Digital Competencies of Russian Rural Pensioners for Labor Activity: Features, Changes in Demand

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Abstract

The purpose of the study is to analyze the changing needs for digital competencies among rural working pensioners. The authors distinguish professional and social digital competencies. Retraining programs for pensioners and pre-retirees can be divided into free courses organized by the state; courses paid for by organizations where the pensioner works; and courses paid for by students. A survey of rural pensioners shows their reluctance to use distance learning technologies, especially for basic digital skills. This leads to problems in organizing the educational process in large areas with a low rural population density. A survey of the same respondents in 2019 and 2020 showed an increase in demand for digital competencies. Among rural working pensioners, there is an increasing lack of knowledge in the field of cybersecurity, setting up and participating in video conferences, searching for information, downloading and installing software, making presentations, etc.

Keywords [1]

Digital competencies, working pensioners, rural residents, retraining programs, information and communication technologies (ICT), impact of Covid-19

1. Introduction

Digitalization of social and economic activities, new digital resources, services, forms of interaction, and the creation of virtual spaces have led to the emergence of new competencies of society, and the addition of courses on information and communication technologies to all educational programs.

Adjustments to educational programs make it possible to compensate for the lack of digital skills among young people. However, the biggest problem occurs in older people who take part in labor activity, but have not improved their skills for a long time. At the same time, agricultural production is declining in rural areas, new professions are emerging, and new competencies are needed.

Many studies have been conducted on the existence of a "digital divide" among rural pensioners [1, 2]. This problem was most acute in the context of the COVID-19 pandemic, when many workers were transferred to remote work. Although the self-isolation regime in Russia has been abolished, some workers still remain at home. The demand for IT technologies is growing, their role is increasing, they not only support production processes, but also are tools for improving knowledge.

2. Purpose and objectives of the research

The purpose of the study is to analyze changes in the needs for digital competencies among older rural workers. To do this, the authors solved the following tasks:

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1. Types of digital competencies are highlighted.
2. Examples of programs for improving the knowledge of rural residents of pre-retirement and retirement age are analyzed.
3. Changes in the needs for digital competencies among older rural workers are highlighted based on an assessment of their level of IT technology proficiency.

3. Literature review

The review of scientific literature shows the interest of scientists in the formation of digital competencies among the population and the stratification of society by the level of their proficiency. They believe that digital competencies are:

- Employee resources [3, 4];
- Means of improving the quality of life of society [5, 6];
- Technology for the preservation of health [7];
- New information and knowledge [8, 9, 10].

Digital competence is a new term describing the knowledge of information and communication technologies (ICT). It is as important as the ability to write, read and count, and will soon become an elementary skill for life. Digital competencies are necessary for effective interaction of people in modern societies, they form the concept of their future needs [11, 12]. Although, sometimes scientists consider digital competencies rather narrowly, in a specific field or for a specific specialization, for example, as media and digital literacy [13], computer literacy [14], or only for librarianship [15, 16].

Based on the analysis of employers ' interviews with candidates for vacancies, B. L. Berkelaar and P. M. Buzzanell concluded that digital career capital is formed, which reflects professional characteristics in the field of ICT [17].

Scientists and practitioners identify different types and examples of digital competencies. So, S. L. Tudor believes that these are: critical thinking and evaluation of the interlocutor; cooperation; effective communication; ability to find and choose information; confidence in the Internet environment; functional abilities; socio-cultural understanding; creative approach [18]. The European Commission in its surveys adheres to their division into access to ICT, computer and Internet skills, active application to various aspects of life, personal attitudes (access to ICT, operational computer and Internet skills, active application to aspects of life, personal attitudes) [19]. A. J. Head, M. Van Hoeck, J. Eschler, S. Fullerton attach the greatest importance in their research to online search skills [20]. All these competencies can be divided into those necessary for work and social life. We call them professional and social digital competencies.

Review of research on Russian employees and their digital competencies. In 2018, a household survey on Internet skills of the population was conducted in Russia, which showed that 33% of respondents had a basic level and 32% had an average level [21]. However, currently 42% of European citizens do not have basic digital skills, and 37% of people in the labor force-farmers, bank employees, and factory workers-also do not have sufficient digital skills, despite the growing need for such skills in all jobs (according to the European Commission).

An analysis of the age structure of IT specialists in Russia in 2018 showed that 7.0% of highly qualified specialists are over 50 years old (0.8% of them are between 60 and 72 years old). Among the average qualified technicians, 11.8% are over 50 years old (1.6% of them are between 60 and 72 years old), and 30.2% are electronics specialists (6.9% of them are between 60 and 72 years old). Skilled workers over the age of 50 make up 29.0% in the ICT sector (6.1% of them are between 60 and 72 years old) [22].

Another survey showed that the rural population in Russia has fewer problems with access to information and communication technologies, but the gap in digital skills is increasing compared to urban residents, while it is decreasing for the elderly group [2].

A survey of Russian scientists aged 50-70 years showed that they prefer advanced training courses in the specialty and computer courses. While scientists aged 30-49 years ranked computer courses in the third place, and those under the age of 29 years-in the last [23]. Thus, people of pre-retirement and retirement age have a high need for digital professional competencies.

The portrait of employees who had almost no reduction in wages in the context of the spread of Covid 19 and the transition to remote work is as follows: these are young men with higher education, specialists or entrepreneurs in the public sector, in the IT industry and Finance [24]. Consequently, women and older people have become more vulnerable in modern economic conditions.

In Russia, there is a significant gap in the level of digital competence among different categories of the population. There are big problems in their development in older people. The most acute lack of digital competencies became visible when organizations switched to remote work. One of the main reasons for this is the lack of basic education in the field of information and communication technologies (ICT) for some employees.

Digital competencies are closely related to information and communication technologies and have their own specifics depending on the field of professional activity of a person and their society. They form the employee's digital capital and social digital capital. The concept of digital competencies should be based on consideration of its types.

4. Methodology

The use of the term pre-retirees and pensioners was introduced on 01.01.2019. Federal law No. 350-FL of 03.10.2018 "On amendments to certain legislative acts of the Russian Federation concerning the appointment and payment of pensions". Depending on the year of retirement, the pre-retirement age will change (Table 1).

Table 1

Changes in the pre-retirement age in Russia due to changes in legislation

Gender of the person	Period									
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Female	51	52	53	54	55	55	55	55	55	55
Male	56	57	58	59	60	60	60	60	60	60

In our study, we considered people who reached the age of 50 to be pre-retirement age. It is from this age that Russian citizens can undergo free retraining (advanced training).

According to the provisions of Federal law No. 378-FL of 30.10.2018 "On amendments to articles 391 and 407 of part two of the Tax code of the Russian Federation", individuals who meet the conditions necessary for awarding a pension in accordance with the legislation of the Russian Federation in force on 31.12.2018 are entitled to a tax benefit. These are women from 55 years old and men from 60 years old. Women will now retire in 2020 at 56, men at 62, and starting in 2023, the retirement age will change to 60 for women and 65 for men. In addition, pensioners can be considered to be a group of persons having retired on superannuation, health, etc. To avoid confusion in our study, we considered people who have reached the age of 55 as persons of retirement age.

We used the questionnaire as a tool for employee survey and conducted it twice. The respondents were rural residents of the Siberian Federal district of the Russian Federation who are retired and still working. The sample size was 20 people.

The following formula was used to calculate changes in the need for digital competencies among working pensioners in rural areas:

$$X_j = \sum_{i=1}^{20} X(2019)_j^i - \sum_{i=1}^{20} X(2020)_j^i, \quad (1)$$

where $X^i_j(2019)$ is the respondent's assessment of their j competence in 2019; $X^j_i(2020)$ – is the respondent's assessment of their j competence in 2020; $i = \overline{1;20}$; $j = \overline{1;8}$.

Respondents were able to rate their competencies on a scale from 0 to 10, i.e. $0 \le X(2019)_j^i \le 10$ and $0 \le X(2020)_j^i \le 10$. Interpretation of the results: if $-200 \le X_j < 0$, the need for digital

competencies has become lower, if$0 < X_j \leq 200$, the need for digital competencies has become higher.

The assessment of changes in the need for social digital competencies was performed using a similar formula:

$$Y_j = \sum_{i=1}^{20} Y(2019)_j^i - \sum_{i=1}^{20} Y(2020)_j^i, \quad (2)$$

where $i = \overline{1;20}$; $j = \overline{1;11}$.

5. Results

5.1. Features of retraining programs for rural older people

An analysis of advanced training and retraining programs for older people in Russia has shown that the state actively supports free ICT training for pre-retirees and pensioners. Programs organized on the basis of village administrations and social support centers are mainly aimed at developing social competencies. For example, such as using smartphones, working on the Internet, using digital public services, etc.

On the basis of educational institutions, professional development and retraining are conducted to form professional competencies for older people. Third-generation universities began to appear. For example, Novosibirsk State Technical University has a folk faculty.

Let's look at examples of ICT-related retraining programs for residents over 50 years old in the Novosibirsk, Tomsk, and Kemerovo regions of the Siberian Federal district of Russia in 2020. (Tables 2, 3, 4).

Table 2

Training programs for older people in the Novosibirsk region using ICT (compiled according to the website https://50plus.worldskills.ru/#intro)

№	Name of the training program	Competence group according to the WorldSkills classification (Russia)
1	CAD engineering design	Production and engineering technologies
2	Internet of things	
3	Mechatronics	
4	Turning operations on numerically controlled machines	
5	Mobile robotics	
6	Software solutions for business	ICT
7	Creating virtual and augmented reality (AR/VR)	
8	Mobile app development	

Table 3

Training programs for older people in the Tomsk region using ICT (compiled according to the website https://50plus.worldskills.ru/#intro)

№	Name of the training program	Competence group according to the WorldSkills classification (Russia)
1	3D modeling for computer games	Creativity and design
2	Network and system administration	ICT
3	Software solutions for business	
4	Mobile app development	
5	Web design and development	

Table 4

Training programs for older people in the Kemerovo region using ICT (compiled according to the website https://50plus.worldskills.ru/#intro)

№	Name of the training program	Competence group according to the WorldSkills classification (Russia)
1	CAD engineering design	Production and engineering technologies
2	Internet marketing	Service sector (provision of services)
3	IT solutions for business on the "1C Enterprise 8 platform"	ICT
4	Web design and development	
5	Software solutions for business	
6	Network and system administration	
7	Mobile app development	

There are two types of training programs: professional retraining (it is 144 hours) and advanced training (72 hours), the number of places in the programs is limited. To enroll, you must pass the tests successfully. As of August 1, 2020, the groups for this year are complete.

In total, for residents of the Novosibirsk region aged 50 and older, WorldSkills Russia offers 29 programs in 2020, eight of them are related to the use of ICT, for residents of the Tomsk region – 27, five of them are related to ICT, for residents of the Kemerovo region – 37, of which seven are related to ICT.

Our analysis has shown that training in these programs requires a high or medium level of ICT knowledge. Thus, these programs are aimed at updating the knowledge of specialists in the relevant fields. The lack of digital competencies among rural workers must be compensated for by other programs. For example, it can be professional development of employees at their enterprises at the expense of the employer or at personal expense in educational institutions, centers, or remotely. The territorial dispersion and low density of the rural population makes it necessary to organize the educational process remotely, but rural pensioners (as our survey showed) prefer live communication. This is especially important when students don't have basic digital skills or software.

5.2. The changing demands in the digital competences

The research was conducted by the authors on the same sample of respondents in 2019 and 2020. Of interest is the change in the demand for digital competence groups, which, in our opinion, is associated with the Covid 19 pandemic and the transfer of people of retirement age to remote work (Table 5).

Table 5

The changing needs of digital competence groups among the employees

№	Digital competence groups	Changing need for groups of digital competencies, X_j
1	The possession of office programs	82
2	Data storage	32
3	Cybersecurity	30
4	Global data networks and communication channels	96
5	System administration and network configuration	-3
6	Technical writing	19
7	Web development	0
8	Programming basics	0

Agricultural workers were the least affected by changes in the need for digital competencies in rural areas. Most of them are school teachers, municipal employees, employees of financial organizations, social services, and other service companies.

The need for digital skills has also changed (Table 6).

Table 6

Changing need for social digital competencies

№	Purpose of use	Changing the need for digital competencies, Y_j
1	Participation in social networks	108
2	Sending/receiving e-mail	15
3	Uploading personal files	8
4	Retrieval	47
5	Implementation of financial operations	14
6	Sale / purchase	-4
7	Download the software	12
8	Distance learning	22
9	Reading news, articles, books	25
10	Listening to music	5
11	Watching video	32

Thus, the need for social digital competencies in rural areas among working pensioners has also increased, especially the role of skills in using social networks, searching for information, watching videos, reading news, articles and books. Respondents note that basic knowledge of ICT is most relevant to them.

A survey of respondents on changes in their needs for digital competencies over the past year also revealed the difficulties faced by older people working in rural areas. They lacked knowledge in the field of cybersecurity, setting up and participating in video conferences, searching for information, downloading and installing software, making presentations, etc.

This study showed a changing need for digital competencies in the context of the Covid 19 pandemic.

6. Discussion

Free ICT retraining programs for pensioners are quite diverse and in high demand. They cover not only information technologies, but also the service sector, creativity and design, production and engineering technologies, etc. These programs allow you to develop not only social competencies, but also digital competencies of employees. However, the analysis shows that they do not allow for such a short period (72 or 144 hours) to raise the level of ICT proficiency from basic to high. These programs are mainly focused on the existing high level of competence or on the acquisition of basic knowledge. Unfortunately, only two rural working pensioners (in our sample) have received an education with an in-depth study of ICT.

Thus, rural working pensioners have three additional options for improving their competencies: self-education; paid educational programs; and free professional development conducted in organizations and by the state.

7. Conclusion

Thus, changing needs for digital competencies entail the need to expand ICT training programs. In our opinion, for rural pensioners, the most relevant courses remain on basic digital skills and for the formation of advanced users. As a problem, it is necessary to highlight the preference for off-line classes for distance learning, which is difficult to implement with a low density of the rural population.

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