DIGITALIZATION

THE POPULATION OF THE KALININGRAD REGION AND THE DIGITAL ECONOMY: A SOCIOLOGICAL ANALYSIS

B. B. Podgorny

Southwest State University,
94, 50 let Oktyabrya, Kursk, 305040, Russia

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Since 2019, the Kaliningrad region has been running a regional digital transformation programme as part of the national initiative The Digital Economy of the Russian Federation. The programme seeks to improve the quality of life by creating information infrastructure and streamlining public administration. The regional Ministry of Digital Development has already presented an interim report on its implementation focused, however, mainly on the economic performance.
The study aims at conducting a sociological analysis of the region's population as a participant in digital transformation. It employs the questionnaire survey method with 384 respondents selected by quota sampling. The results show that slightly over a half of the population has a positive attitude to digitalisation, while about 20% believe that the digital economy leads to the degradation of society. The respondents named the development of the high-tech economy the major advantage of digitalisation and the proliferation of digital surveillance its major disadvantage. Kaliningraders reported extensive use of various digital technologies. Yet, the low indices of digital literacy and personal data protection are alarming. The findings, which supplement the regional digitalisation report with sociological data, can be useful in planning and implementing measures within the regional digital transformation programme.

Keywords:
digital economy, population, digital literacy index, digital literacy self-assessment index, personal data protection index

Relevance of research

In 1995, the American computer scientist Negroponte [1] introduced a new concept called "digital economy". The digital economy has been in the centre of global attention since 2015 when there was a statement made at the World Economic Forum in Davos on a new trend in economic development in a wide range of areas, "including artificial intelligence (AI), robotics, the Internet of Things (IoT), robot cars, three-dimensional printing, nanotechnology, biotechnology,

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materials science, energy accumulation and storage, quantum computing" [2, p. 9]. Another topic discussed at the forum was the shift of paradigms in the social sphere under the influence of the digital economy.

In Russia, it was the address of the President to the Federal Assembly of the Russian Federation on December 1, 2016, that first expressed the need to develop the digital economy. In 2017, the programme "Digital Economy of the Russian Federation" [1] was adopted. It is being implemented both at the federal and regional levels.

Given the overriding importance of the country's transition to the digital way of life, we believe that the successful implementation of the "Digital Economy of the Russian Federation" programme, which affects virtually the entire population of the country and even changes the existing socio-economic structure, is possible only if the population understands the need for such a change, actively supports and strives to achieve the goals set by the programme. Successful digitalization of the country is impossible without taking into account the sociological component which involves its positive public perception, the population's readiness for various changes brought by the programme. One of the key factors in digitalization is the level of the population's digital literacy.

In 2019, within the framework of the federal programme, the Kaliningrad region launched its regional programme called "Digital Transformation in the Kaliningrad Region". The programme aims "to improve the quality of life, create a stable and secure information infrastructure, provide training of qualified personnel and improve the efficiency of public administration through the digital transformation of public administration and priority sectors of the economy".[2] The official website of the Ministry of Digital Development of the Kaliningrad region has already presented its first results.[3] We supplement the report that contains mainly economic data with the selected findings of the sociological study of the Kaliningrad region's population carried out within the framework of the project "Russian Digital Economy as a social field" (RFBR).

The research subject: the population of the Kaliningrad region.

The research purpose: the sociological analysis of the region's population as a participant in digital transformation.

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[1] *Programme "Digital Economy of the Russian Federation",* 2017, approved by the Government Order of the Russian Federation No. 1632-r of July 28, 2017, available at: http://static.govemment.ru/media/files/9gfm4fhj4psb79i5v7ylvupgu4bvr7m0.pdf (accessed 07.05.2020) (in Russ.).

[2] *State programme of the Kaliningrad region "Digital Transformation in the Kaliningrad region",* 2019, decree of the Kaliningrad Region Government No. 555 of August 28, 2019, available at: https://gov39.ru/vlast/npa/p (accessed 05.08.2020) (in Russ.).

[3] *Annual report "On the implementation and evaluation of the state programme of the Kaliningrad region "Digital transformation in the Kaliningrad region,* 2020, available at: https://digital.gov39.ru/documents/?doctype=37 (accessed 07.09.2020) (in Russ.).

Literature review

Analysing the papers on the digital economy, we have singled out some research areas that deal with various social aspects of the digitalization process directly related to the population. First of all, one of the major works is that by Afanasenko and Borisova who propose to consider the digital economy as "a set of new social relations that arise when using electronic technologies, electronic infrastructure and services" [3]. They note that in the Russian socio-economic model, in contrast to the American one, the person is traditionally in the foreground, and any system needs to be adjusted to the person, including the digitalization of a country.

One of the areas in which the academic community is interested is *the ethical problems and social risks of digitalization*. Researchers are concerned about the considerable pressure that digitalization puts on public values, primarily privacy, autonomy, security, human dignity, justice, the balance of power [4] and even the health of citizens [5]. There are scientifically based assumptions that digitalization along with the development of artificial intelligence can lead to the aggravation of socio-anthropological risks [6; 7], the growth of fake news, the polarization of society [8], and sometimes hatred [9]. Researchers are negative about the inevitable increase in digital surveillance associated with the introduction of new digital technologies [10] focusing on privacy issues brought by the digital economy development [11].

Another area of interest is *the transformation of culture*. The paper considers the socio-cultural basis of the digital economy [12], identifies the main trends in the innovative development of modern cultural institutions in the context of the digital economy [13], relationships between online and offline cultural environments [14], changes in cultural policy caused by digital communications and digital media [15]. One of the challenges our society faces today is the selection and interpretation of cultural heritage intended for digitization. For instance, Manzhuch notes that the attempts to fit the knowledge and spirituality of indigenous peoples into the "western" worldview are destructive. Disregard for the needs and values of a community results in a more discriminatory approach to the community that has created this heritage [16].

As for *education transformation*, the scientific community agrees that technologies and tools of the digital economy are becoming unique factors that generate the accelerating effect of educational capital and ensure the use of various network effects to form intellectual capital [17]. However, there are also discussions around the problems of global digitalization requiring innovative approaches and qualitatively different competencies in both business and education [18]. The global education reform has not only increased the technologisation of education systems but also gave rise to new forms of ethical

dilemmas [19]. Scientists emphasize that even in the digital environment, teaching methods should aim at stimulating critical thinking to develop problem-solving abilities [20].

The study of the *human capital's role* in the digital economy is one of the main directions in the research of the social aspect of digitalization. Publications argue that in the digital era human capital is becoming increasingly important [21], they suggest specific models in which it plays a major role in the digitalization of socio-economic life [22]. They also provide the results of applied research including identified practices, relationships [23] and major factors in the formation of human capital in the digital economy [24].

Digital literacy research. In April 2017, within the framework of the G20 summit, a unified indicator-based approach [25] to assessing the level of digital literacy was proposed to enable cross-country comparison. The indicators are widely used to identify the digital literacy levels in different countries. For instance, Berenyi and Sasvari have applied them to study the digital literacy of higher educational institutions' students in Hungary [26] concluding that they have a high-level IT culture. An international group of scientists from Norway, France, Germany, India and Australia published the results of the analysis of the digital literacy of the population of sub-Saharan Africa and India [27]. Cote and Milliner presented an interesting work on the self-assessment of the digital literacy level [28] indicating that Japanese students show the self-assessment level significantly lower than the actual one.

One of the major Russian publications on digital literacy is that by Soldatova introducing the four types of digital competence [29]: "information and media competence, communication competence, technical competence, consumer competence" [29, p. 30]. Today this classification is the methodological basis for applied research aimed at creating the indices or measuring digital literacy levels.

In Russia, digital literacy indices were developed by ROCIT (Regional Public Centre for Internet Technology),[4] NAFI Research Centre,[5] Rosatom Corporation [30], and IIS (Institute of the Information Society) [31]. Zadorin led a study to construct and calculate the media literacy index for 10 Russian regions [32], the Kaliningrad region was not in the study sample. The author of the article led the project on developing the index and measuring the digital literacy level of the Kursk region's population6 taking into account regional specifics [33].

[4] Digital literacy index, 2020, *Regional Public Centre for Internet Technology (Rocit),* available at: https://rocit.ru/news/index-digital-literacy-2018 (accessed 03.09.2020) (in Russ.).

[5] Every fourth Russian has a high level of digital literacy, 2020, *Analytic centre of NAFI*, available at: https://nafi.ru/analytics/tsifrovaya-gramotnost (accessed 03.04. 2020).

Studies of the digitalization processes at both federal and regional levels conducted by Kaliningrad researchers provide some important insights. For instance, Sergeev shows the essence of the economic content of social development digitalization [34]. Klachek, Polupan, and Liberman identify a range of problems finding a solution to which will contribute to the development of modern digital technologies [35]. Serova identifies the main directions of legislation development and doctrinal research in the field of digital economy [36]. Kostrikova, Maitakov and Yafasov draw attention to the emergence of social marginalization risks as digital technologies develop [37]. Kaliningrad researchers also study educational digital technologies and the peculiarities of their application in educational institutions [38; 39].

The publications on regional problems include that by Belaya presenting the results of the analysis of the state programme "Digital Transformation in the Kaliningrad Region". It concludes that it is necessary to conduct campaigns promoting digital literacy [40]. Vetrov suggests specific steps for training personnel to protect information under the auspices of the Kaliningrad State Research Centre for Information and Technical Security [41]. Pekhova and Gafarova, having studied the practice of the Kaliningrad region's municipalities, conclude that it is necessary to introduce digital technologies to increase citizen engagement in solving local issues. [42]. Krishtal and Shchekoturov note the need to consider the role of the region's population in the ongoing processes related to risks [43].

Methodology

In November 2020, within the framework of the "Russian Digital Economy as a social field" project, the author led a comprehensive sociological study of the Kaliningrad region's population. Other areas studied (or planned to be studied) within the project are the Kursk, Tambov and Yaroslavl regions. The criterion for selecting the regions is the share of the population employed in the ICT. The Kaliningrad region is in the second subgroup with 2—2.5%. Within the year it grew by 0.5% making the region the leader in the subgroup.

The study used a questionnaire survey. The general totality, the residents of the Kaliningrad region aged 18 years and older, is 812 thousand people; the sampled population is 384 respondents. The sampling method's criteria are gender and place of residence (urban/rural).

The research objectives include conducting a sociological analysis of the region's population as a participant in the digital transformation process and identifying the characteristics of the population as an actor in the social field. The paper does not discuss the characteristics of the Kaliningrad region's population as an actor in the social field [44], the methodology of the study and its results will be published in a separate paper.

In the course of the study, the following indicators characterizing the quality of life of the population in terms of the digital economy have been identified:

— the attitude of the population to the development and introduction of digital technologies;

— positives and negatives of the digital economy, according to the population of the Kaliningrad region;

— digital activities of the Kaliningrad region's population (the use of digital devices, the purchase of goods or services via the Internet, the use of digital technologies when making payments for goods and services, receiving public services through digital technologies).

— index of self-protection of personal data in the digital environment;

— digital literacy index;

— additionally, the digital literacy self-assessment index has been constructed and calculated.

The study also identifies the possible dependence of the above indicators on the following factors: age, gender, education, marital status, place of residence, employment, and monthly income per family member.

Russian researchers apply different approaches and methods to determine the level of digital literacy of the population. This paper uses a digital literacy index based on the competencies proposed by Soldatova and taking into account regional characteristics [45]. The index is calculated based on responses to 40 questions most of which relate to several specified competencies. The index is the total score for the competencies transformed into percentages (from 0 to 100). For ease of reference and comparison, the index was divided into five levels — from very low to very high. Each level corresponds to the total score, calculated in increments of 20%.

The index of personal data self-protection in the digital environment [46] ranges from 0 to 100% depending on whether or not respondents use anti-virus programs, publish personal data in social networks, use complex passwords and change them frequently, send important information, clean cache, browsing and download histories regularly, post personal information on forums or in social networks, use the *incognito mode*, use public Wi-Fi, use two-factor authentication, etc. The answer to each question is assessed individually taking into account the expert community's opinion expressed when discussing the levels of digital literacy. For ease of reference, the levels of the personal data protection index have been converted into a five-point system in increments of 20% (1 — very low, 2 — low, 3 — satisfactory, 4 — high, 5-very high).

The digital literacy self-assessment index ranges from 0 to 100% depending on the respondents' self-assessment of the following on the scale from 0 to 10: difficulties in searching and exchanging information on the Internet, their ability

to assess how modern a computer and software are, competence in choosing a digital device according to various parameters and functionality, competence in using common digital technologies, skills in using social networks, the ability to use them for self-promotion, competence in using various payment methods through mobile and online applications, ability to create digital multimedia content, programming skills. For ease of use, the self-assessment index has been also converted to a five-point system in increments of 20% (1 — very low, 2 — low, 3 — satisfactory, 4 — high, 5 — very high).

The results were processed, analyzed, and compared using the SPSS program (statistical tables and contingency tables). Since the main variables are nominal, the chi-square indicator (at the level of statistical significance p = 0.05) and Cramer's V were used to determine the probable dependencies. The theoretical chi-square was calculated taking into account the specified level of statistical significance.

Results

1. The attitude of the population to the development and introduction of digital technologies.

The study shows that half of the respondents have a positive attitude to the digital economy and believe that it contributes to social advancement. However, some of them (about 20%) believe that it causes social degradation. About 30% cannot clearly define their attitude to the digital economy as a driver of the development of society.

The analysis results suggest that the following characteristics can influence the population's attitude to the development of the digital economy:

— *education* (p = 0,006, chi-square = 27,8, degrees of freedom =12, Cramer's V = 0,26). Among the respondents with a higher level of education, a larger number have a positive attitude to digitalization. For instance, among those with a first or higher degree, about 60% support the digitalization process. Between 40 and 60% of the respondents with primary, secondary and incomplete secondary education, believe that the digital economy contributes to social degradation. A significant part of those with secondary education is students of secondary or higher educational institutions, which confirms the results obtained by age indicators;

— *employment* (p = 0,05, chi-square =32, degrees of freedom = 20, Cramer's V = 0,23). Figure 1 presents the results of the analysis by the category of employment. The diagram shows a higher than average negative attitude to the digitalization process in pensioners, public workers and students. This list also includes individual entrepreneurs and heads of state-owned companies.

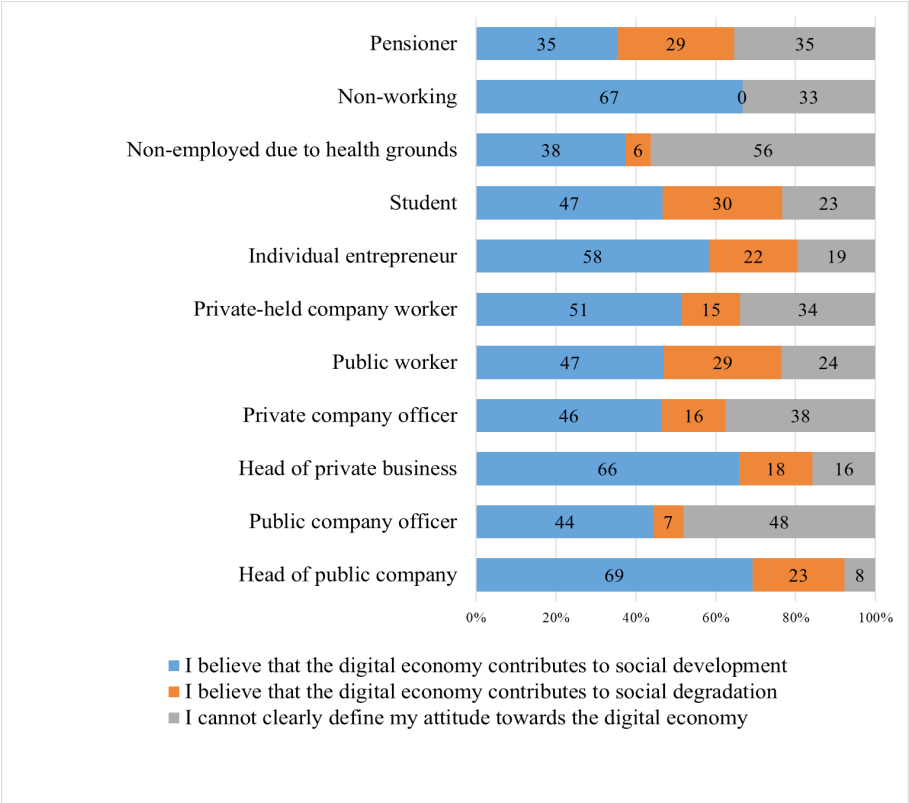

Fig. 1. Attitude to the development and introduction of digital technologies by the category of employment

The results by age are of particular interest although the age dependence of the attitude towards the development and introduction of digital technologies has not been confirmed ($p>0.05$). For instance, in the age group 18—24 years, a quarter of the respondents (both men and women) also believe that the digital economy leads to social degradation, 23% of the respondents in the age group 35—44 years express a negative attitude towards digitalization. Interestingly, in the over-60 age group, less than 17% express a negative attitude to digitalization, which is lower than the general indicator although its value varies from 10% for people aged 60—65 to 30% for people over 65.

2. Positives and negatives of the digital economy, according to the population of the Kaliningrad region.

The respondents were asked to express their opinion about the positive and negative aspects of digitalization choosing an option from the suggested list or providing their answer. As figure 2 shows, the greatest concern is the growing control over all areas of life and activities. The respondents name the development of high-tech industries as the biggest advantage of the digital economy.

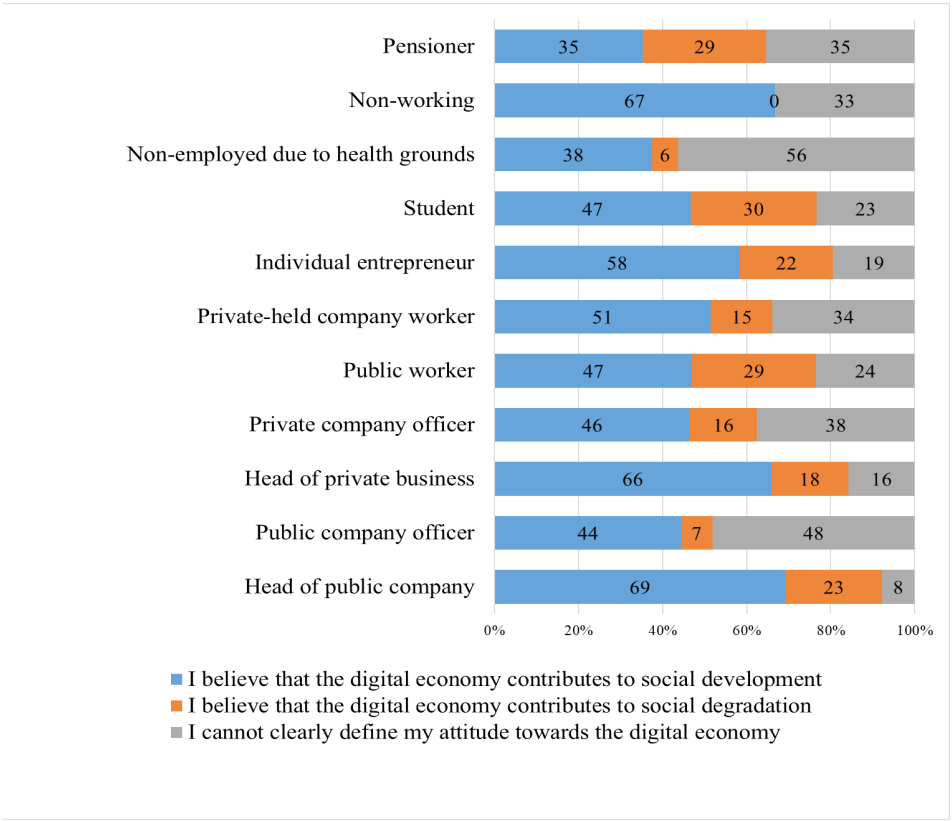

Fig. 2. Positives and negatives of digitalization

3. Assessment of the Kaliningrad region population's digital activities.

3.1. Daily use of digital devices. To measure this indicator, the respondents had to select devices that they use daily from the list or add their own in the 'others'.

About one-third of the respondents use only one electronic device every day, mainly a smartphone or a mobile phone, about 50% use two or three devices, 13% use four-five devices, and about 3% of the respondents use more than five devices.

We have calculated the percentage of the number of users from the sampled population for each device offered in the list. Since the respondents, answering this question, could choose several options or add their options, the ratio of the number of responses to the sampled population was calculated for each option. Therefore, the overall result exceeds 100%. The majority of answers in the "others" was "a robot vacuum cleaner". Figure 3 shows the results.

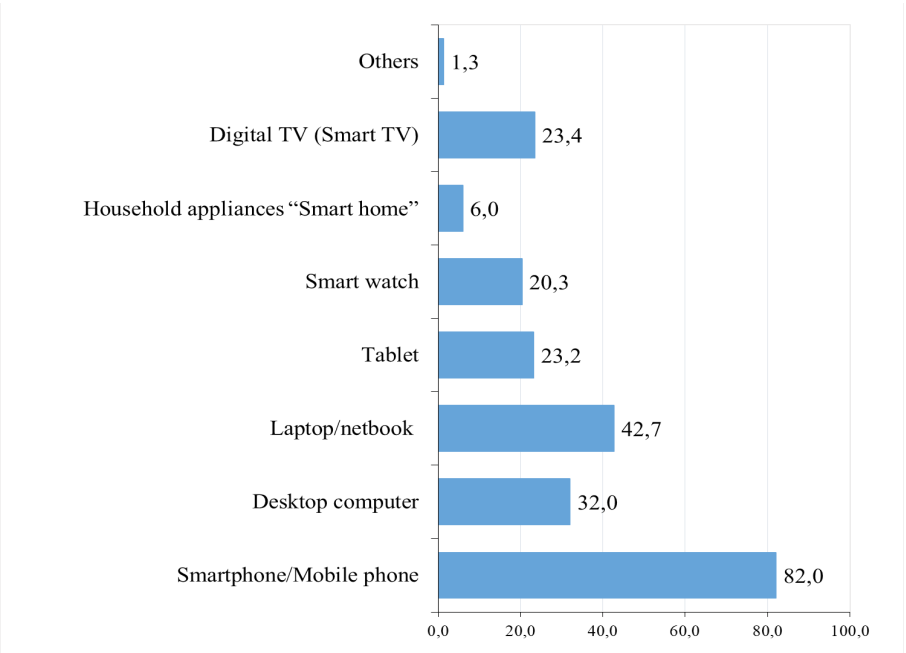

Fig. 3. Daily use of major digital devices, %

With a high probability, the indicator under study is affected by the following factors: age (p = 0, chi-square = 104.8, degrees of freedom = 35, Cramer’s V = 0.25); gender (p = 0, chi-square = 61.7, degrees of freedom =7, Cramer’s V = 0.4); type of employment, gender (p = 0, chi-square = 158.9, degrees of freedom = 70, Cramer’s V = 0.25). Table 1 presents the data by age.

Table 1

The dependence of the number of digital devices used on the age

Number of digital devices used	Age				
	18—24	25—34	35—44	45—60	over 60
1,00	3	5	28	35	63
2,00	41	36	27	29	14
3,00	38	34	23	19	12
4,00	3	14	14	9	5
5,00	6	7	5	3	4
6,00	9	3	1	5	1
7,00	0	1	1	0	1
8,00	0	0	0	0	0

The employment of respondents has the following impact on the use of digital devices: the sampled students and the non-working (not for health reasons) use six-seven digital devices; the unemployed for health reasons and the pensioners mainly use one or two devices; the remaining categories use three-four devices daily.

The gender of the respondents also impacts the use of digital devices. More than 40% of the sampled men are in the group that uses three to four devices. Half of the women use one device, about 40% of them make up a group that uses two to three devices. The maximum number of devices, seven, is used by 2% of the men. Devices in the "others" category were indicated by the women.

3.2. Purchasing goods or services via the Internet. About 60% of the respondents use the Internet to purchase goods or services. The employment has a probable influence on this indicator ($p = 0$, chi-square=78.14, degrees of freedom = 30, Cramer's V = 0.27), as well as education ($p = 0$, chi-square = 45.66, degrees of freedom = 18, Cramer's V = 0.2) and age ($p = 0.007$, chi-square = 31.95, degrees of freedom = 15, Cramer's V = 0.17);

More than 70% of the unemployed, public company officers, private company workers and from 60 to 70% of the private-held company workers and individual entrepreneurs make purchases via the Internet, as well as half of the students and heads of companies, while only 16% of the pensioners shop online.

The highest percentage of online shoppers are those with higher education (more than 70%), they are followed by those with secondary education and primary vocational education (about 50%). Among the respondents with secondary education, about 45% make purchases and services via the Internet.

The age group of 35—44 years is in the first place in terms of online shopping, 45—60 years and 25—34 years are in the second place. At the same time, only about 50% of the 18—24-year-olds and less than 20% of the over-60-year-olds use the Internet to purchase goods or services.

3.3. Preferred form of payment for goods and services. About 53% of the respondents prefer to make payments by bank card, 17% choose to use smartphone applications, about 30% still prefer cash payments.

Age has the biggest influence on this indicator ($p = 0$, chi-square = 71.62, degrees of freedom = 30, Cramer's V = 0.2), as well as the form of employment ($p = 0$, chi-square = 144.05, degrees of freedom = 60, Cramer's V = 0.25). Table 2 provides the detailed information on age.

Table 2

The preferred form of payment for goods and services, depending on age

Preferred form of payment	Age				
	18—24	25—34	35—44	45—60	> 60
Cash	21	30	24	37	68
Card	59	34	57	51	25
Smartphone apps	21	37	19	12	7

About a third of the private companies' officers and individual entrepreneurs and more than 20% of the students use smartphone apps. More than 60% of the pensioners prefer to pay in cash. Interestingly, about 45% of the heads of both public and private companies also choose to use cash.

3.4. Applying for public or municipal services if necessary. Since the respondents could choose several options or provide their own answers, we calculated the ratio of the number of responses for each option to the sampled population. Therefore, the overall result exceeds 100%. The calculations have shown that 55% of the respondents prefer to use the portal of public services to receive state or municipal services, 30% prefer personal visits to institutions and organizations, 35% would rather make a phone call, 15—16% choose social networks or search engines.

Education and the type of employment impact the respondents' actions when there is a need to apply for public services ($p = 0.001$, chi-square = 32.14, degrees of freedom =12, Cramer's V = 0.2) ($p = 0.016$, chi-square = 35.8, degrees of freedom = 20, Cramer's V = 0.216). Other characteristics do not affect this indicator.

4. Personal data self-protection index.

The calculation has shown that the overall level of personal data self-protection is 24.3 on a 100-point scale or 1.8 on a 5-point scale. At the same time, more than half of the respondents belong to the group with a very low level of personal data self-protection, 25% show its low level, and 17% demonstrate a satisfactory level. Only 6.5% of the respondents have a high and very high level of personal data self-protection.

The level of personal data self-protection can be influenced by the following indicators:

— *age* ($p = 0$, chi-square = 103.26, degrees of freedom = 20, Cramer's V = 0.26). The group with a very high level of personal data self-protection consists of the respondents aged 18—24, in the group with a high level there are respondents aged 18—24 and 25—34. Most people over 60 are in the group with a very low level of personal data self-protection.

— *gender* ($p = 0$, chi-square = 29.4, degrees of freedom = 4, Cramer's V = 0.28). Gender dependence is very evident in the group with a very low level of personal data self-protection. It includes more than 65% of all the women, which is almost twice as much as the share of men in this group of their total number. At the same time, the opposite ratio is observed in the groups with low and satisfactory levels: among the individuals with high and very high levels of personal data self-protection, the share of men and women to their total is the same.

5. Digital literacy index.

The average level of digital literacy of the Kaliningrad region's adult population is about 32 points on a 100-point scale or 2.1 on a 5-point scale, which is low. Figure 4 provides detailed results.

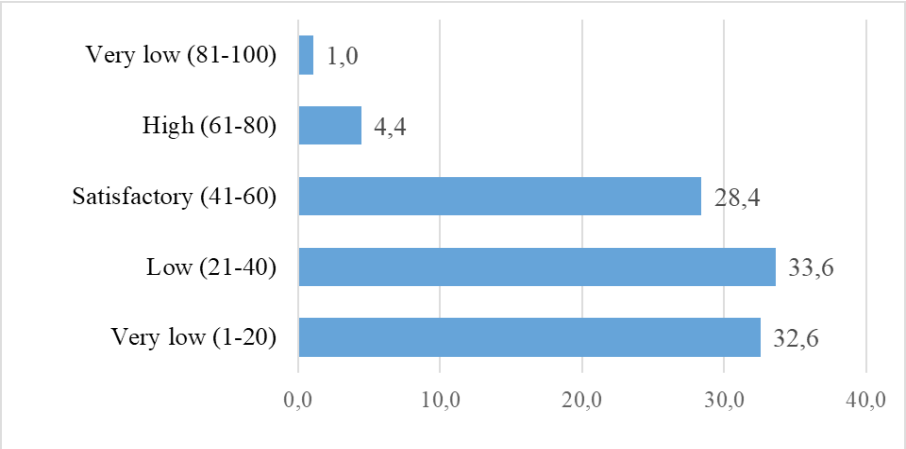

Fig. 4. Digital literacy index of the Kaliningrad region's population

The value of the digital literacy index is most affected by age and employment.

The age dependence (p = 0, chi-square = 177.11, degrees of freedom = 20, Cramer's V = 0.35) is clear in very high, high and very low levels of digital literacy. The group with a very high level of digital literacy includes only people between 18 and 34 years old, while the same age category largely comprises the group with a high level of digital literacy. The composition of the group with a very low level of digital literacy is as follows: 1% of the age group of 18—34, 16% of the age group of 35—44, 31% of the age group of 45—60, 77% of the age group of 60 years and older. The group with a satisfactory level of digital literacy includes 40—50% of the respondents belonging to the age category of 18—44, about 20% of the representatives of the age group of 45—60 years, and about 6% of the representatives of the older generation. The low digital literacy group includes approximately 40% of all age groups, except for the older generation, whose share in this group is about 16%.

As for the form of employment (p = 0, chi-square = 156.26, degrees of freedom = 40, Cramer's V = 0.32), the group with a high level of digital literacy includes the students, individual entrepreneurs and heads of private-held companies. The group with a high level has the largest share of the students, heads of public companies and non-working people. About 45% of the public companies' officers are in the group with a low level of digital literacy. About 80% of the pensioners are in the group with a very low level of digital literacy. The other characteristics have a limited impact on the level of digital literacy.

6. Digital literacy self-assessment level.

The self-assessed level of digital literacy differs from the actual one. It is 49 against 32 points respectively on a 100-point scale. Figure 5 presents data comparing the actual level of digital literacy and the self-assessed one.

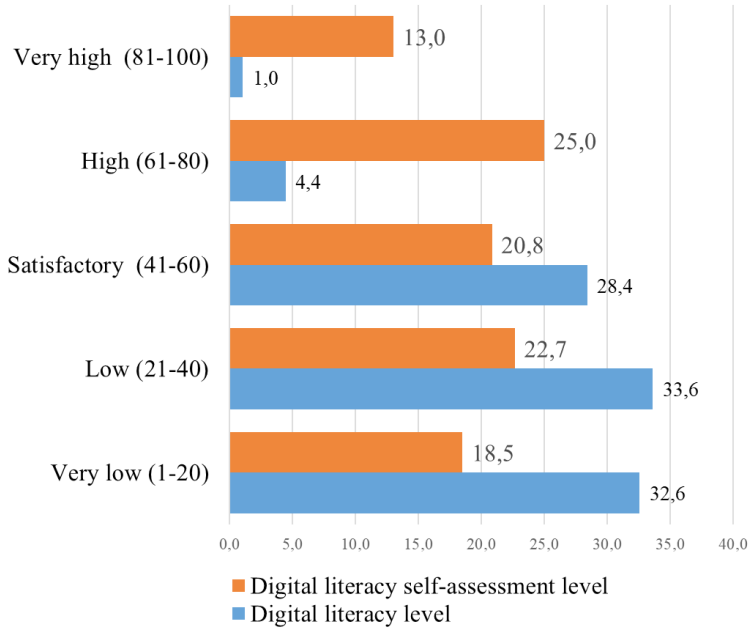

Fig. 5. Comparison of digital literacy level and self-assessment level

The formation of digital literacy self-assessment level is most affected by age ($p = 0$, chi-square = 189.58, degrees of freedom = 20, Cramer's V = 0.35) and the form of employment ($p = 0$, chi-square = 217.92, degrees of freedom = 40, Cramer's V = 0.37).

Conclusion

The paper presents the results of the sociological study of the most important group involved in this process, the population of the Kaliningrad region supplementing the official Fig.s presented in the annual report of the Ministry of Digital Technologies and Communications of the Kaliningrad region on the implementation of the digital transformation programme in 2019.

The analysis shows that a little over half of the population aged 18 and older has a positive attitude towards the process of digitalization and about 20% believe that the digital economy contributes to social degradation. However, the greatest concern is the number of people who have not formed their opinion about the digital economy yet. It is approximately 30% of the population, or about 250 thousand people. This group might not have made up their mind because they still do not understand the processes that are taking place and do not see how they impact their lives.

Examining the opinions on the positives and negatives of the digital economy, the research reveals which components of digital transformation are of the greatest concern and which of them are supported.

The results of studying the digital activities of the Kaliningrad region's population show that it uses a variety of digital technologies, however, the index of the personal data self-protection in the digital environment is very low, only 24 points on a 100-point scale, which is alarming.

The digital literacy index of the region's population is several points higher than the digital literacy indices in other regions studied. Nevertheless, it is still low.

The index of the population's digital literacy self-assessment, which is 49 points on a 100-point scale, indirectly confirms that a significant part of the population considers itself an active participant in the digitalization process.

The results made it possible to identify the key areas requiring attention in further implementation of digital transformation programme in the Kaliningrad region, including:

— enhancing awareness-raising activities emphasizing the need for the introduction and use of digital technologies. An efficient way to reach the older generation is to use clear examples referring to the past, when, for instance, a conventional wired telephone was considered a luxury. It is important to explain to the younger generation that digitalization aims not only at creating databases for the digitalization programme. It is essential to provide regional, national and global examples of digitalization, including artificial intelligence, robotics, the Internet of things, biotechnologies, as well as basic digital technologies that improve the lives of the region's population. We believe that a well-organized explanatory work will make most of the 30% who has not formed a clear opinion the supporters of digitalization.

— increasing awareness-building work on personal data self-protection in the digital environment, primarily among the seniors. The research results show that a significant part of the older population simply does not use antivirus programs when accessing the Internet from personal computers. It is advisable to create volunteer groups (based on higher educational institutions) whose activities will be aimed at solving problems associated with data protection in the digital environment.

— increasing the digital literacy index of the region's population. It is also necessary to develop and implement educational programs among different age groups. For school children, this can be done through digital literacy classes, which along with financial literacy programmes is within the competence of the regional education authorities. As for the rest of the population, higher education institutions can provide similar programmes through volunteering or within the frame of work placement, which additionally will give practical skills to their graduates.

We believe that the development and implementation of the proposed measures will promote the interests of the population as the main participant in digitalization and provide greater results in the digital transformation of the Kaliningrad region.

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The author

Prof. Boris B. Podgorny, Department of Philosophy and Sociology, Southwest State University, Russia.

E-mail: b.podgorny46@gmail.com

https://orcid.org/0000-0002-2972-3603