

UNIVERSITY OF PUBLIC SERVICE
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**Csaba Fási: Complex analysis of the preparedness of officials in
the context of competitiveness and digitalization**

Thesis booklet

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1. Topicality of the topic, reasons for choosing it and hypotheses

Digital solutions have been part of our present for a while now, and the development of the digital ecosystem is intensive in Hungary as well but the breakthrough, the social prevalence and – sometimes – a sufficiently stable and strong political will to act is yet to come.

BUDAI – GERENCSÉR – VESZPRÉMI explained in their most recent work that *“we do not know when and what will bring the breakthrough that will completely transform the systems of society. Nor do we foresee whether this breakthrough will result in revolution or organic change. If it becomes revolutionary, we don’t know how much devastation it will do before it builds”*¹

The epidemic caused by the coronavirus has only increased the need for online solutions in education, the service sector and work, thus accelerating the digital transition. At the same time, the application of digital solutions requires competencies not only for businesses and for the members of the public but also for officials.

The selection of this topic was basically motivated by the examination of correlation between competitiveness, digitalization and the preparedness of staff members in the public administration. My research covered the digital preparedness and competence of officials in Hungary because the operational level and efficiency of the governance itself are important factors of competitiveness.

The hypotheses of this thesis have been divided into two groups. A part of them was solely certified by processing extensive literature, reports, indexes and recommendations. In addition, an empirical survey was conducted that target group of which had been predetermined. The large number of responses justified drawing broader conclusions from the results obtained

¹ BUDAI Balázs – GERENCSÉR Balázs Szabolcs – VESZPRÉMI Bernadett (2018): *A digitális kor hazai közigazgatási specifikumai*. Dialóg Campus Kiadó, Budapest. 24.

there. Other hypotheses could be confirmed or refuted both by the literature and by using the results of the empirical survey.

The main hypotheses of this dissertation are the following.

- H1: The main feature and function of each competitiveness report and index are support of decision-making based on credible and reliable data. Competitiveness reports and indices – in particular the DESI – nowadays do not completely fulfill this role in the field of public administration as the digital competence of officials is not measured.
- H2: There is no uniform and measured digital competence framework developed for public administration officials in Hungary, although, the existence of digital competencies is peculiarly important.
- H3: The digitalization brings significant changes both in society and in the field of governance, therefore the role of continuous training, professional development and the improvement of digital competencies among officials are becoming more important. Empirical studies can support the evidence that higher education institutions are capable of transferring digital knowledge.
- H4: Empirical studies show that there are no differences in areas of digital competence by age group, job classification and workplace.
- H5: The measurement of Digital Content Development and Problem-Solving competencies is demonstrably less important for those over 55 and non-executives.

2. The aims and subject of the research

The dissertation starts from the statement – also referred by CSATH² – that there have been four major changes in the history of the world economy. The first was the invention of steam energy (18th century), the second was the discovery and spread of electricity and mass production (19th century), and the third was the use computing and automation to control industrial processes (from the second half of the 20th century). Today, we are among the lucky ones who can witness the Fourth Industrial Revolution that builds on the achievements of the Third Industrial Revolution and takes advantage of digitalization, robotization and networking. Their areas of use and their effects spillover into many subsystems of society, including other

² CSATH Magdolna (2018): *Tudás- és innovációalapú versenyképesség. A költségvetési bevételek növelésének lehetőségei a digitalizáció és robotizáció korában.* Pénzügyi Szemle, 2018/1. 65-79.

sectors of the economy and human sectors (education, health), as well as into the political dimension (eg government, public administration).

Research questions: How does digitalization appear and what impacts does it have in the areas of competitiveness, public administration and competence.

„The digital cohesion is one of the most important success criteria for increasing economic competitiveness in the European Union, but it is also a key issue for social well-being.”³ Today, digitalization is not only one of the competitiveness criteria, but it has become more valuable and emerged from them. The competition between countries continues on a different path than where we have got used to so far. In the framework of digitalization, my research focuses on the efficient operation of state (which I examine through competitiveness rankings and the transformation of state’s tasks) and the knowledge level and competence of the personnel ensuring the efficient operation of state (which I examine through the results of my empirical survey), because the human factor is the most important element of the system of public administration, whose knowledge needs to be improved at all times.⁴

The subject of the research is best illustrated in the following figure which is simple but even more illustrative. The authors of the figure paid special attention to the subject of public administration in the case of Digital Competences, while the e-government appears in the case of Digital State. In my view, none can exist without the other: it is necessary to employ staff with the right depth of digital competence, who can operate increasingly complex systems, and at the same time use their expertise to be engines of innovation for the further development of public administration. Simultaneously, there is a need for a well-functioning digital administration that can be an effective supporter of officials who are in service of customers and are working for the interests of the country.

³ NEMESLAKI András (2018): *A magyar közigazgatás digitális transzformációjának jelentősége a vezetéstudományban*. Vezetéstudomány, XLIX. vol. 2018/07-08. issue 2.

⁴ BUDAI BALÁZS BENJAMIN (2017): *A közigazgatás újragondolása. Alkalmazkodás, megújulás, hatékonyság*. Budapest: Akadémia Kiadó.

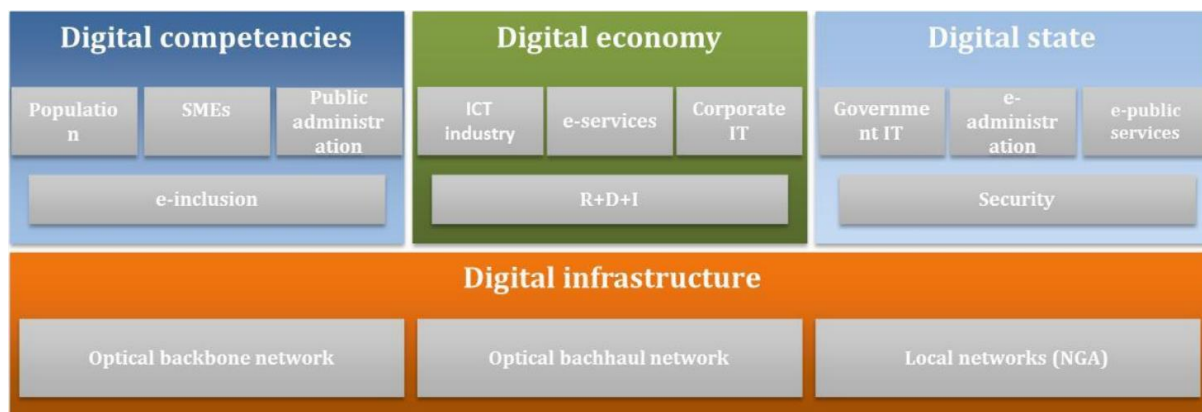


Figure 1: Pillar of the National Infocommunication Strategy 2014-2020

Source: NATIONAL INFOCOMMUNICATION STRATEGY 2014-2020

3. Applied methodology

During the preparation of the dissertation, I conducted both primary and secondary researches, the detailed explanation of which is given below.

My empirical research was conducted in the form of a survey, the foundation of which began to develop by the end of 2018. The questionnaire was sent electronically to officials working in government offices and district offices through their official training portal, called ProBono. This system is also a good choice because it only reached the predetermined target group, hence reducing the number of possible errors. The survey was conducted through the EvaSys system, a program that provided an empirical research background for universities and other educational institutions. The program is suitable for querying several types of questions as well as for optional questions. Completing the questionnaire is easy, and its author also helps a lot in data processing like data visualization, summarizing the answers of open questions, and in the process of data analysis. During the compilation of the questions I considered the expectations of the literature, I tried to group the questions and obtain the widest possible results. The questionnaire was compiled considering the current GDPR rules, and the data voluntarily shared during the survey will be processed anonymously. Tests had been done on the questions in several rounds before they were compiled, both when developing them (methodologically) and when uploading their online version (technically).

The survey launched on May 6, 2019, and its results were already available on May 24. The questionnaire was first sent to the training rapporteurs, the main training rapporteurs and the training organizers, as the organization keeps in touch with them, hence approx. 2,000 to 2,500

people received the request directly in the first round. Then the questionnaire was forwarded to the staff by the training officers, training chief rapporteurs and training organizers, so that potentially the entire staff of 70,000 officials received the request indirectly. However, experience shows that only 10,000 to 15,000 people received the questionnaire meaning that 5-7.5% of the potential population participated in the study. That means 757 people filled it out and sent it back to me. The sample size and the target group in focus allowed me to draw more generic conclusions. To analyze the results, I used various methods including simple descriptive analysis as well as analytical solutions.

Completing the survey was voluntary so that as many answers were received as possible, officials were not deterred and mistrust did not jeopardize the research. The questionnaire contained 31 open-ended and closed-ended questions. The questions were grouped as follows:

- I. Classic introductory questions: demographics such as gender, age, education, job, job title, time spent in public administration
- II. Question regarding usage of assets: this block is intended to question the official's digital habits outside working hours
- III. Knowledge related to digital competencies: in this block I defined 5 different competence areas on the basis of DigComp 2.0 and its further developed version, DigComp 2.1. These are Information and data literacy, Communication and Collaboration, Digital content, Security and Problem Solving. The respondents were able to categorize themselves into five categories that correspond to DigComp 2.1. Later, in connection with these competence areas, I asked the respondents to determine how important a competence area was for them, then I asked to what extent they would like to develop it. The respondents then answered questions about what they / their workplace do to develop their digital competencies. Finally, I asked them about trainings in this area.
- IV. Work-related issues focused on organizational assessment and motivational factors. In addition, the officials' views on the opportunities, challenges and dangers of digitalization were surveyed.

In the course of the research, I examined the dimensions of the digital preparedness of officials and the factors affecting digital competence areas. In order to achieve the goals above, it was necessary to formulate indicator questions used to measure each area. The exploration of the

connections between these issues was of paramount importance. After the analysis, my aim was to develop indicators that could be used to measure the digital competences of officials.

The pre-defined target group of the research were officials working in public administration, so in view of this and the size of the number of respondents, more general conclusions can be drawn.

In the framework of the secondary research, I used the method of document analysis among others. A wide range of domestic and international literature (especially on the European Union) such as specialist books, book chapters, studies etc. was processed in order to clarify the conceptual background and to substantiate the dissertation. Besides, several domestic and international strategies, programs, reports, contracts and legislation contributed to the completion of the dissertation. In addition, I conducted extensive research on competitiveness rankings, reports and indices, studying and analyzing their results for many years back, examining their data tables and methodology, as well as the situation in Hungary, especially in the context of the V4's. I also processed and evaluated other empirical research, thus strengthening the validity of my findings. As one of the main elements of my topic is digitalization, I processed internet links, too, that had been evaluated in advance, and I used only reliable results and relevant information materials which were incorporated into the dissertation.

4. Summary

As I stated in the introduction, the selection of my topic was basically motivated by the examination of the correlation between competitiveness, digitalization and the personnel of the public administration. I focused on the efficient operation of the state and the level of knowledge and competence of the personnel ensuring efficient state operation (which I examine through the results of the empirical survey) as the human factor is the most important element of the public administration system that needs to be improved at all times.⁵ Reviewing the theory of competitiveness, we have seen that while there was an increase in economic productivity, and employment (see: BUCKLEY – PASS – PRESCOTT 1988⁶) was the focus of

⁵ BUDAI BALÁZS BENJAMIN (2017): *A közigazgatás újragondolása. Alkalmazkodás, megújulás, hatékonyság.* Akadémia Kiadó, Budapest.

⁶ BUCKLEY, Peter J. – PASS, Christopher L. – PRESCOTT, Kate (1988): *Measures of International Competitiveness: A Critical Survey.* Journal of Marketing Management 4(2), 175–200.

thinking initially, the living standards and knowledge of the population was in focus both in PORTER's researches⁷ and the OECD's concept. GARELLI⁸ also referred to the prominent role of education when he said that there was a competitive factor in the education system and the level of training of each nation. Key factors in competitiveness include education and the quality of the skills gained there. Speed, efficiency, creativity and adaptability are of particular importance as the conditions for faster and more efficient operation in both the private and public sector could be a skilled workforce, research and development, innovation, modern management, quick decisions, and the presence and application of modern techniques and possibilities. Besides, CSATH⁹ has argued that nations need to harness their capabilities. Skills that belong to the human assets such as knowledge and preparedness need to be continuously developed. The education has evolved into a Community policy in the European Union since the early 1990's, and its importance has been strongly represented by the decision-makers since then. The Lisbon Strategy has already set the goal of making the European Union the most competitive and dynamic knowledge-based society in the world.¹⁰

Based on primary and secondary research, digitalization is now not only one of the competitiveness criteria but has become more and more valuable. Digital competitiveness – in economic terms – is *“the ability of the economy to adopt and explore digital technologies that lead to changes in governmental practices, business models, and society in general.”*¹¹ Digitalization is one of the many megatrends that are fundamentally transforming the economic and social systems, as well as the state and the public administration. When examining the impact of digitalization on public administration, we can witness a paradigm shift. Digital administration is a more comprehensive concept than e-government¹² as it can be observed in Hungary. While public administration and e-government were separated both organizationally, strategically and financially before 2010, the “digital state” was formulated as an achievable goal after 2010: information and communication technology (ICT) issues have been integrated

⁷ PORTER, Michael (1989): *The Competitive Advantage of Nations*. The Free Press, New York.

⁸ GARELLI, Stéphane (2002): *The Fundamentals: Competitiveness of Nations*. IMD, Lausanne.

⁹ See e.g.: CSATH Magdolna (2018): *Tudás- és innovációalapú versenyképesség. A költségvetési bevételek növelésének lehetőségei a digitalizáció és robotizáció korában*. Pénzügyi Szemle, 2018/1. 65-79.

¹⁰ GÁCS János (2005): *A Lisszaboni Folyamat: rejtélyek, elméleti problémák és gyakorlati nehézségek*. Magyar Tudományos Akadémia Közgazdaságtudományi Intézet, Budapest.

¹¹ BÉRESNÉ MÁRTHA Bernadett – DARABOS Éva (2017): *Versenyképesség régen és ma, avagy merre tovább Magyarország?*

¹² FALK, Svenja – RÖMMELE, Andrea – SILVERMAN, Michael (szerk.) (2017): *Digital Government: Leveraging Innovation to Improve Public Sector Performance and Outcomes for Citizens*. Springer, Svájc.

into public administration systems and their strategies have become integrated. A significant difference is that technology was interpreted as a tool before 2010, while later it was already interpreted as an operational framework.¹³ An essential condition for an efficient state today is to adapt the most modern technology, and all this should be done not only isolated, but also in a systematic, well-thought-out way. This requires an effective and strong state, a strong will of state, a bold vision and conscious implementation. The global economic crisis of 2008-2009 has made society and governments realize that they need to be not only good, but strong and smart. Several proposals have been made by the Central Bank of Hungary and the National Competitiveness Council on issues affecting public administration. For example, the National Competitiveness Council proposes interventions in the field of digitalization of public administration processes and increasing the proportion of official cases that can be handled online. The main goals were to fully digitalize the internal processes of the central administration by 2022, as well as to fully digitalize 95% of the most commonly used types of procedures.¹⁴ In connection with e-government, the Central Bank of Hungary notes that with its further expansion, in addition to the efficiency of the sector, the utilization of the labor reserve within the public administration could also be improved.¹⁵

2010 marked a turning point and EU decision-makers recognized that the European Union was lagging behind its competitors. This was due to the insufficient use of information and communication technologies (ICT) and moderate innovation among others. For this purpose, the Europe 2020 Strategy was announced in 2010, which, among other things, is a strategy for smart (knowledge-based, innovative) growth, which focuses on education and training.¹⁶ One of the key objectives of achieving smart growth is to strengthen education, a flagship initiative of the Digital Agenda for Europe which aims to increase digital literacy, digital coverage and strengthen and help the competitiveness of SMEs. Another goal was to develop skills. As a prelude to this, the Council Recommendation on Key Competences for Lifelong Learning was adopted in 2006, naming digital competences as key competences.¹⁷ The existence of digital knowledge and digital competencies is of paramount importance for both citizens and officials

¹³ SÁNTHA György (2015): „Utazás a digitális állam körül” – e-közigazgatási úti beszámoló az elmúlt 10 évről. Új Magyar Közigazgatás, 8. évf. 3. sz. 69–78.

¹⁴ MAGYARORSZÁG KORMÁNYA – PÉNZÜGYMINISZTERIUM (2019): *Program a versenyképesebb Magyarorszáért.*

¹⁵ MAGYAR NEMZETI BANK (2017): *Versenyképességi jelentés.*

¹⁶ EURÓPAI BIZOTTSÁG (2010): *Európa 2020. A Bizottság közleménye. Az intelligens, fenntartható és inkluzív növekedés stratégiája.*

¹⁷ 2006/962/EK – AZ EURÓPAI PARLAMENT ÉS A TANÁCS AJÁNLÁSA (2006. december 18.): *az egész életen át tartó tanuláshoz szükséges kulcskompetenciákról.*

working in public administration. There are a number of suggestions that the administration and its processes need to be rethought.¹⁸ However, this requires trained, digitally competent officials who know and understand the processes taking place in the world, thus taking a serious role in developments, even as proposers. At the same time, the data in the analyzed reports show that while our technological development is constantly improving, we do not achieve a significant improvement in the indicators related to knowledge and skills. Therefore, a high level of digital competence of officials is essential to operate a public administration based on digital solutions. If their knowledge, experience, ability to innovate and willingness to provide an appropriate supportive environment contribute significantly to the rethinking and reorganization of the operational processes of public administration, the development of the appropriate application of digital solutions with the involvement of scientific actors is a common task. Digitalization can lead to more efficient, cost-effective government operations, which is also a factor in competitiveness.

At the same time, we need to see that the digital competence of officials is not measured by renowned competitiveness rankings such as IMD, WEF and DESI. This is despite the fact that Government-efficiency is among the areas examined by IMD. The digital capabilities appear at WEF while both Human Capital and Digital Public Services areas at DESI. However, they do not make the measurement and assessment of officials' digital competence the subject of their inquiry. A proposal for a digital competence framework for European citizens was completed identifying five areas of competence and a few related competences by 2013. It has been fine-tuned twice since then. In 2016, the DigComp 2.1 - The Digital Competence Framework for Citizens was completed, which also defines 21 competencies at 8 skill levels in five competence areas (Information and Data Management; Communication and Collaboration; Digital Content Creation; Security; Problem Solving). In 2018, the European Council redefined the description of digital competence, stating that “*digital competence includes, and commitment to, confident, critical thinking and responsible use of digital technologies for learning, work and participation in society. These include information and data management skills, communication and collaboration, media literacy, digital content production (including programming), security (including digital well-being and cybersecurity competencies), intellectual property*

¹⁸ Łásd például: BIAŁOŻYT, Wojciech (2017): *Digital Era Governance – a new chapter of public management theory and practice*. MAZOWSZE Studia Regionalne nr 22. 117-129.

issues, problem solving, and critical thinking."¹⁹ As there is no specific digital competence framework for civil servants in Hungary, based on DigComp 2.1, the proficiency of Hungarian civil servants in competence areas was assessed in my dissertation based on the answers of the 757 respondents.

In summary, proficiency in the competence areas of information and data management, communication and cooperation are typically intermediate or advanced. In areas of security as well as problem-solving competencies, the proficiency of officials is typically intermediate or basic. In the field of digital content competence, the proficiency of officials is typically basic or lower. Empirical studies confirm that the Digital Content Development and Problem-Solving competency areas are less important among the responding officials than the other three competence areas. Empirical studies can be used to detect differences in digital competence areas that occur only by age group (in favor of younger people). At the same time, there is no difference between officials of government offices and of district offices, and between senior and non-senior positions. Recognition of this is of practical importance, as it is possible to organize training and to address officials in a targeted manner.

The respondents also rated their own preparedness for the changes caused by digitalization, with a total of 90.23% (674 people) finding it appropriate. Within this, 43.78% (327 people) of the respondents rated it as moderately good, 29.85% (223 people) as more suitable, and 16.6% (124 people) as completely good. In contrast, 4.69% (35 people) rated it as inappropriate and 1.34% (10 people) rated it as not at all appropriate. 3.75% of them (28 people) could not judge the question. However, this should not reassure either managers or decision makers. Development is important but neither on-the-job training nor off-the-job training, nor self-training can statistically contribute to the complex improvement of digital literacy in all areas of competence. Higher education institutions are the most effective forms of digital knowledge transfer.

5. Examination of hypotheses

The hypotheses formulated at the beginning of the dissertation are examined in this chapter. The system of hypotheses is summarized in the table below.

¹⁹ A TANÁCS AJÁNLÁSA (2018. május 22.) az egész életen át tartó tanuláshoz szükséges kulcskompetenciákról (EGT-vonatkozású szöveg) (2018/C 189/01)

<p>H1: The main feature and function of each competitiveness report and index the support of decision-making based on credible and reliable data. Competitiveness reports and indices – in particular the DESI – nowadays do not completely fulfill this role in the field of public administration as the digital competence of officials is not measured.</p>	
<p>H2: There is no uniform and measured digital competence framework developed for public administration officials in Hungary, although, the existence of digital competencies is peculiarly important.</p>	
<p>H3: The digitalization brings significant changes both in society and in the field of governance, therefore the role of continuous training, professional development and the improvement of digital competencies among officials is becoming more important. Empirical studies can support the evidence that higher education institutions are capable to transfer digital knowledge.</p>	
<p>H4: Empirical studies show that there are no differences in areas of digital competence by age group, job classification and workplace.</p>	<p>rH.1. The officials belonging to the younger age group rated their proficiency better in the areas of competence on the basis of their self-declaration compared to the officials belonging to the older age group (both in each area of competence and in the aggregate)</p>
	<p>rH.2. There is no significant difference in the proficiency of senior and non-senior officials in each competence area (and in the consolidated index) / they have a similar level of digital competence.</p>
	<p>rH.3. Based on their self-assessment, there is no detectable difference between the level of competence of officials working in government offices and officials working in the district office.</p>
<p>H5: The measurement of Digital Content Development and Problem-Solving competencies is demonstrably less important for those over 55 and non-executives.</p>	<p>rH.1. The Digital Content Development and Problem-Solving competence areas are less important than the other three competence areas for the respondents.</p>
	<p>rH.2. In the case of the over-55 age group, the Digital Content Development and Problem-Solving competence areas are less important, which difference can be statistically justified.</p>
	<p>rH.3. For senior executives, the Digital Content Development and Problem-Solving competency areas are more important than for non-executives.</p>

H1 (justified): In the dissertation, the competitiveness rankings I examined were IMD, WEF, and DESI. Although I have examined the most important of the competitiveness rankings, I did not find an analysis of the digital competence of civil servants and their level among the measured indicators. This is particularly important because both the IMD Competitiveness

Yearbook and the DESI authors emphasize the importance of education, lifelong learning and digital competences through other channels.

The IMD's World Competitiveness Yearbook measures government effectiveness but there is no measurement of the digital competence of officials. Although, the IMD Digital Competitiveness Yearbook measures digital / technological capabilities, it does not include indicators for public administration staff. The WEF is a competitiveness ranking with an economic nature focusing on productivity, prosperity and long-term economic growth, so it does not include a measurement assessment related to the digital competence of officials. DESI, as an index produced by the European Union, also measures both Human Capital and Digital Public Services, but these also do not include the level of digital competence of public administration officials, thus not providing a sufficient basis for assessing public administration due to the lack of analysis. Despite the above, many government decision-makers place great emphasis on these reports in the development of public administration, although they do not reveal information about its personnel, so it is feared that the digital competence of officials will not be addressed with sufficient intensity at government level.

H2 (justified): The appreciation of digital competencies has highlighted the need to measure the area of competence and to develop an indicator system even within the European Union. Since 2013, DigComp 1.0 has been developed further and fine-tuned. The framework covers the digital competences expected from citizens. However, digitalization is bringing major changes not only in the lives of citizens but also in the states. An efficient state supported by the toolbar of digitalization as well as the level of knowledge and digital competence of the personnel ensuring its operation are of paramount need as I argued in this dissertation. The development of a Digital Competence Framework specifically for officials is essential, as the original Digital Competence Framework is only partially suitable for its function in the administrative environment and does not describe the specific digital competencies required of officials. Based on the extensive literature review, it can be stated that there is currently no uniform and measured digital competence framework for those working in public administration in Hungary.

H3 (justified): This area is also linked to what has been said so far: there is a need for trained professionals for the sake of an efficiently operating state. An empirical survey of officials confirmed that officials typically have intermediate or advanced skills in the areas of

information and data management as well as communication and collaboration. In areas of security and problem-solving competencies, the proficiency of officials is typically intermediate or basic. In the digital content competency area, the proficiency of officials is typically basic or lower.

Before examining the hypothesis, it is worth examining whether a combined index, called the Digital Competence Area Index Based on Consolidated Self-Assessment, can be formed from the results of each competence area included in the questionnaire. To do this, we must first make sure that we get a reliable indicator. This requires the determination of the Cronbach's alpha, which measures the internal consistency of the future index, the reliability of the indicator. During the present study, the value of Cronbach's alpha (0.835), which confirms that the Digital Competence Area Index Based on Self-Assessment is reliable.

If we look at where digital learning is most effective, we find the following. Although most acquired their digital knowledge in a self-educated way (78.47% of respondents), we still assume that higher education institutions are the most effective channels for imparting this knowledge. Based on the data, 34.21% of respondents said they acquired their knowledge in this way. The Mann – Whitney test confirmed my hypothesis ($Z = -5.874$, $p < 0.001$) that higher education institutions are the most effective forms of digital knowledge transfer, because, according to the Digital Competence Area Index based on the Consolidated Self-Assessment, neither workplace-organized and off-the-job training nor self-education contribute to the statistically verifiable improvement of digital familiarity in all competence areas. Furthermore, it can be demonstrated that those who have participated in digitalization-related training within a year have the highest level of competence. Assessing the five areas of competence examined separately and together, the results of the Dunn – Bonferroni post hoc test conducted with a significant result of the Kruskal – Wallis test show that those who have participated in some digitalization-related training in the past year have significantly higher competence in the field of information and data management in the case of Digital Competence Area Index based on the Consolidated Self-Assessment. This also means that it is in the strategic interest of the University of Public Service (UPS) – the institution that deals most with the training of officials of public administration – to include digital knowledge and methods promoting the development of digital competencies in its trainings. As we have seen in Chapter 9, the UPS has the developed methodological background, the courses and the team of professionals capable of teaching it for the development of digital competencies of officials.

H4 (justified): To test the hypothesis, I analyzed the results of the questionnaire using statistical methods, and I also set up sub-hypotheses.

Factor	Hypothesis	Result
H4: Empirical studies show that there are no differences in areas of digital competence by age group, job classification and workplace		
General	rH.1. The officials belonging to the younger age group rated their proficiency better in the areas of competence on the basis of their self-declaration compared to the officials belonging to the older age group (both in each area of competence and in the aggregate)	justified
By age group	rH.2. There is no significant difference in the proficiency of senior and non-senior officials in each competence area (and in the consolidated index) / they have a similar level of digital competence.	justified
By job title	rH.3. Based on their self-assessment, there is no detectable difference between the level of competence of officials working in government offices and officials working in the district office.	justified

H5 (discarded) In the course of the research, I examined how important the given area of competence is for the officials in terms of achieving their work and / or their own individual goals. To test the hypothesis, I analyzed the results of the questionnaire using statistical methods, and I also set up sub-hypotheses, the results of which I will explain in tabular form below. **Hypothesis H5 was discarded because the differences cannot be traced back to age and job classification.**

Factor	Hypothesis	Result
H5: Assessing the Digital Content Development and Problem-Solving competency areas is demonstrably less important for those over 55 as well as for non-executives.		
General	rH.1. The Digital Content Development and Problem-Solving competence areas are less important than the other three competence areas for the respondents.	justified
By age group	rH.2. In the case of the over-55 age group, the Digital Content Development and Problem-Solving competence areas are less important, which difference can be statistically justified.	discarded
By job title	rH.3. For senior executives, the Digital Content Development and Problem-Solving competency areas are more important than for non-executives.	discarded

6. Further suggestions

Despite I fulfilled the goal set for this dissertation, I made a number of suggestions regarding the extension of the research that is summarized below:

1. Building on the experience gained from the empirical research, the methodology can be refined then the survey can be continued or repeated. (Dimension 1 (competence area) has been assessed in relation to the DigComp 2.1 framework. A more in-depth analysis should also be carried out in relation to Dimension 2 (competence).)
2. A proposal should be made for the EU to assess the digital competence of officials for at least the context of DESI index.
3. Particular attention should be paid to the regional and territorial distribution of the level of officials' knowledge and to the assessment of the supportive environment of the given organization (infrastructural support, promotion of learning).
4. It is necessary to determine what skills officials need, what data needs to be used in further training, and it is necessary to create a culture of self-training. A management interview could be used for this purpose.
5. At the same time, it is important to create strong foundations on which professional competencies can be built, so a digitalization audit of the undergraduate courses of the University of Public Service must be carried out.
6. It is necessary to assess the students' digital competencies at the time of admission to UPS, to define its framework (what and how we measure them), to apply targeted developments for them, to strengthen the competencies necessary for the career (basic competencies and knowledge of professional systems), to measure the outcome.

All the above proposals are new and exciting research aspects for further analysis of the relationships between competitiveness, digitalization and staff members of the public administration.

CSABA FÁSI

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Professional CV

Csaba Fási was born on March 1, 1991 in Mezőtúr. He began his studies in 2010 at the predecessor institution of the University of Public Service, then once received a special faculty scholarship, twice a republic scholarship and worked as a scholarship holder in the Office of the Parliament for one year. During his undergraduate education, he was one of the founders of the Ostrakon College for Advanced Studies, helping the work of the Department of Public Administration as a demonstrator. He graduated with a distinguished qualification and received a Pro Juventute University Professional Award for his professional activities. He also completed his master's degree at the National University of Public Administration, and his degree was also highly distinguished.

Admission to the doctoral program was won in 2015, the supervisor is first Prof. Dr. Csaba Lentner, then Prof. Dr. Magdolna Csath. His research interests include competitiveness and digitalization, as well as the study of public administration staff. From 2015, he taught at the legal predecessor of the Faculty of Public Governance and International Studies in both undergraduate and is a member of the University Doctoral Council. From 2016, as a researcher and research organizer, he participated in the work of a research workshop entitled *The State's toolkit for competitiveness improvement, with special regard to the effects of governmental capabilities on the soft factors of competitiveness*.

So far, 6 journal articles, 7 book excerpts and 4 conference papers have been published in Hungarian and English. He is publishing 1 conference paper and 1 study in a foreign language.

In addition to his scientific and research activities, he also acts as a science organizer and project coordinator. Since 2013, he has been carrying out various project-related organizing activities at the University of Public Service and its strategic partners.