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DIGITAL COMPETENCIES' ASSESSMENT AND CHALLENGES OF ACADEMIC STAFF: THE CASE OF LATVIA*

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Abstract. The need to develop digital competences has long been emphasized, but only in the state of emergency due to COVID-19, it has become a real necessity. The study process in higher education institutions is organized remotely, which means that academic staff have essential digital competencies to ensure a certain level of quality. The aim of the research is to study the self-assessment of the digital competencies of the academic staff and the possibilities of its improvement. In the course of the research, there were surveyed the representatives of the academic staff of regional higher education institutions of Latvia, who were asked to assess their digital competencies. When analysing the obtained data, it was taken into account whether the academic staff has an IT-related education or occupation. As a result, it was concluded that, in general, the most significant problems for academic staff are content creation and information processing, which are essential for the successful implementation of their job responsibilities. Accordingly, the academic staff is also interested in developing these competencies in particular.

Keywords: academic staff; digital competencies; Information and Communication Technology (ICT).

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1. Introduction

The global economy and society as a whole are open to information and communication technologies (ICT) and expect the growth of added value and productivity. The sector of higher education plays an important role in the growth of the country's economy, public expectations include the quality of higher education as a factor for growth. Higher education institutions (HEIs) are required to demonstrate the ways in which they respond to the social and economic needs of society. This refers to multiple areas: their actions to enhance graduate employability, their short- and long-term contribution to the growth of national economics and local development, and the ways in which they are stimulating the establishment of new enterprises, and innovations in existing firms. HEIs may demonstrate entrepreneurialism and innovation in many ways, one of them is how they embed digital technology into their activities (Heinnovate, 2018). The set of skills and competencies of the academic staff plays an important role in the quality of higher education, which multiplies the development of entrepreneurship and growth of the economy. The higher education is characterized by both academic traditions and the search for innovations. Changes in approaches and paradigms in education are always complicated. Today, structural long-term education reforms are not possible without a radical improvement in the skills and competences of academic staff, which basically includes the development of digital competences. The research paper pays special attention to one of the today's priority issues and challenges in higher education - the readiness of the academic staff to use ICT in the provision and administration of the study process. ICT are evolving rapidly and the issues surrounding their use in education are becoming increasingly complex. In order to use ICT tools effectively in the study process, it is necessary to improve the digital skills and competencies of the academic staff.

The aim of the research is to analyze the self-assessment of the digital competencies of the academic staff and the possibilities of its improvement.

Within the framework of the research, **a hypothesis** was put forward - the level of self-assessment of the digital skills of the academic staff and the professional activity or education of the staff in the field of ICT are interdependent values.

The significance of the research becomes especially essential in the Covid-19 emergency situation, when thanks to ICT technologies it was possible to do business and implement the study process in HEIs. It is clear that the changes brought by the Covid-19 emergency situation are not the short-term ones – the digital transformation will not stop, it will only accelerate to continue. Those enterprises and HEIs that are able to take the advantage of the benefits provided by technologies will definitely have a better chance of winning the competition. Taking into account the fact that the digital competences of the workforce in all spheres and sectors will be a key advantage of competitiveness for both employees and enterprises, it is important for a high-level workforce to develop these competencies in a timely and sufficient manner. Today's students are the human capital of tomorrow, the quality of which largely depends on the competencies of the academic staff of universities. The assessment of digital competences in all areas has become increasingly important, both in assessing the professional skills of employees and in developing curricula at all levels.

The novelty of the research is related to the fact that for the first time a self-assessment of digital competencies of the academic staff of the regional higher education institutions was performed based on the Europass approach to the assessment of digital competencies.

The research limitations are related to the formation of selection amount, when only the elected academic staff was interviewed.

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The scientific research methods that were used in the research are as follows: monographic method, content analysis, survey, data processing with SPSS to determine the mutual independence of statistical indicators.

2. Literature review

The authors of the research focus on the **digital competence** as one of the eight key competences defined by the European Commission. This is defined as "the confident and critical use of Information Society Technology for work, leisure and communication. It is underpinned by basic skills in ICT: the use of computers to retrieve, assess, store, produce, present and exchange information, and to communicate and participate in collaborative networks via the Internet" (European Commission, 2006). Digital competence also referred to as digital literacy, encompasses a set of basic digital skills described in five areas, covering information and data literacy, online communication and collaboration, creation of a digital content, safety and problem solving. Digital competence is about the ability to apply those digital skills (knowledge and attitude) in a confident, critical and responsible way in a defined context (e.g. education) (European Commission, 2016; Brolpito, 2018; Kirillova et al., 2019; Shevyakova et al., 2021).

In the current information age, educational institutions at all levels are expected to play a crucial role as a driving power for generation of knowledge and learning environment. The renewed EU agenda for higher education emphasizes the need for higher education institutions to address digital transformation, implement digital learning strategies and exploit the potential of technology to the benefit of their staff and students (European Commission, 2017). Digital technology has been used to improve the accessibility and provision of education, in particular at the university level, offering new tools and solutions for innovative pedagogies and distance learning. For HEIs, dealing with digital transformation means introducing new digital processes in their organisations, adopting new digital teaching methods and tools, helping students in achieving the skills and competencies needed to act in digitalized societies and economies or having open science policies. It also means adopting a broader view of their role as actors of digital innovation. HEIs, with adequate policies and support from the government, can have an important role in helping enterprises adopt emerging technology and acquire relevant digital skills for their workers (OECD, 2019a).

Undoubtedly, digital competencies are becoming important in all sectors of the economy starting from agriculture to industry and services due to the increasing ubiquity of ICTs and growing capabilities of new technologies. Digital competencies are the skills and capabilities that enable businesses to exploit opportunities provided by ICT, to ensure more efficient and effective performance, to explore new ways of conducting business and establishing new businesses. Be it a start–up, a small or micro company or a medium company operating for decades on the market – they all need a certain set of digital competencies to be competitive, productive and innovative. Digital technologies offer new scope for entrepreneurship because digitalization brings about fundamental changes to the organization of production, how businesses are set up and who can become an entrepreneur, even without a lot of capital (United Nations, 2019). Digital technologies can be enablers, outcomes, and contexts of digital entrepreneurship at the same time (Davidsson et al., 2018; Recker and Von Briel, 2019).

Today, we are at the beginning of the so called 4.0 industrial revolution, it will lead to a digital transformation of our economies and societies. Representatives of a real economy sector consider the crucial one the problem of insufficient digital competencies and lack of literacy in the sphere of IT on the part of entrepreneurs and workforce. Fortunately, fundamental knowledge can easily be obtained by upskilling or reskilling of the current workforce as short-term measures (Hoell et al., 2018) and maintained in a process of lifelong learning. Even though in the first European skills and jobs survey, the majority of employees (between 60% and 80 %) reported only needing a basic or moderate level of ICT skills for their job (Cedefop, 2018), one strong indicator for the

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digital transformation of the professional world is the fact that about 70% of newly emerged job titles are directly related to digital technologies (Zenhäusern & Vaterlaus, 2017).

Digital technologies have also created and grown the gig (or sharing) economy and generated new entrepreneurial opportunities and new types of entrepreneurship called digital entrepreneurship. Digital entrepreneurship – the intersection of digital technologies and entrepreneurship – is gaining increasing importance in the global economy and scholarly community. Digital entrepreneurship focuses on the design, use, and commercialization of digital technologies in the context of creating new economic activities and, importantly, how both digital technologies and entrepreneurial processes interact and shape each other (Shen et al., 2018; Elia et al., 2020).

However, several challenges remain with respect to promoting digital entrepreneurship. One of the challenges to building digital skills among youth is modernising education and training systems to ensure that teachers are equipped with the skills and resources to teach basic and advanced digital skills to students (OECD, 2019b). In the process of integrating digital technology into education, critical aspects in its success are teachers' digital competences, digital confidence and their mindset towards new technologies (European Schoolnet, 2013). However, the majority of today's teachers only feel sufficiently confident in administrative and basic digital tasks (e.g. producing text documents and sending emails), but far less confident with regard to more complex digital tasks such as programming or creating databases (Deloitte & Ipsos MORI, 2019). In short, European students are still taught by teachers who are neither sufficiently digitally confident nor sufficiently supportive (Conrads et al., 2017). The previously made research reveals that the overall digital teaching competence of academic staff in Latvia and Lithuania should be developed: on the one side, the university teachers obtained the optimal level of competence in media and equipment, media literacy and teaching staff motivation. On the other side, university teachers' competence that requires a specific professional knowledge in courses, didactics and instructional design, Learning Management Systems and e-moderation is of the low level (Grünwald et al., 2016). The digital competencies of the academic staff have become an essential tool in everyday work, and they are important not only in the study process, but also in the scientific research, communication and administrative work.

The main characteristics of Pedagogical Digital Competence (PDC) is the ability to develop/improve pedagogical work by means of digital technology in a professional context, primarily in web course/online teaching. University lecturers have great influence over their students' learning contexts, i.e., the contexts that guide the students in their study of a particular subject. Lecturers in higher education can influence and leave their mark in various ways on the courses they teach or coordinate. The ability to design courses is directly related to knowledge. In this connection, a knowledge of ICT-support is relevant and important. Are there digital technologies that might enhance the teaching and learning processes the students are involved in? ICT has dramatically changed our society, the contexts that young people are fostered into, what is learnt and how it is taught. In order to attain PDC it is not enough merely to understand concepts, be familiar with current research and to know what digital technologies are available. Skills are also needed, e.g., being able to use such technologies, meeting students where they are and giving them precisely the kind of support they need to progress. A person possessing PDC can support students in their journey towards achieving expected learning outcomes, understand how this process works and how it relates to regulating principles (From, 2017).

Today, it must be taken into account that students are the Z generation[†], who expects to acquire knowledge using ICT and digital tools, therefore, digital competencies of the academic staff must be at a high level. The conducted survey of the students who are going to become future managers and administrators, allows concluding that acquiring digital competences is, evidently, of crucial importance for their present and future professional activity

[†] Often referred to as Digital Natives or the iGeneration. Gen Z starts from around 1996 till 2010 which means they are currently somewhere between 9 and 23 years old in 2020.

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(Ashmarina & Mantulenko, 2020). Undoubtedly, the level of digital competencies of the academic staff and the use of digital tools in the study process have an impact on the digitization of society as a whole.

According to Digital Economy and Society Index (DESI) 2019 Latvia ranks 17th out of the 28 EU Member States. Latvia performs well in Digital public services and Connectivity thanks to the wide availability of fast and ultrafast fixed and mobile broadband networks and the increased take-up of e-government services. However, the Latvian business sector still scores below the EU average on the Integration of digital technology and also on the Human capital dimension. As regards Human capital, Latvia ranks 21st among EU countries and below the EU average, with indicators showing no relevant progress in the last few years. Although increasing numbers of Latvians are going online, basic and advanced digital skills levels remain well below the EU average. Only 48 % of people have basic digital skills (57 % in the EU as a whole) and the gap between Latvia and other EU countries is even wider for advanced skills (European Commission, 2019).

Regarding the business sector, the conclusions of the Latvian Information and Communication Technology Association's "Smart Latvia" campaign on the level of digital development of the enterprises of Latvia also confirmed the assumption that a large number of companies are not ready to work in the digital age. The majority - 41% - of the respondents of the Digital Maturity Test available at www.gudralatvija.lv admit that only a few basic digital solutions have been implemented in their company (LIKTA, 2020).

Scientific discussions on the assessment and development of digital competences have been topical since the beginning of this century. Improving digital competences has also become a priority for the European Union in the context of citizens' lifelong learning. Digital skills - alongside literacy and numeracy - are basic skills necessary for all sections of the population, but too many people have limited or outdated digital competences. There is a need for more comprehensive approach since all citizens have different levels of understanding of different aspects of digital competences, as well as there is a need for an in-depth approach to more specialized IT skills that are particulary essential in the ICT profession (European Commission, 2018).

The assessment of digital competences in all areas has become increasingly important, both in assessing the professional skills of employees and in developing curricula at all levels. An objective and widely used tool is essential for this purpose.

3. Methodology

Within the research there was developed a survey based on the Europass approach to the assessment of digital competences. The survey included 5 categories of digital competencies: information processing, content creation, communication, problem solving and safety. Respondents were asked to assess their competencies in each of these categories.

The survey was conducted in higher education institutions of the regions of Latvia by interviewing the elected academic staff. In general, there were collected 116 valid surveys from 24.04.2020 to 06.05.2020. The survey data represent the general population (Raosoft Samle size) with the probability of 95%.

4. Research outcomes

The survey was mostly completed by respondents whose education or occupation is not related to IT (71.6% - is not related to IT; 28.4% - is related to IT). The gender distribution of respondents is 54.3% women and 44.0% men. The distribution corresponds to the gender structure in Latvia, where the proportion of women is 54%, which confirms the representativeness of the sample. 1,7% - prefer not to say their gender. 32,8% was

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respondents till 40 years and the same percent (32,8%) 41-50 years, 25,0% - 51-60 years and 9,5% - more than 61 years.

Figures 1., 2., 3., 4. and 5. show the respondents' self-assessment of their digital competencies.

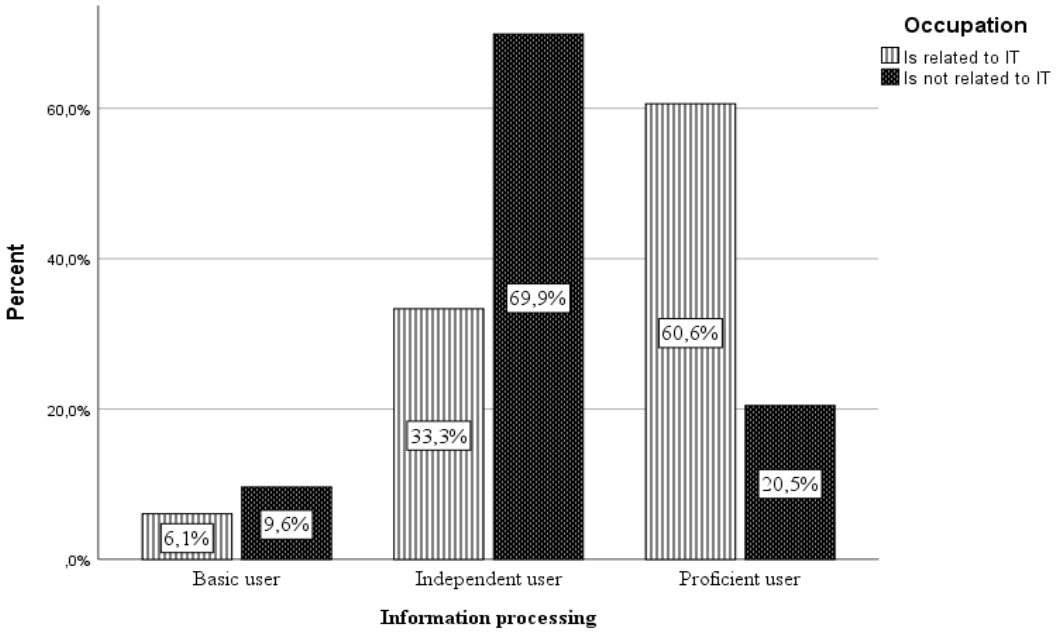

Fig.1. Respondent's self-assessment of information processing

Source: authors compiled

Figure 1 shows that the majority of respondents for whom education/occupation is not related to the IT field evaluate their information processing competence as an independent user (69.9%) and relatively many (20.5%) consider that they are proficient users. This competence is essential for academic staff to be able to provide students with the latest information they need, as well as for researchers to find relevant information in order to carry out high quality scientific research. According to the authors, there are a relatively large number of respondents whose occupation or education is related to IT, but according to self-assessment they refer to themselves as basic users (6.1%) and independent users (33.3%). This trend is also observed in other areas of digital competence assessment: content creation, communication, problem solving and safety. The assumption of the authors of the research in explaining these results is as follows - in accordance with the LR Cabinet of Ministers regulations No. 322 of 13.06.2017. "Regulations on the Classification of Education in Latvia", as well as on the basis of the research conducted by CERTUS think tank specialists on the ICT sector in Latvia, the field of IT studies includes the thematic study programmes of the fourth level of Latvian education classification code 48 "Computers" and a part of the fifth level codes of the study programme groups 523 "Electronics and Automation" and 526 "Other engineering sciences" (see Table 1) (Cabinet of Ministers of the Republic of Latvia, 2017; Spuriņš, Sjundjukovs, 2017).

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Table 1. The fourth and fifth levels of the classification of Latvian education (education thematic groups, thematic areas and programme groups) in the field of IT studies

Fourth classification level		**Fifth classification level**	
The third and fourth digit of the code	**Thematic area of education**	**The third, fourth and fifth digits of the code**	**The group educational programmes**
48	Computers	482	Use of computers
		483	Computer systems, databases and computer networks
		484	Programming
52	Engineering sciences and technologies	523	Electronics and automation *
		526	Other engineering sciences

* In the 523rd group of educational programmes "Electronics and automation" in accordance with the sixth classification level in vocational education there are included the sets of educational programmes as follows: 52301 Automation and computer engineering, 52302 Electronics, 52303 Telecommunications, 52304 Repair of computer equipment, 52305 Transport computer management, information and electronic systems.

Source: Cabinet of Ministers of the Republic of Latvia, 2017

Due to the fact that the respondents were not offered the opportunity to indicate the specific education/occupation, but only to indicate the connection of the education/occupation with the IT field, it means that the group of respondents who indicated that their education/occupation is related to the IT field could include also representatives of academic staff, for whom, for example, the education is actually related to "Electronics and automation" (which is also IT-related education). Thus, it suggests that IT education/occupation does not always automatically mean that a person can have digital competencies at the level of independent or proficient user.

Respondent's self-assessment of content creation is available in Figure 2.

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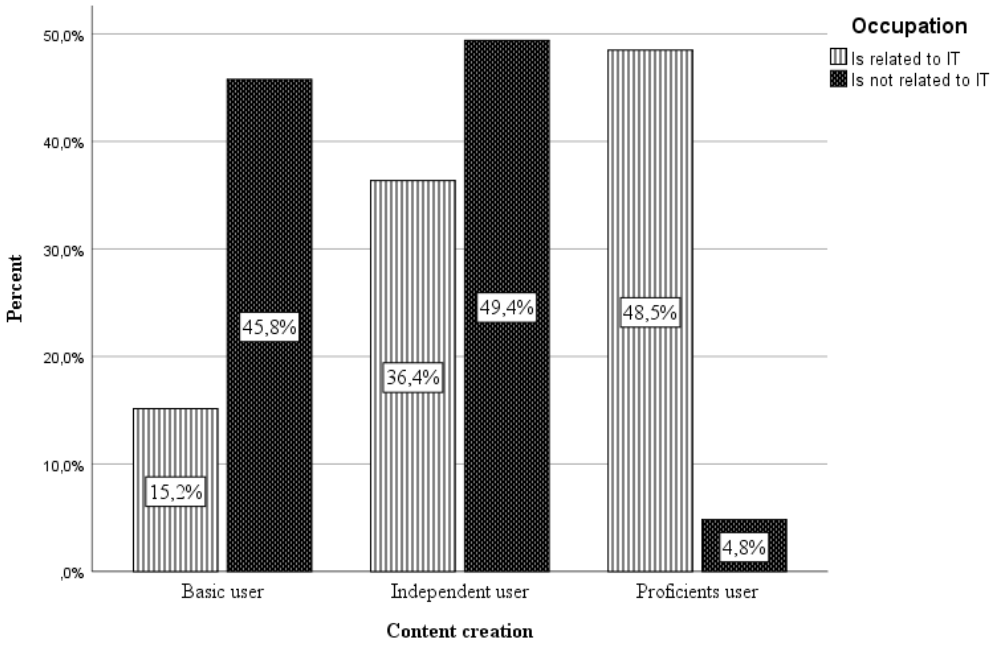

Fig.2. Respondent's self-assessment of content creation

Source: authors compiled

Figure 2 shows that almost equal respondents whose education/occupation is not related to IT believe that their content creation competence corresponds to the basic (45.8%) and independent (49.4%) user level. This shows that most academic staff know how to create simple content, such as gathering information from various sources, creating text, citing and creating references, images, charts, tables, formatting text, creating presentations, and much more. According to the authors, this digital competence is important both for the academic staff in the development of the study content and for the research staff in the research work in order to present the obtained research results in a way understandable to the audience, using various content reflection methods.

The average age of the academic staff in Latvia is one of the highest in Europe. According to OECD data, in 2017, in Latvia, the academic staff of higher education institutions aged 40+ accounted for 71.5%, while 47.4% of the total number of academic staff in higher education institutions of Latvia was represented by the staff aged 50+. The authors of the study note that the structure of the survey respondents is similar - 67.2% of them are aged 40+. This may explain why a relatively high proportion of respondents (45.8%) whose education/occupation is not related to IT have indicated that their digital requirements for content creation are at a basic level. Older adults have limited digital competences, for example, in 2017 in the EU there was on average 43% of people aged 55-64 with at least low digital competences (based on the ability to copy or move a file or folder) (ICTskills4All, 2019), thereby it can be assumed that the level of digital competences indicated in the survey directly depends on the age of the respondents. This assumption is also included in the hypothesis put forward in the research. In order to prove the hypothesis, a Chi-Square Test was performed at the end of the study, assessing the statistical independence between the age of the respondents and each area of the digital competences (see Table 4).

Respondent's self-assessment of communication is avalable in Figure 3.

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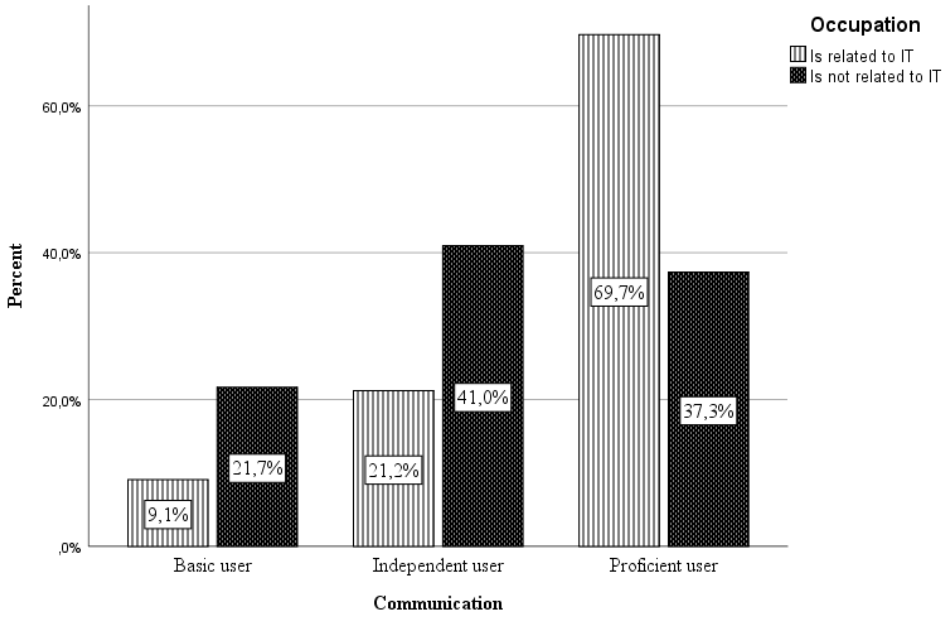

Fig.3. Respondent's self-assessment of communication

Source: authors compiled

Figure 3 shows that despite the fact that a large proportion of respondents who do not have a profession or education related to IT evaluate their communication skills at the level of independent user (41.0%) and slightly less as a proficient user (37.3%), however, relatively many respondents have assessed themselves as basic users (21.7%). The use of digital technologies in communication means the use of various communication tools (e-mail, social media, blogs, etc., online collaboration and file sharing tools) on a daily basis. The relatively high number of respondents (78.3%) whose education/occupation is not related to IT and who marked their communication competencies as an independent user or proficient user can also be justified by the restrictions caused by COVID-19, as a result of which the study process is organized in on-line mode, which promotes the need for academic staff to master a variety of platforms under the influence of external conditions.

Respondent's self-assessment of problem solving is available in Figure 4.

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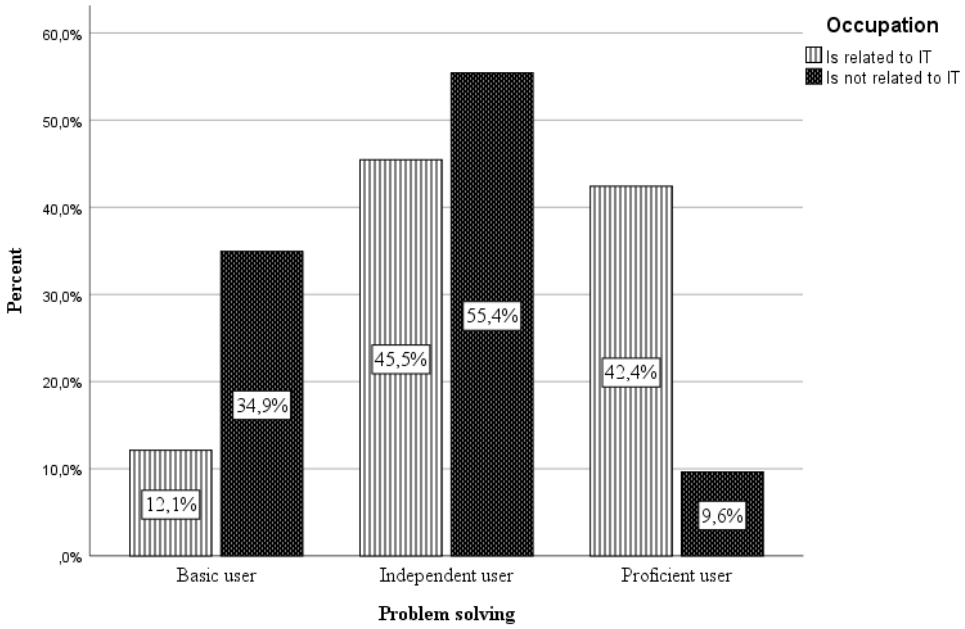

Fig.4. Respondent's self-assessment of problem solving

Source: authors compiled

Figure 4 shows that the majority (55.4%) of respondents whose occupation or education is not related to IT evaluate their problem solving competencies at the independent user level, while a relatively large number of respondents (34.9%) with education/occupation not related to IT rated their problem solving competence as a basic user. The authors of the study believe that this can be justified by the fact that higher education institutions usually employ IT specialists who are responsible for servicing computer equipment and monitoring its functionality. As a result, there is no need for academic staff to be able to solve all the problems connected with digital devices. The same can be said for academic staff who marked their education/occupation as IT related. Most of them (45.5%) rate their problem solving competencies at the independent user level, which means that they are able to solve uncomplicated technical problems on their own, such as updating software or checking the Internet connection.

Respondent's self-assessment of safety is available in Figure 5.

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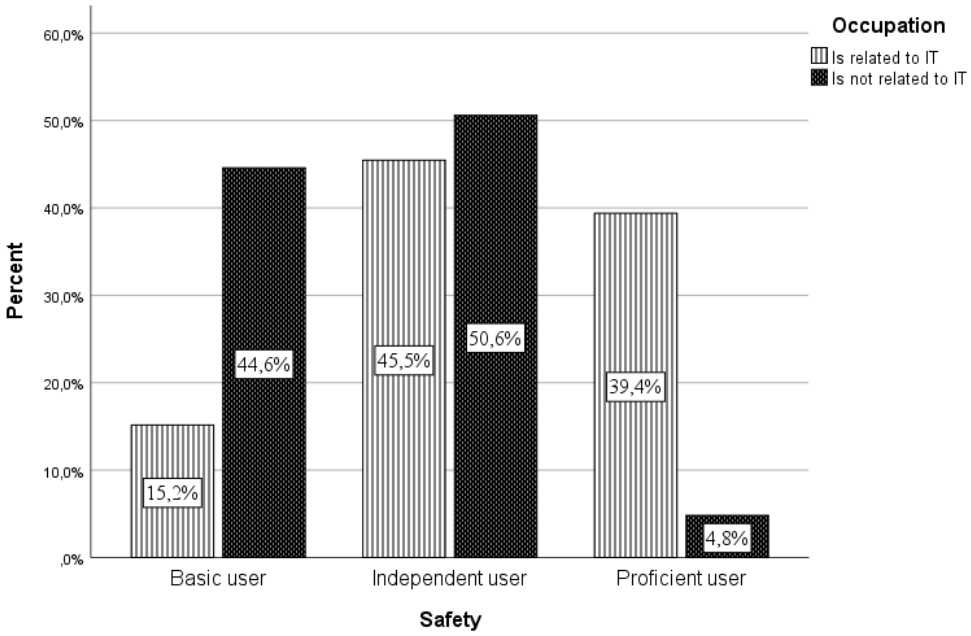

Fig.5. Respondent's self-assessment of safety

Source: authors compiled

Figure 5 shows that respondents' self-assessment of digital safety competence is very similar to problem solving. Digital safety competence means the use of various security programmes to protect the devices, safe use of the Internet (passwords, antivirus programs), adherence to the principles of personal data protection, as well as knowledge of the positive and negative effects of technology on health and the environment. The authors of the research are concerned about the relatively high number of respondents whose education/occupation is not related to IT and who assess their digital safety competence at the basic user level (44.6%). This means that they can recognize simple ways to protect their digital devices and content, distinguish simple risks and threats in the digital environment, choose simple means of protection and safety, and distinguish simple ways to protect their security and privacy that threaten not only academic work but also daily life. The authors of the research link it both with the age structure of the respondents and with the fact that the requirements of safe digital behavior have not still been fully accepted in society and the risks of non-compliance have not been identified (Bismart, 2020; Digital Security Alliance, 2017).

In general, it can be concluded that the majority of respondents whose education/occupation is not related to IT assess their digital competences at the level of independent users, however, in a relatively large number of cases they are at the level of basic users.
Respondents were asked what they thought was the best way to improve their digital competences. The responses are summarized in Figure 6.

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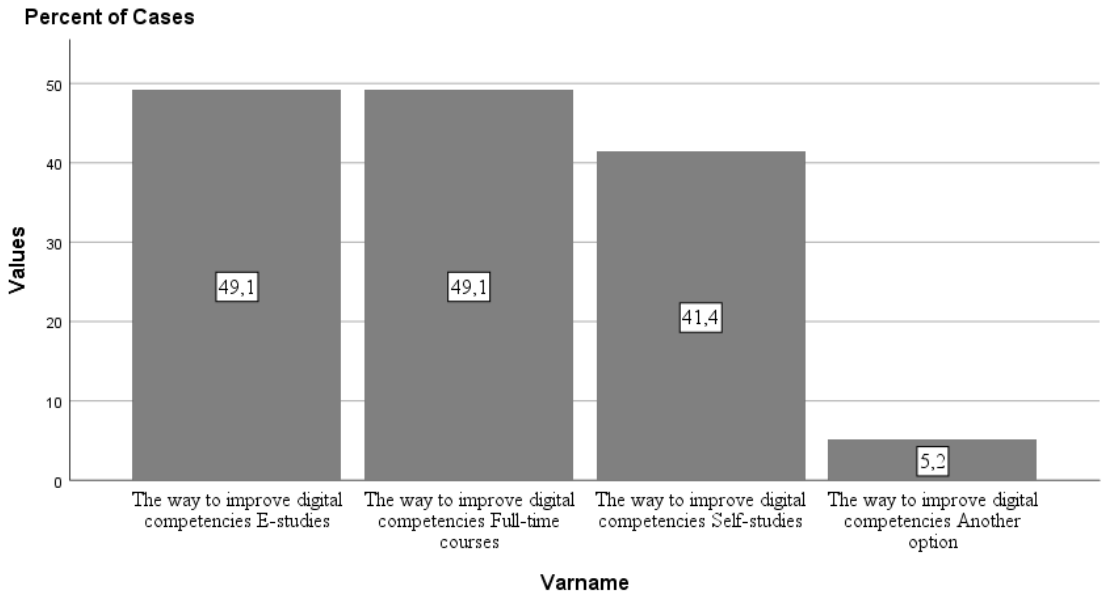

Fig.6. Respondent's answers about the way to improve their digital competencies

Source: authors compiled

Figure 6 shows that respondents' answers are evenly distributed (49.1%) between distance learning and full-time studies. This means that it is important for the interviewed respondents to gain new knowledge in the organized training process, where there is two-way communication between the lecturer and the learner. A slightly lower number of respondents chose to improve their digital competencies through self-studies (41.4%). 5.2% of respondents offered their vision of how to improve their digital competences, such as face-to-face individual classes with a lecturer.

Table 2 presents the information on the Cross-Tabulation Analysis carried out in order to find out how IT-related education/occupation influences respondents' choices regarding ways to develop digital competences.

Table 2. Cross-Tabulation Analysis of the impact of IT-related education/occupation on the ways to develop digital competencies

		Occupation/education	
		Is related to IT	Is not related to IT
Way to improve	E-studies	28,1%	71,9%
	Full-time courses	22,8%	77,2%
	Self-studies	41,7%	58,3%
	Another option	50,0%	50,0%

Source: authors compiled

Analyzing the information presented in Table 2, there can be observed significant differences between the answers provided by the respondents. It is clear that respondents who do not have an education/occupation related to IT prefer to improve their digital competences in the form of e-studies or full-time courses - 71.9% and 77.2%, respectively. The option of self-studies is marked as one of the least attractive (58.3%). It is logical that respondents who do not have an IT-related education/occupation choose the ways of developing digital competencies, where there is feedback and the opportunity to communicate with the lecturer. This cannot be

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attributed to the respondents who have an education/occupation related to IT - in their opinion, the development of digital competences in the form of full-time courses is the least engaging way (22.8%), followed by e-learning (28.1%). The option of self-studies, by contrast, is marked as one of the most attractive way (41.7%). Interestingly, both groups of respondents equally marked another option as a way to improve their digital competences (50.0% and 50.0%, respectively).

Respondents were asked to express their opinion about the digital competences they need to improve. The responses are shown in Figure 7.

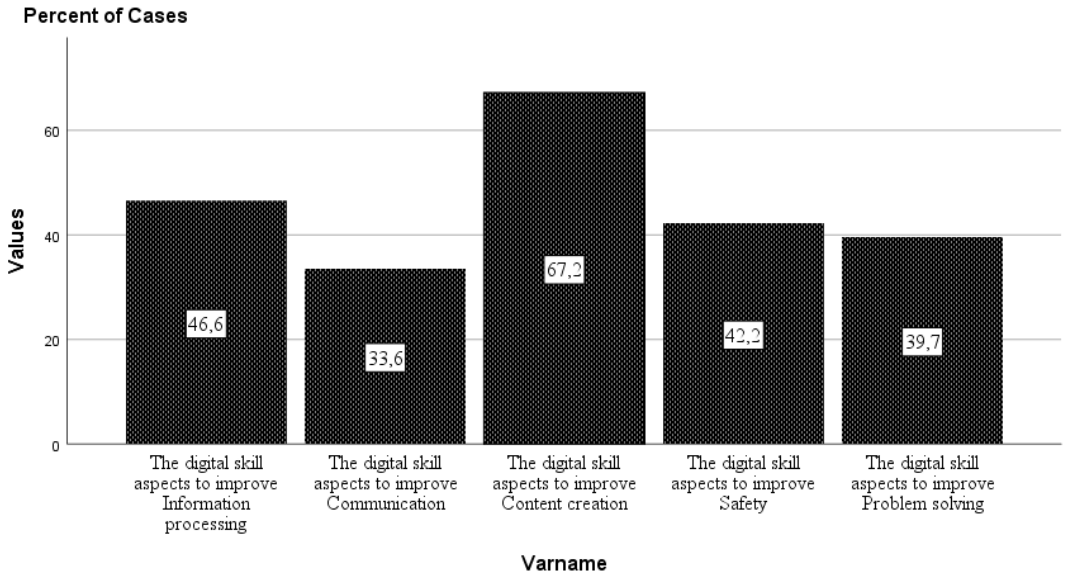

Fig.7. Respondents' answers to what digital aspects need to be improved

Source: authors compiled

Figure 7 shows that the majority of respondents believe that there is a need to improve content creation (67.2%) and information processing (46.6%). Taking into account the fact that the target audience of the survey is academic staff, these two competencies are essential in their daily work. Therefore, it is natural that these two competencies are marked as those that need to be improved.

Table 3 presents information on the Cross-Tabulation Analysis carried out in order to find out how IT-related education/occupation influences respondents' choice of categories of digital competences to be developed.

Table 3. Cross-Tabulation Analysis on the impact of IT-related education/occupation on the categories of digital competences to be developed

		Education/occupation	
		Is related to IT	Is not related to IT
What need to improve	Information processing	27,8%	72,2%
	Communication	23,1%	76,9%
	Content creation	23,1%	76,9%
	Safety	34,7%	65,3%
	Problem solving	28,3%	71,7%

Source: authors compiled

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Analyzing Table 3, the authors of the research note that in this case, there are also sharp differences between the answers of the two groups of respondents. Respondents who do not have education/occupation related to IT have marked all digital competencies that need to be improved, respectively information processing - 72.2%, communication - 76.9%, content creation - 76.9%, safety - 65.3 %, problem solving - 71.7%. On the other hand, among respondents with IT-related education/occupation, among all digital competencies, which need to be improved, safety digital competence stands out the most, - 34.7%, but this indicator is twice lower than the second group of respondents' assessment of this digital competence. The authors of the research emphasize the interesting fact that it is safety digital competence that has the lowest value in the group of respondents who do not have an IT-related education/occupation, and the highest value in the group of respondents who have an IT-related education/occupation. This could be based on the data presented in Figure 5 - 15.2% of respondents with an IT-related education/occupation have assessed their safety digital competence at a basic level. However, despite the fact that 44.6% of respondents who do not have an IT-related education/occupation have assessed their safety digital competence at basic level, which is one of the highest indicators among all digital competences (the highest 45.8% is related to content creation), they have identified safety digital competence as the one that needs to be improved the least.

Within the research there were done calculations and determined statistical independence between the age of the respondents and each of the areas of digital competences (see Table 4). For this purpose, respondents were divided into 6 age groups (up to 40 years, 41-50 years, 51-60 years, more than 61 years).

Table 4. Chi-Square Test, assessing statistical independence between respondents' age and digital competences

Variables		Value	df	Asymp.Sig. (2-sided)
Information processing: Age group	Pearson Chi-Square	24,032	6	,001
Communication: Age group	Pearson Chi-Square	24,020	6	,001
Content creation: Age group	Pearson Chi-Square	21,136	6	,002
Safety: Age group	Pearson Chi-Square	47,155	6	,000
Problem Solving: Age group	Pearson Chi-Square	55,071	6	,000

Source: authors compiled

Analyzing the results presented in Table 4, it can be concluded that the probability of the chi-square test statistic was $p = 0.000$ or $p = 0.001$ or $p = 0.002$, less than the alpha level of significance of 0.05. Thus, we can state that the age group and each of the digital competence categories are interdependent features, which confirms the initial hypothesis that digital competences are directly dependent on the age of the respondents, i.e. elderly respondents have an insufficient level of digital competences.

The calculations established statistical independence between the respondents' IT-related education/occupation and each of the digital competence areas (see Table 5).

Table 5. Chi-Square Test, assessing statistical independence between respondents occupation/education and digital competences

Variables		Value	df	Asymp.Sig. (2-sided)
Information processing: Occupation	Pearson Chi-Square	22,483	2	,000
Communication: Occupation	Pearson Chi-Square	11,822	2	,000
Content creation: Occupation	Pearson Chi-Square	50,856	2	,000
Safety: Occupation	Pearson Chi-Square	37,334	2	,000
Problem Solving: Occupation	Pearson Chi-Square	24,737	2	,000

Source: authors compiled

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The probability of the Chi-Square Test statistic (information processing: chi-square=22,483, communication: chi-square=11,822, content creation: chi-square=50,856, safety: chi-square=37,334, problem solving: chi-square=24,737) was p=0.000, less than the alpha level of significance of 0.05. Consequently, we can say that the occupation/education is or is not related with IT and each digital competence category are mutually dependent features.

Conclusions

Within the framework of the research, 116 representatives of academic staff from higher education institutions of the regions of Latvia were interviewed with the aim to obtain information about their self-assessment of the level of digital competencies. In total, digital competences were assessed in five areas: information processing, communication, content creation, safety and problem solving.

In the research it was found that the majority of respondents whose education/occupation is not related to IT rate their information processing skills as independent users and proficient users. Content creation and digital safety competences were rated the lowest by the respondents whose education/occupation is not related to IT. However, the digital competence of communication was rated at the highest level by the respondents in this group.

Respondents whose education is related to IT rated the level of their safety digital competence the lowest. In turn, the digital competence of communication was evaluated the highest by the respondents of the mentioned group.

As a result of the analysis, it was concluded that respondents whose education/occupation is not related to IT prefer to improve their digital skills in the form of e-studies or full-time courses. On the other hand, respondents who have an IT-related education/occupation are not interested in the development of digital competencies in the form of full-time courses and e-studies. Respondents in this group noted the type of self-studies as one of the most engaging.

Analyzing how IT-related education/occupation influences respondents' choices regarding digital competencies to be developed, it was concluded that it is safety digital competence that has the lowest value in the group of respondents without IT-related education/occupation and the highest value in the group of respondents with IT-related education/occupation.

In order to prove the hypothesis put forward in the research - the level of digital competences depends on the age of respondents - the Chi-Square Test was performed, assessing the statistical independence between the age of the respondents and each of the areas of digital competences. In the result of analysis, it was concluded that the age group and each of the digital aspects are interdependent features that support the original hypothesis.

Therefore, based on the results obtained in the study, the authors conclude that digital competencies of academic staff from higher education institutions of the regions of Latvia are directly dependent on the occupation/education related or not related to IT.

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