Katarzyna Śledziewska[1], Renata Gabryelczyk[2], Renata Włoch[3]

The Gap in the Digital Competence: The Diagnosis for Poland

1. Introduction

The purpose of this study is the diagnosis of the digital competence gap between SMEs in Poland and the EU against the background of digital skills of human capital. The subject is important in the context of the Digital Single Market being developed by the European Commission in order to overcome the barriers to the growth opportunities offered to enterprises by digital technologies[4].

The motivation for our study is to provide recommendations regarding the use and development of digital technologies by SMEs. According to the Digital Single Market assumptions, the condition of the Polish economy will be determined by the level of the digital competence acquired by SMEs (whose share in Poland's Gross National Product comprises 48.5%)[5].

The illustration of the current state of the Polish SMEs in comparison to the SMEs in the EU may serve to indicate the benchmark for transition economies. We argue that levels of SMEs' digitalisation and human capital digital skills are closely related and the relationship is a classic vicious circle. The Polish SMEs find it hard to recruit people with the adequate digital competence and as such they are not eager to implement digital technologies[6]. On the other hand, if they

1 University of Warsaw, Faculty of Economic Sciences, Digital Economy Lab.
2 University of Warsaw, Faculty of Economic Sciences, Digital Economy Lab.
3 University of Warsaw, Faculty of Philosophy and Sociology, Digital Economy Lab.

4 European Commision 2015, Digital Single Market, http://ec.europa.eu/priorities/digital-single-market/index_en.htm (retrieved: 30 May 2015)

5 PARP 2014, „Raport o stanie sektora małych i średnich przedsiębiorstw w Polsce w latach 2012–2013", Polish Agency for Enterprise Development Report, http://badania.parp.gov.pl/files/74/75/76/479/21753.pdf (retrieved: 12 May 2015).

6 Caldeira, M.M., Ward, J.M. (2002). Understanding the Successful Adoption and Use of IS/IT in SMEs: An Explanation from Portuguese Manufacturing Industries. *Information Systems Journal, 12*(2), 121–152; Kretschmer, T. (2012). *Information and Communication Technologies and Productivity Growth: A Survey of the Literature*. OECD Digital Economy Papers,

do not implement digital technologies, they do not perceive the digital competence as an important recruitment criterion, nor do they motivate their employees to develop this competence.

Thus, the research questions we ask, are as follows:

RQ1: How large is the digital competence gap of Polish SMEs in comparison to other EU countries?

RQ2: How large is the digital competence gap of human capital in Polish SMEs?

RQ3: What is the relationship between the level of digital competence at the organizational level and the individual level?

While conducting our review, we follow the conceptual framework shown in Figure 1.

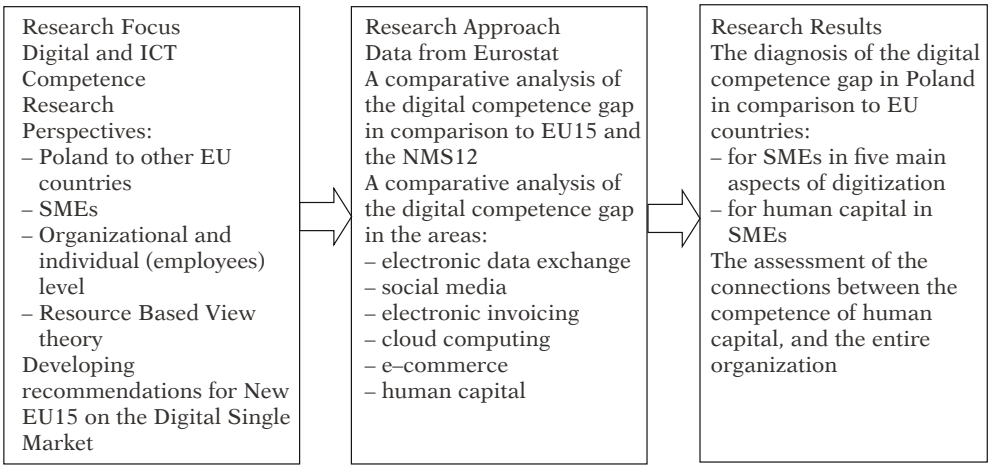

Figure 1. Conceptual Framework

Source: The authors' own elaboration based on: Roztocki, N., Weistroffer, H.R. (2015). Information and Communication Technology in Transition Economies: An Assessment of Research Trends. *Information Technology for Development*, *vol. 21*(3), 330–364.

The research focus is to indicate the digital and ICT competence from different perspectives and with the aim to develop recommendations for New European Union Members on their way to the Digital Single Market. We provide our comparative analysis on the basis of the Eurostat database and the Digital

No. 195, OECD Publishing; Juchnowicz, M. (2014). Sektorowe badania podaży i popytu na kwalifikacje i kompetencje. *Edukacja ekonomistów i menedżerów, Nr 2*(32), 11–20.

Economy and Society Index (DESI)[7]. The chief focus is on the following areas: electronic data exchange, social media, electronic invoicing, cloud computing, e-commerce, and human capital. The competence gap is based on a statistical analysis and specifies for the selected areas from two perspectives: for SMEs (the organizational level) and for employees (the individual level). We compare the level of competence for three entities: Poland, the 'old' EU15 and NMS12 (New Member States). A literature review refers to the resource-based view theory[8] that allows us to understand how an organization's competencies are defined. To define the digital competence, it is necessary to refer to the strategies for managing assets concerned with developing specific organizational skills[9]. A literature review in relation to the organizational competence allowed us to adapt the definition of digital literacy contained in the broadly defined ICT competence.

The paper has been structured as follows. In the background section we discuss briefly the definition of digital competence, then we introduce the research methodology. In the next section we present the results in charts comparing the level of the competence for Poland, EU15 and, NMS12. The paper concludes with the discussion and summary of the contribution.

2. Background

According to the recommendations made by the European Parliament and the European Council (2006) concerning key competences in the lifelong learning process, digital competences are one of eight key competences in the knowledge society. Those competences ensure labour flexibility and its faster adaptation to labour changes. Additionally, they contribute to innovation, productivity and competitiveness, shape the motivation and satisfaction of workers, and, ultimately, the quality of work. The digital competence includes skilful and critical usage of technologies used in the information society, particularly the use of information and communication technologies (ICT). The use of digital

[7] EC Eurostat 2014, European Commission, Eurostat. *Your key to European statistics*. http://ec.europa.eu/eurostat/web/information-society/data/comprehensive-database (Accessed: 14 April 2015).

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[9] Teece, D.J., Pisano, G., Shuen, A. (1997). Dynamic Capabilities and Strategic Management. *Strategic Management Journal*, *18(*7), 509–533.

technologies may initially become a significant growth factor in the new EU member states. The Internet, as well as digital technologies in general, offer them leapfrog progress opportunities. The relevance of the internal ICT competence to the development of the competitive SME advantage has been proven in studies[10], however, when constructing ICT competence models, one should allow for the differences between small and medium-sized enterprises[11]. When defining an organization's competences, including its digital competence, it is necessary to refer to the resource-based view[12] and to strategies for managing assets concerned with developing specific organizational skills[13]. On the organizational level, digital competences are demonstrated in the form of technical and operational processes that employ selected technologies and employees' skills identified on the individual level[14].

The digital competences of enterprises may be analysed on two levels: individual and organisational. There is abundance of research into individual digital competences, particularly targeted at the computer, communication and media

[10] Caldeira, M.M., Ward, J.M., op. cit., 121–152; Caldeira, M.M., Ward, J.M. (2003). Using Resource-Based Theory to Interpret the Successful Adoption and Use of Information Systems and Technology in Manufacturing Small and Medium-Sized Enterprises. *European Journal of Information Systems, 12*(2), 127–141; Montealegre, R. (2002). A Proces Model of Capability Development: Lessons from the Electronic Commerce Strategy at Bolsa de Valores de Guayaquil. *Organization Science, 13*(5), 514–531; Peppard, J., Ward, J. (2004). Beyond Strategic Information Systems: Toward an IS Capability. *Strategic Information Systems, 13*, 167–194; Tarafdar, M., Gordon, S. (2007). Understanding the Influence of Information Systems Competencies on Process Innovation: A Resource-Based View. *The Journal of Strategic Information Systems, 16*(4), 353–392.

[11] Cragg, P.B. (2002). Benchmarking Information Technology Practices in Small Firms. *European Journal of Information Systems, vol. 11*(4), 267–282; Cragg, P.B., Caldeira, M., Ward, J. (2011). Organizational Information Systems Competences in Small and Medium-Sized Enterprises. *Information & Management, 48*, 353–363; Eikebrokk, T., Olsen, D. (2007). An Empirical Investigation of Competency Factors Affecting E-Business Success in European SMEs. *Information & Management, vol. 44*(4), 364–383; Grandon, E.E., Pearson, J.M. (2004). Electronic Commerce Adoption: An Empirical Study of Small and Medium US business. *Information & Management, 42*(1), 197–216.

[12] Barney, J., op. cit., 99–120.

[13] Teece, D.J., Pisano, G., Shuen, A., op. cit., 509–533.

[14] Teece, D.J. (2000). Strategies for Managing Knowledge Assets: The Role of Firm Structure and Industrial Context. *Long Range Planning, 33*, 35–54; Bharadwaj, A. (2000). A Resource- Based Perspective on Information Technology and Firm Performance: An Empirical Investigation. *MIS Quarterly, vol. 24*(1), 169–196; Tarafdar, M., Gordon, S., op. cit., 353–392; Orzechowski, R. (2008). *Budowanie wartości przedsiębiorstwa z wykorzystaniem IT*. Szkoła Główna Handlowa, Oficyna Wydawnicza.

skills of young people[15], as well as issues of digital exclusion[16]. Individual competences are usually defined as being a combination of knowledge, skills and attitudes[17]. Knowledge ('I know how') concerns acquiring information by means of learning on the basis of facts, rules, theory and practice. A skill is an ability to apply knowledge ('I know how and I can do it') in order to cope with a task or solve a problem. They may be of cognitive (based on logic, intuition and creative thinking) and/or of practical character (physical fitness, using tools, instruments and materials). Attitudes motivate people to undertake activities ('I want and I am ready to use my knowledge') and form the basis for future development.

On the individual level, digital competences comprise basic skills that enable communication, acquiring information, production of content in a digital environment, as well as more advanced skills useful in business practice (i.e. finance management, contacting clients, logistics processes, communication within project teams, and contacting other business actors and public institutions). They require knowledge about specific ICT solutions (products and services), dedicated or adapted to business functions, but also management, analytical and programming skills, which enable identification, modelling, analysing and carrying out business processes with the use of a technological system. "The workers' skills are the most precious capital of an enterprise; the task for the personnel processes is not only recruitment, evaluation and the planning of the development of the workers, but also adapting their skills to the needs of the enterprise and using them according to those needs"[18].

3. Methodology

In order to diagnose the digital competence gap of the Polish SME sector, we have analysed the entire period of digital technologies implementation by the Polish businesses against those in the remaining EU states. The analysis covered

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[15] ICILS, *International Computer and Information Literacy Study 2013*. The International Association for the Evaluation of Educational Achievement IEA.

[16] Żak, K. (2013). Orientacja na klienta a problem wykluczenia cyfrowego. *Zeszyty Naukowe Uniwersytetu Szczecińskiego. Finanse. Rynki finansowe. Ubezpieczenia 64, T. 1* 541–551.

[17] European Qualifications Framework (2008). Recommendation of the European Parliament and of the Council of 23 April 2008 on the Establishment of the European Qualifications Framework for Lifelong Learning. *Official Journal C 111" 6/5/2008*, DIGCOMP.

[18] Rostkowski, T. (2004). *Nowoczesne metody zarządzania zasobami ludzkimi*. Wydawnictwo Difin.

the EU15 (European Union in 2003) and the NMS12 (New Member States post-2004). The categorization into these two main areas enabled us to evaluate the status of digitalization in Poland not only against the 'old' EU states, but also against similar institutional environments of the 'new' EU members, where knowledge-based economies are built. The evaluation was based on data published by Eurostat. Eurostat assesses the digital competence using the Digital Economy and Society Index (DESI), which is measured in five main dimensions: Connectivity, Human Capital, Use of the Internet, Integration of Digital Technology, Digital Public Services. For our evaluation two of them: Human Capital and Integration of Digital Technology were selected to a more detailed analysis. The available data permitted the analysis of SMEs defined in terms of personnel numbers falling between 10 and 249 employees. SMEs were diagnosed in five main aspects of digitization: electronic data exchange, social media, electronic invoicing, cloud computing and e-commerce. Basing on the data from the dataset available for 2014 and all EU member states we provide the analysis for the Human Capital on the averages for the 'old EU MS', new EU member states and Poland. Eurostat provides a comprehensive working database with the results from the surveys on the usage of information and communication technologies by households and by individuals.

The conclusions refer to the SMEs' digitalization status in the analysed areas and to the SMEs digitization determinants. The individual digital competences of SMEs' workers may be diagnosed by means of a secondary analysis of the data concerning the competences of people of working age in Poland and other EU countries. This approach allows us to answer RQ1 and RQ2. Indirectly, this may help to evaluate the recruitment barriers that SMEs face and to answer the question of whether the inadequate digital competence may prove to be a barrier to using digital technologies by SMEs, and, in the long term, a barrier to future development.

To answer RQ3, we used the Digital Economy and Society Index (DESI), which enabled the examination of the correlations between the Human Capital and Integration of Digital Technology dimensions. We analyzed the correlations between these two dimensions in relation to the EU15 and to the New Member States. Such an approach enables the identification of the relationship between the level of the digital competence at the organizational level and the individual level.

4. Results

4.1. The Diagnosis of the Gap in the Digital Competence of Polish SMEs

In terms of digital performance, Poland takes a low 24th rank in the list of 28 EU states, following the general Digital Economy and Society Index. The degree of Polish company digitization is, for example, two times as low as that recorded in Denmark, Sweden or Finland.

Following the DESI dimension of Integration of Digital Technology among businesses, Poland lags behind other EU countries especially in electronic information sharing, as well as cloud computing. What is even more striking, there is a major gap between Poland and other EU Member states in terms of E-commerce, which is a broader sub-dimension than other five presented (first five compound the Business Digitization sub-dimension).

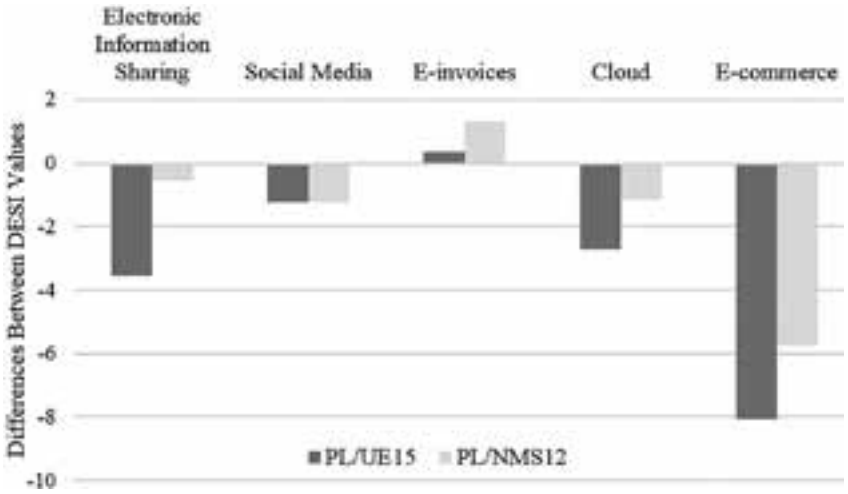

Figure 2. Differences between DESI Values for Sub-Dimensions of Integration of the Digital Technology Dimension of DESI 2015

Source: The authors' own calculation based on: EC Eurostat 2014, op. cit.

In order to answer RQ1 we have conducted an in-depth statistical analysis of the Integration of Digital Technology area for small and medium-sized enterprises in comparison to EU15 and NMS12. The study involves the following areas: SMEs using EDI, SMEs using CRM/ERP systems, enterprises using any

social media, enterprises buying cloud computing services used over the internet, enterprises sending / receiving e-invoices and, enterprises engaged in e-commerce, showing the percentage of SMEs in terms of those areas (Table 1).

Table 1. Main Areas of Integration of Digital Technology for SMEs in Poland in 2014 in Comparison to UE15 and NMS12

		EU15	NMS12	Poland
External electronic information sharing	Automated systems	17.05%	16.05%	17.78%
	Non-automated systems	10.81%	11.99%	14.36%
Use of CRM/ERP	CRM	32.83%	20.47%	20.55%
	ERP	35.73%	22.90%	20.21%
	CRM or ERP	45.96%	29.19%	28.78%
Social Media	Blogs or microblogs	11.09%	6.17%	2.64%
	Social networks	39.37%	30.84%	17.77%
	Multimedia content sharing websites	14.29%	9.92%	8.09%
	Wiki-based knowledge	5.27%	3.90%	3.28%
Cloud	Cloud computing services	22.79%	12.63%	5.37%
E-invoices (in a standard structure)	Suitable for automated processing: receiving	27.02%	26.90%	25.11%
	Suitable for automated processing: sending	16.29%	10.96%	4.83%
	Sending e-invoices not suitable for automated processing	25.92%	27.39%	13.84%
E-commerce	Accepting online payment	7.98%	5.76%	4.76%
	Having made electronic sales or purchases: to the own country	16.55%	14.07%	9.88%
	Having made electronic sales or purchases: to other EU countries	7.68%	6.90%	3.26%
	Having received e-commerce orders via computer networks	18.73%	15.29%	10.98%

Source: The authors' own calculation based on: EC Eurostat 2014, op. cit.

As far as electronic data exchange is concerned, the Polish SMEs use both automated and non-automated systems in exchanges with external partners. The situation may result from the high level of foreign investment in Poland, as well as from the financial support Polish SMEs have been obtaining under EU grants.

Polish SMEs use business management software, such as ERP or CRM much less than their EU counterparts. Only 17% of Polish SMEs use social media, while in the case of EU15 and NMS12 this share is 39% and 30%, respectively. Polish entrepreneurs employ blogs, multimedia services and Wiki pages far less than their European counterparts do. The use of cloud computing is in the SMEs from Poland four times as low as in the EU countries.

As far as the acceptance of e-invoices is concerned, the Polish SMEs also lag behind the average European indicators. One in seven EU15 SMEs sends e-invoices to its customers, while only one in twenty has adopted this practice in Poland. Generally, businesses in Poland are characterised by a very low level of e-commerce competences. Orders placed via computer networks are received by one in ten Polish SMEs, while in EU15 that figure is one in five. The percentage of the Polish SMEs selling online is two times as low as that in EU countries with the consequence that the need for being able to accept online payments via a website is less important.

4.2. The Diagnosis of the Digital Competence Gap of HumanCapital in Poland

The analysis of the data shows that in terms of human capital the Polish economy is lagging in the process of digitalisation. The Polish workers take the 22nd place in a ranking of the digital competence in the EU, ahead of only the Portuguese, Italians, Cypriots, Greeks, Bulgarians and Romanians.

The only positive aspect of the Polish Human Capital digitalisation is a relatively high percentage of STEM (Science, Technology, Engineering, Mathematics) Graduates, but unfortunately the data is based on 2012 results. In terms of other DESI sub-dimensions of the Human Capital dimension, Poland is lagging far behind other EU Members, especially behind EU15 countries.

Within the in-depth analysis of the digital competence gap of human capital, we have examined detailed data for EU15, NMS12 and Poland, presenting the percentage of individuals broken down by their education level or the percentage of overall labour force:

- Computer skills and Internet skills among people with primary, secondary and higher education,
- Internet use for selected purposes among employed people (aged 25–64),
- Ways of obtaining ICT skills among employed people (aged 25–64).

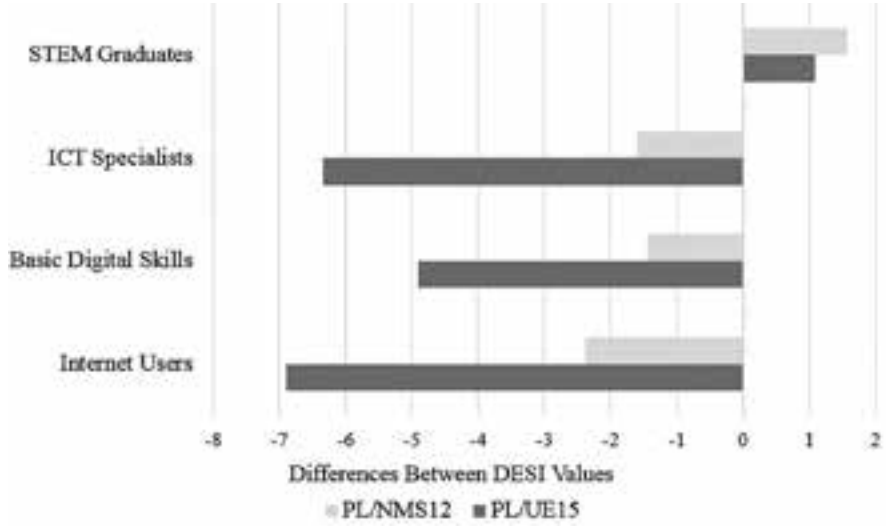

Figure 3. Differences between DESI Values for Sub-Dimensions of Integration of the Digital Technology Dimension of DESI 2015

Source: The authors' own calculation based on: EC Eurostat 2014, op. cit.

Table 2. Human Capital Digital Skills in Poland in 2014 in Comparison to EU15 and NMS12

		EU15	NMS12	Poland
Computer Skills	Low educational level			
	Low skills	19.11%	14.71%	6.04%
	Medium skills	18.17%	9.17%	4.58%
	High skills	11.96%	4.74%	1.98%
	Medium educational level			
	Low skills	18.72%	21.30%	17.88%
	Medium skills	29.36%	24.89%	20.56%
	High skills	32.09%	18.78%	10.15%
	High educational level			
	Low skills	9.65%	11.96%	12.31%
	Medium skills	28.43%	32.65%	36.83%
	High skills	57.11%	49.81%	45.34%
Internet skills	Low educational level			
	Low skills	33.76%	21.31%	13.96%
	Medium skills	24.19%	14.32%	8.03%
	High skills	5.23%	3.28%	1.32%

		EU15	NMS12	Poland
Internet skills	Medium educational level			
	Low skills	37.11%	32.42%	31.37%
	Medium skills	41.23%	34.81%	26.81%
	High skills	11.89%	9.24%	4.46%
	High educational level			
	Low skills	24.70%	21.69%	21.67%
	Medium skills	50.50%	51.35%	55.01%
	High skills	22.46%	23.82%	20.16%
Internet use (employed individuals)	Looking for information about education, training or course offers	35.32%	31.28%	19.35%
	Creating websites or blogs	10.79%	6.76%	2.46%
	Finding information about goods or services	80.88%	69.84%	62.25%
	Internet banking	65.99%	48.10%	45.97%
	Job search or sending an application	16.93%	13.08%	11.45%
	Phone calls or video calls	33.57%	43.06%	30.10%
Ways of obtaining IT skills (data as of 2011)	Formalised education institutions	29.29%	27.24%	25.40%
	Informal assistance from colleagues, relatives, friends	61.91%	59.45%	43.57%
	Self-studying using books, CD-roms etc.	26.81%	30.39%	15.54%
	Some other ways	3.52%	1.74%	1.47%

Source: The authors' own calculation based on: EC Eurostat 2014, op. cit.

Generally, people with higher education in Poland display a similar level of the digital competence as people with higher education in other EU countries. However, more specifically, people with higher education in Poland less often have advanced digital skills. In other respects, the Polish workforce has deficits in the digital competence when compared to the workforce from the EU15, as well as (to) the new member states. This particularly concerns people with primary and secondary education.

This can be aptly illustrated, e.g., by comparing the level of Internet use. Generally, Poles use the Internet less often than other EU citizens: e.g. when searching for information about goods and services (80% in EU15, 70% in NMS12 and 62% in Poland) or to use Internet banking (65% in EU15, 48% in NMS12, 45% in Poland). Relatively few Poles buy via the Internet and the rise in the number

of customers using online shops in 2010–2014 was slower than in the case of other low-performance groups; this especially concerns people with primary or secondary education[19].

The Poles differ from other Europeans when it comes to the ways of gaining digital knowledge and skills. For example, they use informal channels of education, such as network education, or help from members of their family or friends much less often. What is also important, Poles are not prone to self-education.

4.3. The Diagnosis of the Relationship between the Level of Digital Competencies at the Organizational and Individual Level

For the in-depth analysis of the relationship between the level of the digital competence at the organizational level and the individual level, we used a correlation matrix (Table 3). It is assumed that the Integration of Digital Technology dimension of DESI represents the measurment of the organizational digital competence. The measurement of the individual digital competence is represented by the Human Capital dimension of DESI. The measurement covers two groups of countries: EU15 and NMS12. Our results indicate that there is a positive correlation for both EU15 and NMS12 Member States, but the correlation among EU15 is stronger and more significant ($p>0.05$).

Table 3. Spearman's Correlation Co-efficients of Organizational Digital Competence and Individual Digital Competence

	EU15	NMS12
	Organizational Digital Competence	Individual Digital Competence
Organizational Digital Competence	1.0000	0.4545
Individual Digital Competence	0.6643*	1.0000

Note: Significance level ** ($p<0.05$), Anderson-Darling statistic was used to determine that the data meets the assumption of normality.

Source: The authors' own calculation.

[19] Diagnoza społeczna 2013. Warunki i jakość życia Polaków. http://analizy.mpips.gov.pl/images/stories/publ_i_raporty/DS2013/Raport_glowny_Diagnoza_Spoleczna_2013.pdf (Accessed: 15 May 2015); Seybert, H., Reinecke, P. (2014). Half of Europeans Used the Internet on the Go and a Fifth Saved Files on the Internet Storage Space in 2014. *Statistics in Focus 16/2014*; Seybert, H. (2012). Internet Use in Households and by Individuals in 2012. *Industry, Trade and Services*, *Eurostat*, *Statistics in Focus 50/2012*.

5. Discussion

In terms of digitalization, the Polish economy is at one of the lowest levels across the EU, also in comparison with the New Member States (NMS).

The main reason for such least favourable position of the country is the very slow and insufficiently low application of digital technologies by small and medium-sized enterprises (SME). The DESI index and the data provided by Eurostat apparently show that Polish SMEs face considerable problems in adoption of digital tools that simplify and accelerate decision making processes at the whole chain of management (EDI/ERP systems); allow making more effective business analyses (cloud computing); facilitate transactions (e-commerce/e- invoicing), allow building image and branding easily and effectively (CRP systems, social media) and facilitate penetrating new markets and gaining new customers (e-commerce, CRP).

While looking for the reasons for the low involvement of Polish SMEs in digitalization, we can underline the following two factors. First, SMEs do not recognize the usefulness and effectiveness of digital technology and second, the low digital skills of human capital in Poland does not allow for the adoption of the advanced digital tools. They usually do not encounter difficulties with introducing more advanced digital technologies, due to the adequate digital competences amongst workers with higher education. But on the other hand, they are often not able to introduce technologies that would appear to be "digitally simple" (i.e. their introduction and usage do not require advanced digital knowledge or skills) due to the lack of digital competences amongst workers with just primary and secondary education. Therefore, without structural investment in digital skills in the framework of lifelong learning, there is a risk that Polish SMEs not only will not sustain their development, but also will lose their share of their traditional internal markets.

The problem becomes crucial in the light of the establishment of the Digital Single Market (DSM) in the EU as it implies the increased competition among SMEs all over the EU member states. Therefore, the readiness of SMEs to continue functioning in the more competitive and global market becomes critical. The launch of DSM in fact endangers further performance of Polish SMEs, because they are building an advantage (over their EU counterparts) through increased productivity while keeping salaries relatively low. However, this currently favourable position is expected to gradually worsen. Polish SMEs should be seeking a new competitive edge from the greater digitization of their

businesses, yet this requires a higher digital competence. Raising entrepreneur awareness of the gap existing in this area is the first step towards the digital revolution in Polish SMEs.

6. Conclusion

The analysis presented here reveals the gaps in the use of digital technologies between Polish small and medium-sized enterprises and those from the EU, with low ICT competences in SMEs being the prime reason. These results are compatible with other studies on enterprises in Poland (Lewiatan 2012). Polish SMEs are characterized by a relatively low use of ICT tools among all areas covered by the study, which may indicate that they suffer from insufficient internal assets in the field of ICT and are incapable of acquiring the additional resources required to fill the internal gap, as well as managing their ICT resources efficiently. The gap in digital competences of human capital in Poland, which negatively affects the digitalisation of Polish SMEs, critically impairs development prospects for the Polish economy in the context of the EU Digital Single Market.

The study is based only on statistical analyses. We do not provide more comprehensive research methods such as econometric ones. The focus of further studies should be on identifying the causes/ determinants of this situation and the Polish economic policy tools required to support the process of digitization in Polish SMEs. As our research was based on general quantitative data, hence its inherent limitations as it only marginally takes into account the specificity of different business sectors. Further research should elucidate the causes of the digital gap at the educational level and at the junction between the educational system and the labour market. It should also focus on the modes of breaking through the behavioural patterns and 'acquired inefficiency' regarding digital technologies, as well as incentives to learn new digital skills and competences both independently and from other sources.

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Pomiar kompetencji cyfrowych – diagnoza dla Polski

Streszczenie

Zastosowanie technologii cyfrowych w przedsiębiorstwach może stać się ważnym czynnikiem wzrostu, głównie w nowych państwach członkowskich UE, które niedawno przeszły transformację gospodarczą. Diagnoza luki w kompetencjach cyfrowych polskich małych i średnich przedsiębiorstw stanowi punkt wyjścia formułowania rekomendacji dotyczących wykorzystywania i rozwoju nowoczesnych technologii informacyjnych oraz komunikacyjnych przez MSP. Temat jest ważny w kontekście budowania w Europie jednolitego rynku cyfrowego oraz przekonania zarządzających, że kompetencje cyfrowe stanowią podstawowy wyznacznik sukcesu firm. Celem artykułu jest pomiar kompetencji cyfrowych polskich MSP oraz kapitału ludzkiego w porównaniu z innymi krajami UE oraz wskazanie luki w tym zakresie. Do oceny luki cyfrowej wykorzystano bazy danych Eurostat. Pomiar kompetencji oparto na analizie statystycznej dwóch wybranych obszarów – małych i średnich przedsiębiorstw oraz pracowników. Analiza wykazała braki w zakresie korzystania z technologii cyfrowych przez polskie przedsiębiorstwa. Opóźnienie w digitalizacji wykazano również w badaniu kompetencji polskiego kapitału ludzkiego. Wnioskowanie dotyczy diagnozy oraz współzależności kompetencji cyfrowych MSP i kapitału ludzkiego w Polsce. Niski poziom umiejętności cyfrowych kapitału ludzkiego jest główną przyczyną niskiego poziomu cyfryzacji polskich MSP, który może zaszkodzić w ich rozwoju w kontekście jednolitego rynku cyfrowego w UE.

Słowa kluczowe: kompetencje cyfrowe, umiejętności cyfrowe, cyfrowa gospodarka, cyfryzacja MSP, cyfryzacja kapitału ludzkiego