments. The goal is to make it easier for customers involved in the development (city leaders, company representatives) to find the right tools to meet their needs.

The process of entering the platform begins after registration with the creation of a profile. This is important in order for the platform to categorise settlements based on size and economic, social, geographical characteristics and issue maps. Registration and access to information is free for municipalities, while businesses have to pay a minimal fee. They will then have access to the marketplace, including the product catalogue. The most important element of the latter is a datasheet of available products, which contains legal and warranty information, technical and compatibility data, investment costs, and social impact figures. A similar process takes place on the vendor side of the marketplace. After registration, candidates enter into a contract with the marketplace, followed by legal, technical and economic validation, then a social return calculation. This process results in a product data sheet which is made available to customers. The marketplace offers other services in the existing product catalogue, including trademarks, the registration of consultants, newsletters and blog information on financing options, and. in this context, runs a return calculator [5]

The functioning of the marketplace is closely linked to the other two elements of the horizontal theme of the DWP smart city. Specialist training in digital spatial development, the first comprehensive smart graduate training course in Hungary, is provided by the Edutus University, the National University of Public Service and the Moholy-Nagy University of Art and Design. The target group is made up of professionals who have the appropriate knowledge and influence on the decision-making processes of their cities or towns. The aim is to train professionals who have a thorough knowledge of the relationship between digitisation and towns and cities and smart city considerations and practices. Graduates will be aware of smart city solutions and will have enough knowledge to launch and implement a related project.

The second component, the first phase of pilot projects at nine sites, is undergoing substantive studies.[6] The methodology applied during the studies can serve as an example for municipal (smart

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[5] See in detail: Smart City Methodologies, available at: http://okosvaros.lechnerkozpont.hu/hu
[6] The pilot project locations: three districts in Budapest (the 8th, 11th and 17th), Tata and Tata County districts, Balatonfüred and Balatonfüred County districts, Tamás, Nyíradony and Nyíradony County districts, and two non-urban

city) developments: it plans data-based developments, takes into account the size and needs of the user community, the aspects of financing and sustainability, and the characteristics of the settlement. It is significant that the methodology also utilises the results of other digital strategies (e.g. education strategy, agricultural strategy, health strategy, Carpathian Basin digital ecosystem) applied to the situation assessment of smaller settlements. Finally, the studies present the cost structure (investment and maintenance) of the proposed improvements based on the identified capabilities and opportunities, as well as the calculation of the return on the improvements.

The tools of this methodology are opinion polls and the secondary data collection (examination of the administrative, economic, IT and social characteristics of the settlement/region based on the data of the Hungarian Central Statistical Office), the enumeration of existing developments, their analysis, the processing of accepted site development plans, and interviews with decision makers, the civil sector and institutional leaders, i.e. all stakeholders in the area. The main purpose of surveys is to assess the digital status of a given area. The main elements of these surveys is to explore socio-demographic and statistical issues, use of internet and social media, use of e-government (customer gateway, e-administration), commerce, and use of electronic payment methods and smart tools. [5]

It is too early to assess the effectiveness of the DWP marketplace. At the same time, it can be seen that in the realisation of smart city governance, the goals and tools of a supportive environment based on a common logic, and a multi-level, layered institutional structure are beginning to emerge.

5. Conclusions

According to some estimates, the number of connected devices, commonly known as the IoT (Internet of Things), could reach 50 billion by 2020. In the urban environment, new technologies appearing on the market are making significant changes to the life and functioning of cities. Experience has shown that all forms of settlement have to respond to rapid changes, so becoming a smart city could be understood as an inevitable process. However, this is not a development based on straightforward and unified models. Developments must take into account the geographical location, aptitude, level of development and size of the city. In many respects, the problems of small and medium-sized towns are different from those of developed large towns. Here, a lack of financial resources, difficulties in public procurement, and restrictions on the use of ICT tools are serious obstacles. This does not mean, of course, that a small town cannot be a smart city in general but it is particularly important at this early stage to introduce smaller-scale developments that can be directly felt in everyday life, such as smart parking, street lighting and waste management.

However, the use of ICT tools, platforms and the marketplace as an open info-communication platform is not enough to build a smart city. The creation and operation of the supportive environment – especially the marketplace – is often a long-awaited solution: the market for smart city applications and products is not regulated, there is no monitoring system for technical, economic and social features and impacts of the investments implemented under the title of smart city) and these circumstances may hinder the realisation of the developments at settlement and regional level.

The experiences of the initial phase of the implementation of the digital development strategy in Hungary clearly indicates that there is a strong need to create a supportive environment which requires the full involvement and cooperation of the municipal government and the citizens, as well as the

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development areas: Tokaj, the mountain range, which covers the area of the Tokaj wine region, and the heart of Pannonia, which covers part of Lake Velence and the Vértes Mountains.

development of effective management structures, business models, platforms and a sustainable marketplace. These efforts follow the good practices developed elsewhere, but showcase mainly Hungarian solutions, providing a space for Hungarian small and medium size towns and enterprises to present themselves and their innovative solutions.

Yet in order to unravel the details, a great deal of research is still needed, particularly in the areas of management, governance, technology, public policy, urban communities, the economy, built infrastructure and the natural environment. These factors form the basis of an integrative framework capable of exploring the processes that determine the future of a smart city. However, within this overall framework, our future research must pay particular attention to the different dimensions of governance, where city leadership plays an important role not only in producing smart city content, but also in understanding and managing the smart city operation.

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COMPARATIVE ANALYSIS OF EVIDENCE BASED-POLICIES IN THE ERA OF DIGITALIZATION

András Bojtor[1] and Gábor Bozsó[2]

Abstract

A well-functioning administration with embedded institutions enables the formulation of a competitive environment which propitiously effects the country's economic growth. In case of an intervention, the results and impacts should be measured and continuously monitored in a strategic policy cycle. These activities can be done on project and national levels and at the same time there could be a legitimate claim for carrying out international comparative analysis of results. The majority of public administration developments belongs to the scope of e-government. The evidence-based policy making is a component of good governance next to transparency, sustainability, efficiency, integrity and people centricity. Government obligations and responsibilities in evaluations vary from country to country. Digitalization brings new challenges for public service and governments are taking various measures in response to them. Evaluation can fulfil its role in the strategic policy cycle only if it can meet the political conditions with attention to ethical and methodological standards; can adapt to the digitalized circumstances. The paper aims a deeper analysis of evaluation phase, and to summarize the possible new methods reaching better results in public services and public administration services. In this paper we are going to conduct an international comparative analysis with a special attention given to a public administration development program in Hungary.

1. Introduction

A well-functioning pubic administration can significantly improve the level of well-being through its services. At the same time public administration also affects the competitiveness of countries and businesses. Hungary's Public Administration and Public Service Development Strategy 2014-2020 [1] emphasizes that not only businesses, but also public administration formulates policies that can encourage competitiveness. This paper examines the strategic policy cycle with special attention on the monitoring and evaluating phrases and introduces a framework which allows to conduct comparative analysis of public administration interventions at the evaluation phase. Educational and social interventions are evaluated regularly in the public sector. [2, p. 7] However, except some best practices, [3] there is a shortage of evaluations carried out in case of public administration reforms. By introducing a case study about the Hungarian public administration development program, we demonstrate the difficulties of carrying out evaluations with special focus on international comparisons. The Hungarian Government is committed to improve the competitiveness of public entities, therefore the Public Administration and Civil Service Development Operative Programme (PACSDOP) was introduced with the co-finance of the European Union in the 2013-2020 budgetary cycle.

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2. Monitoring and evaluation in the strategic policy cycle

The strategic policy cycle [4, p. 13] demonstrates the steps of handling a referred problem. Interventions are carried out, because a social / economic / environmental problem is revealed and an adequate policy response receives political support and gets implemented. The first step in the strategic policy cycle is the detailed analysis of the problem followed by its prioritizations and objective settings. In case of an EU funded program, the result of the indicator setting can be found in operative programs. Then action planning is followed by costing, monitoring and reporting. Evaluators will hardly dispose sufficient volume of data in the required quality without a well-structured and well-prepared monitoring system. A functioning monitoring and reporting institution provides the possibility to discover and execute minor corrections in the implementation phase. Reports carried out in the evaluation phase can focus on outputs, outcomes and impacts, but also can evaluate institutional background, operational quality or competence of management. The success of a program, defined consciously beforehand, can also be evaluated. Evaluation findings should already be available in the preparation phase of future programs.

There is not a commonly accepted definition behind some relevant concepts (e.g., outcome, impact [5]) which renders it challenging to execute and interpret evaluations. According to the OECD, the short and midterm results are outcomes, meanwhile impacts are the long-term results. [6, p. 27-28.] To make it more difficult to clarify what is behind these categories, the concept of result-orientation [7, p. 206.] has emerged connected to the 2013-2020 financing period of the European Union. The demand for evaluations parallelly increases with the spread of New Public Management techniques [8]. The European Union is committed to increase citizen satisfaction and intends to improve the efficiency in the use of EU funds [9]. Stakeholder consultation and engagement are expected in every stage of the strategic policy cycle (Figure 1). It can improve transparency, effectiveness and efficacy.
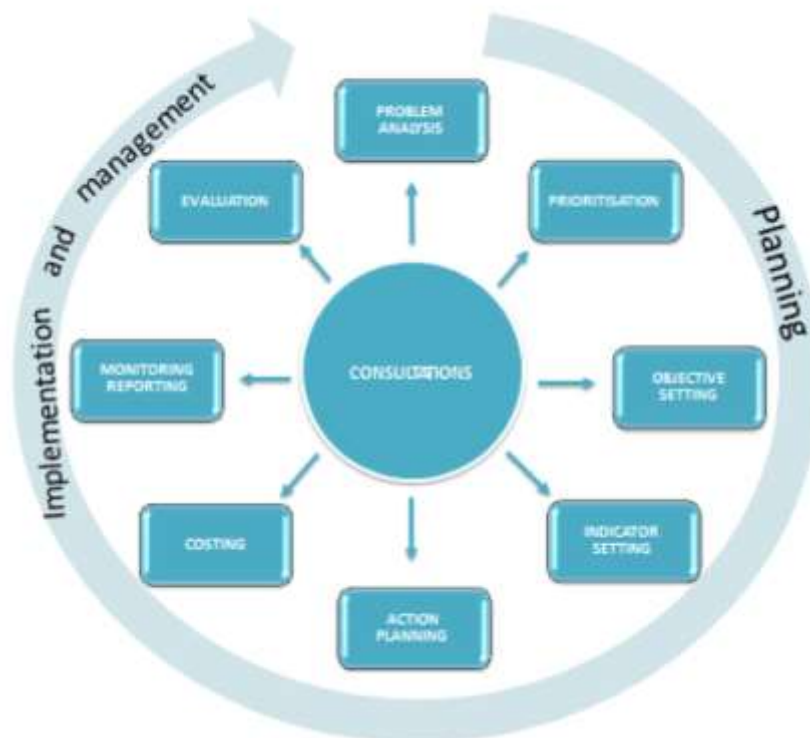
Figure 1: The strategic policy cycle [4, p. 13]

In phase of evaluation, research questions are determined by the evaluation criteria: relevance, coherence, effectiveness, efficiency and EU added value [10] in the case of the European Union. Variety of methods are available: e.g. selecting and analyzing performance indicators, making cost-benefit analysis or carrying out multi criteria analysis. The connections between the criteria and the output, result or impact indicators can be observed on Figure 2. It can be seen, that outcomes can refer to results in this model.
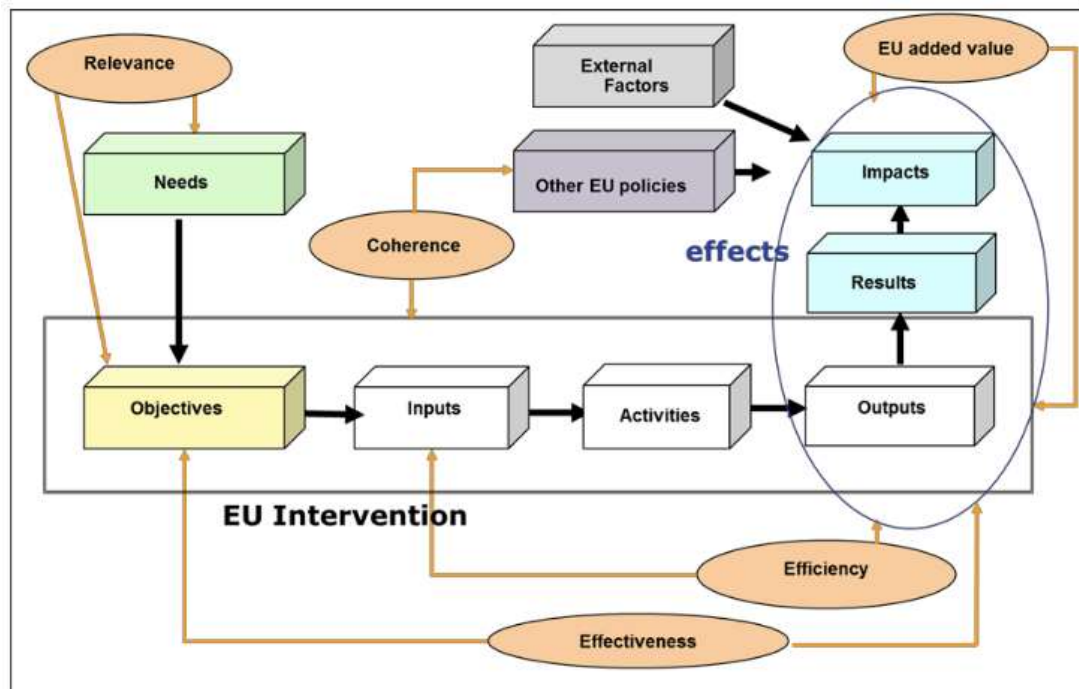
Figure 2: The model of interventions with the evaluation criteria [10, p. 336]

3. Reforms in the Hungarian public administration

Hungarian Government introduced several reforms in the past 10 years in the Hungarian public administration that can be defined as "deliberate changes to the structures and processes of public sector organizations with the objective of making them (in some sense) to run better."[11, p. 8] The territorial administration was totally restructured, the complete reform of local governments was introduced and the National University of Public Service was established as a main body to provide human resource management of public administration with well-trained and capable human resources, which was also positively evaluated by the OECD [12]. In the background of the centralised reforms, a strong and capable state-theory can be observed [13]. Essential elements of the public administration reform programmes [1], [14], [15] are currently being implemented by developmental projects financed by the Public Administration and Civil Service Development Operative Programme (PACSDOP). More than 935 million euros are planned to be spent on the development of the Hungarian public administration, which plays an important role in the process of improving the performance and efficiency of the Hungarian state with its indirect effects on the competitiveness of the business sector. The outcomes and impacts should be measurable and detectable in international comparisons as well; however, a good evaluation also should be able to distinguish the changes caused directly by the intervention or just a side-effect of unintended circumstances.

4. Methodological notes

International comparative analysis mainly can be carried out based on data collected by international institutions, like International Institute for Management Development, World Economic Forum (WEF), World Bank. Almost always there is an ideology behind these data collections. In some cases include shortage of methodological transparency or defined reasoning of data [16], [17] . In other cases we see that international rankings "simplify social phenomena, level unwarranted normative judgements, and selectively diagnose complex problems"[18, p. 62]. More than 93 different comparative governance indicators exist [19], with various number of countries involved in their data collections. The frequency of their publication (e.g. annually, biannually, or more rarely) is divergent. Between two publications, the methodology behind the same indicator can change radically, which makes it difficult to draw historical conclusions or evaluate their values or rankings. A well-designed, definite ranking is applicable when not only the ranking's objective and dissemination, but also its methodology is taken into consideration [20]. On one hand, a ranking system can cause a huge publicity and can draw the attention to specific issues. It can also encourage quality debates; it can enable the possibility to explore the studying effect. On the other hand, it may also have several disadvantages: the debate can be just about the place in the ranking, it can cause the improvised re-discussion of the long-term strategies [21].

Besides rankings, international indicators can be used in performance evaluations providing comparisons among countries. In case of public administration, the capabilities and capacities of the applied systems show wide varieties. There is a continuous pressure introducing reforms on public administrations. E-government development and digitalization is only a part of public administration reforms. Application of new methodologies like big data analysis (e.g. at the examination of the criminal activity during the Boston Marathon [22]), experimental research methods in the policy-making processes also augur good results.

Achieving improved competitiveness by digitalization is an important objective of the Hungarian operative program focusing on public administration development. The aggregated results or impacts of the implemented projects can hardly be detected in international rankings exclusively. However, their effectiveness, impacts cannot be denied in level of indicators. In this paper 5 indicators from four worldwide or regional rankings (the Ease of Doing Business, the Digital Economy and Society Index (DESI), the eGovernment Benchmark, the Global Competitiveness Report) are going to be highlighted and briefly discussed to characterize the changes in case of the Hungarian public administration development. The indicator selection was based on (i.) strong validity and reliability to public administration, especially to e-government services and (ii.) its connectivity to economic competitiveness; (iii.) availability of comparative data in EU and benchmark countries. 7

As the PACSDOP is currently in either development or implementation phase, several project results are yet to be delivered likewise its impacts. Furthermore, international rankings and indexes collect previous years' data, in our case 2018, 2019. These two factors only enable us to draw an ex dure, or midterm evaluation only.

5. International advances of PACSDOP

Selecting benchmark countries makes it easier to perform comparisons among countries. Analysts have to take into consideration the qualifications and interests of the target audience (who are going to read the evaluations). The projects of the Hungarian public administration development program,

partially financed from the Cohesion Funds of the European Union, are under implementation. In this case we can talk about intermediate results or impacts. By historical comparisons there is also a need of setting out a base year, when the effects of the program are not perceptible. In our case this year is 2016. Financed projects stepped into implementation phase next year. Data collection requires attention: using the report of Doing Business 2017 means that the data are collected in 2016, Global Competitiveness Report 2017 means that the data are collected in the first part of the same year, in 2017. As the PACSDOP is partially financed by the European Union, there is a need to emphasize the role of the EU, therefore the EU28 average is involved in the performance analysis. The rank of a country means the place among the 28 member states of the European Union.

The eight countries are selected for visualisation (keeping in mind relevance): Estonia (as a country which generally performs well in digitalization as a consequence of early introduced well designed digital reforms), the V4 countries (Slovakia, Czech Republic, Poland and Hungary) plus Slovenia (as EU countries with similar history and culture) and finally Bulgaria and Romania (as countries joined the EU together following the 2004 enlargement).

Developing e-government services is of little worth, if citizens and businesses are not committed to use them. Its EU wide applied indicator is the e-government users, collected by the Eurostat. It measures people who sent filled forms to public authorities, over the internet, in the previous 12 months aged between 16-74 years. Figure 3 shows that number of Hungarian users significantly increased from the base year, however lagging behind the two third of EU countries and EU28 average. Several new services were introduced (e.g. Hungarian Tax Authority introduced an electronic system of income tax return (eSZJA)) in line with legislative changes to promote e-governmental services. Later on, higher increase is expected as more development projects enters implementation phase.
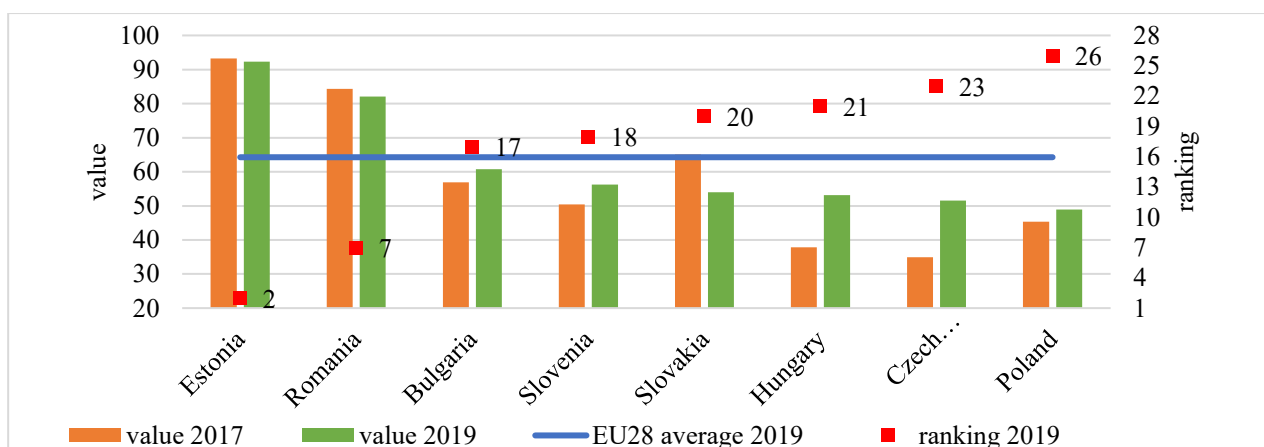
Figure 3: E-government users in different countries and their rankings in EU28
Source: https://digital-agenda-data.eu/

Users can choose to use e-governmental service only if it is available and they can easily adopt them. It is measured by the highly comprehensive user centricity indicator collected within the eGovernment Benchmark. The user centricity improved in all the visualized countries meaning that governments are committed to improve availability of services and paying attention to user satisfaction. It also can be assumed that their feedbacks are more important and taken into consideration by the developers. Figure 4 shows that all countries have made progress, but not good enough to outperform the last third, except Estonia. Hungary has gained relative position overcoming 4 countries in the past two years. [23]
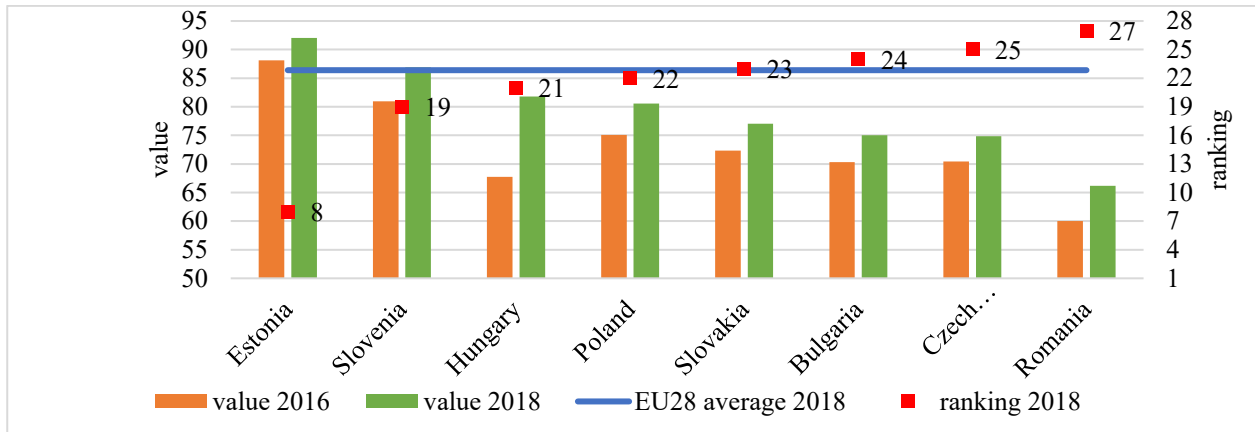
Figure 4: The user centricity values in the base year (2016) and in the latest available data (2018)
Source: https://ec.europa.eu/digital-single-market/en/news/egovernment-benchmark-2019-trust-government-increasingly-important-people

As e-governmental services are developed to provide easier and more cost-effective way of using public services, it is necessary to save users time. This can be reached if the identified user's data are filled automatically if it has already been given previously by the user. This is measured by a mystery shopping technique in various life events e.g. applying for unemployment aid. This indicator can increase on one hand by the development of the infrastructure and the interoperability between various data centers, and on the other hand by the satisfaction of citizens, meaning the improvement of user-experience. In case of Hungary, we can find adequate and significant improvement.
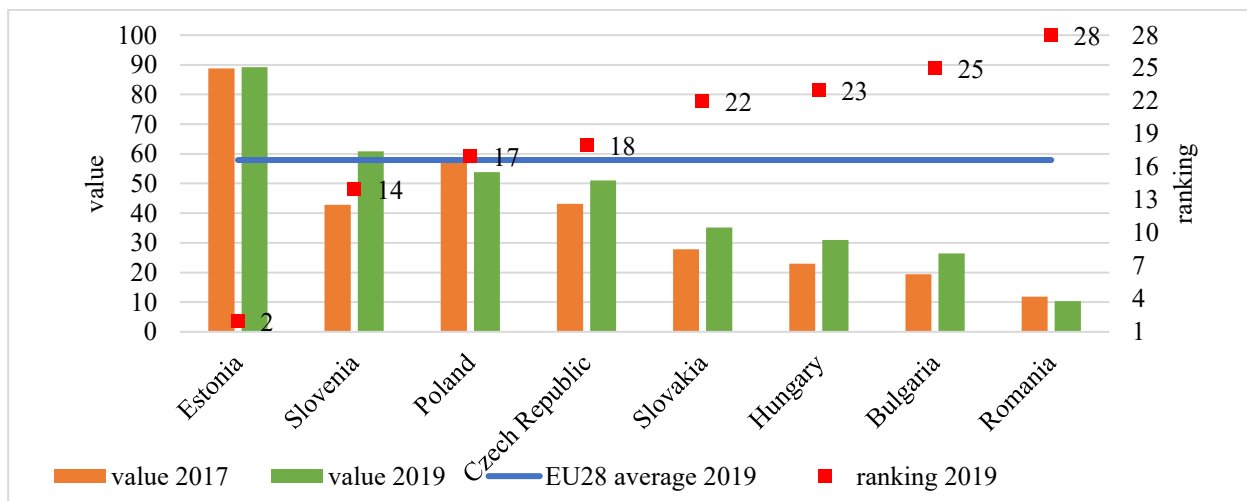
Figure 5: Prefilled forms
Source : https://digital-agenda-data.eu/

Not only e-government development can be compared internationally, but also some relevant selected sectors. As an illustration, we have chosen the taxation indicator of the Doing Business ranking system. The Hungarian tax system is usually criticised because of its rates and complexity. Several reforms were introduced recently, the rate of taxation was decreased, the tax-system was simplified and the level of digitalization, like automated income tax return (partially financed by the EU funds), was improved. All the activities together improved the taxation indicator.
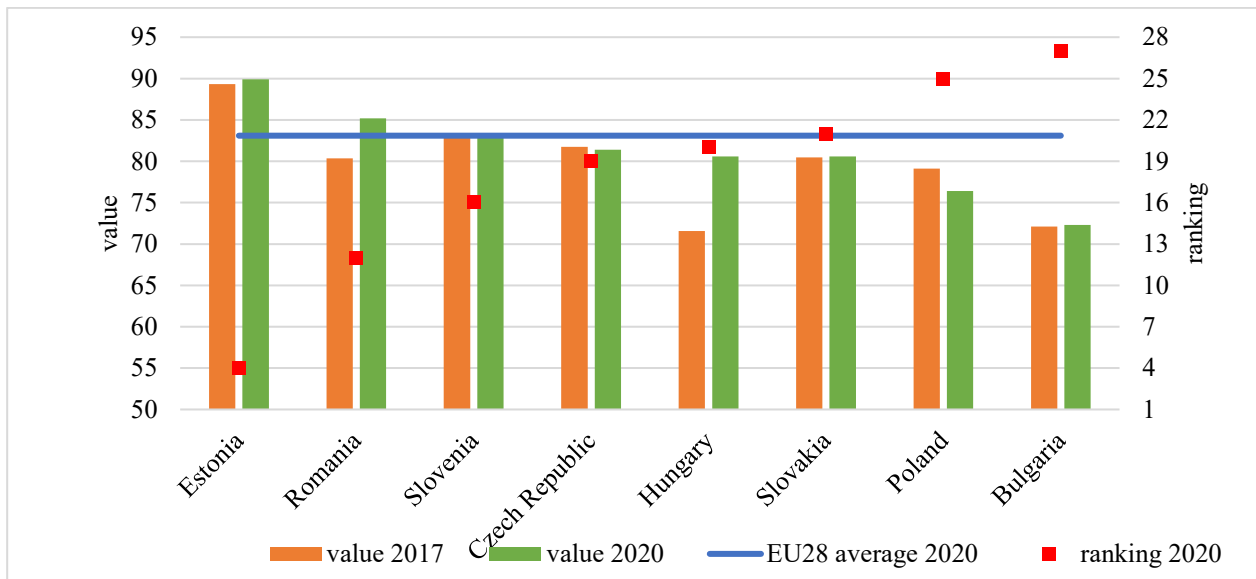
Figure 6: The values in 2017 (as base year) and in 2020 (as midterm year) and the ranking of taxation in 2020
Source: www.doingbusiness.com

International surveys also provide useful data for making comparisons. The WEF annually performs the Executive Opinion Survey that provides soft data about competitiveness. Among others it asks "In your country, how burdensome is it for companies to comply with public administration's requirements (e.g. permits, regulations, reporting)?" which can be replied with a 7 scaled scale where 1= extremely burdensome and 7 = not burdensome. The more than 16000 answers can improve the credibility of results. [23]
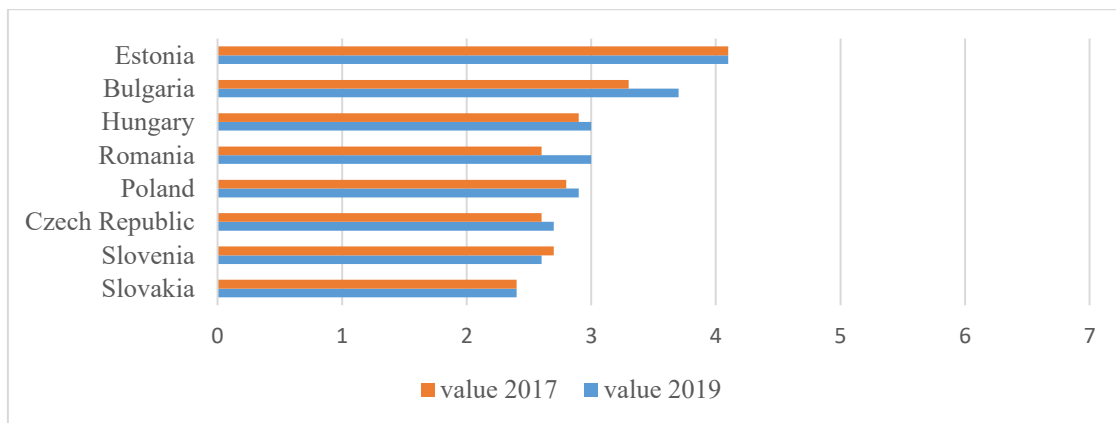
Figure 7: The burden of government regulation [23]

6. Conclusions

We have demonstrated the role of evaluation in the strategic policy cycle of public administration. As we have seen, evaluations are rarely carried out in this field, and international comparisons also have their limits. It is less evident to find the proper indicators for featuring the impacts of an implemented public policy program.

The selected international indicators evaluating the performance of the Hungarian public administration development program are various; some of them are based on hard data (e.g. government users) while others on soft data (administrative burden). These constraints should be

taken into consideration by evaluators. The example of taxation presented that the changes of an indicator can be caused by several factors, like changes in legislation, or technological development etc. The process of making evaluation is a balance of costs and benefits, which means that the more precise evaluation required, the more resource needed (more costly), and the value of the intervention should also be in line with that cost.

Most countries show visible improvements in the selected indicators and Hungary (alongside with Bulgaria) outperformed all countries by improving or significantly improving its values since 2016. Four out of the five indicators gained substantially (by 10% or more) and the one remaining also improved slightly. Speaking of relative position in rankings, it is worth noting that these advancements were only enough to close the gap and gain some places, but Hungarian values still yet to reach EU average in all 5 indicators examined.

The final conclusion is that the performance of the Hungarian public administration has improved and most probably is going to improve in the future compared to 2016. There are several projects in the implementation phase waiting its results and outcomes to evolve. An indicator showing an increase does not necessary mean that the country gains place in the rankings. It shows only the direction and an increase relative to others, while that other countries can improve their performance more rapidly and effectively.

It also important to keep in mind that not all the impacts of a project can be measured and other impacts can bring numbers down. Normative way of thinking can limit the borders of discovery, significant factors can lurk in the background.

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Relevance for the Danube Region

EXIT/ENTRY, VOICE/NOISE, AND LOYALTY/APATHY IN THE ERA OF SOCIAL MEDIA IMPACT OF SOCIAL MEDIA TO PUBLIC SECTOR

Hiroko Kudo

The contribution deals with how the way changed citizens interact with public administration due to Social Media. If focuses on the ease of mobilization and the "ease" by which communities can be built via Social Media. Whereas the marginal exit/entry costs to citizens into social networks has decreased considerably, the impact and also the costs to state authorities to deal with the effects of such networks increases. The paper uses examples from the U.K., however the contribution is particularly relevant to the Danube Region, as Social Media can help shape (or reshape) a political landscape.

Vîrtusu's paper exemplifies that in analyzing the effects these reduced entry costs to Social Media had on elections in Moldova, where one candidate apparently managed to shape the public perception of another candidate in a decisive way using Social Media – this at very low marginal costs and in a way much more efficient than it would ever have been via traditional media. Also the literature overview provided by Aburumman and Szilágyi lists a number of cases reporting similar evidence. Kudo raises a point here that goes well beyond current U.K. topics (such as Brexit) and has general applicability including the Danube Region.

Indices

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