Digital Technologies and the Silver Economy in Modern Conditions

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Abstract: This paper is devoted to the analysis of the development of the silver economy in our country and abroad, its role in digitalization and solving social and economic problems in the field of demographic aging among the population. Statistical information of the Federal State Statistics Service, annual reports of the Social Fund of Russia, comparative analysis, secondary data analysis were used in the work. It is emphasized that the main factors in the development of the silver economy are 1) digital literacy of older people, 2) the level of income and consumer activity of older people, 3) interaction with non-profit structures and institutions, participation of older people in volunteer activities. As a new trend in global development, the silver economy is developing differently in different countries. Its development largely depends on the image of the elderly in the eyes of business, the state and society.

1 INTRODUCTION

Today, digital technologies play an important role in the development of the economy, affecting all spheres of activity, moreover, we can talk about a serious transformation of society under the requirements of the digital economy. Building up digital potential and using neural network technologies leads entrepreneurship and business to leadership in global positions and high competitiveness in the service market. Researchers from St. Petersburg M.V. Stiller and I.M. Using the example of the banking industry, Trushkevich reveals how neurocomputer technologies have conquered the economic, state, political, and public space today. They emphasize that today both the government and international corporations, and even small and medium-sized businesses, are ready to invest huge amounts of money and risk investing in the neurocomputer economy (Stiller, 2023).

Despite the positive aspects of digitalization, it is also necessary to realize and prevent the problems and risks associated with its rapid development, for example, the growth of crime in the field of digital technologies (Masovets, 2020). According to official data of the Ministry of Internal Affairs of Russia, currently every fourth crime is committed using IT technologies. Rightly noting that the process of digitalization poses serious challenges to legal science related to combating crime in modern conditions, researcher E.V. Rogova, cites statistical information in her research: their share in the total number of registered crimes increased from 25.8% in 2021 to 26.5% in 2022 (Rogova, 2023).

The processes of digitalization of society are proceeding unevenly, reflecting a significant differentiation of indicators of the development of the digital economy among the eight federal districts in our country. The analysis of the digital inequality of macro-regions on the example of the Siberian Federal District is presented in more detail in the work of V.I. Samarukha, T.G. Krasnova, T.N. Plotnikova (Samarukha, 2019). In addition to studying the processes of digitalization among various regions and sectors of the economy, the analysis of society's readiness for universal informatization and the problem of digital inequality among various socio-demographic groups of the population is of particular importance. As researcher I.E. Kalabikhina notes, the

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main challenge of digital development is the aging of the population, which is still not a verdict for the digital economy, moreover, digitalization can mitigate the effects of aging (Kalabikhina, 2019). The trend of global population aging has been called the «quiet demographic revolution» and leads to the transition to a new model of demographic development, its consideration in all spheres of life, where the central role is played by «new elderly people» (Oleinikova, 2021).

According to official data presented in Fig.1, the increase in the population over the age of able–bodied in the structure of the total population of our country in 2011 was 0.41%, in 2012 – 0.42%, in 2013 – 0.48%, in 2014 – 0.53%, in 2015 - 0.51%, in in 2016 – 0.43%, in 2017 - 0.45%, in 2018 - 0.45%, in 2019 - (– 0.92)%, in 2020 – 0.28%, in 2021 - (– 1.25)%, in 2022 – 0.48%. In 2022, the largest share (44%) fell on people aged 70 years and older, in second place – citizens aged 60-64 years (30%), and the lowest number aged 65-69 years (26%). Over the past 12 years, approximately the same ratio between the age groups of life-for-life convicts has been maintained, despite the fact that from 2010 to 2022, the proportion of life-sentenced citizens aged 60-64 years has increased by 1.2 times, and the proportion of life-sentenced citizens aged 65-69 years has increased by 2.2 times. In total, over the period from 2010 to 2022, the proportion of elderly people increased by 2.21% in target terms. The table is compiled by the authors on the basis of statistical information provided on the official website of the Federal State Statistics Service for 2010-2022.

Period	60 – 64	65 – 69	70 or more	Total number, thousand people	Percentage of the total population, %
2022	10369	8958	15152	35847	24,47
2021	10479	8825	14625	35272	23,99
2020	10300	8469	14686	36903	25,24
2019	10106	8339	14361	36629	24,96
2018	10027	8179	13797	37989	25,88
2017	9783	7937	13506	37362	25,43
2016	9610	7637	13230	36685	24,98
2015	9445	7263	13086	35986	24,55
2014	9260	6428	13377	35163	24,04
2013	8949	5269	13587	33788	23,51
2012	8690	4453	14099	33100	23,09
2011	8380	3896	14380	32433	22,67
2010	7982	3913	14219	31809	22,26

Figure 1: Dynamics of changes in the number of elderly people for 2010–2022 in the Russian Federation.

Having analyzed megatrends and digital technologies, including in the field of demography, researcher N.A. Ekimova notes that demographic processes in Russia correspond to the trends of developed countries. The author notes that megatrends change the structure of the economy, leading to the development of the so-called *silver economy*, which entails both changes in the labor market and in the structure of the production of goods and services, and stimulates gerontomarketing, which in the coming decades should affect economic growth and the national economy (Ekimova, 2021).

2 METHODOLOGY

The theoretical and methodological foundations of the study of digital technologies and the silver economy were laid by research of L.I. Smirnykh, I.N. Oleinikova, N.A. Tepina, K.A. Galkin, N.V. Goroshko, S.V. Patsala, O.V. Zaborovskaya, A.S. Zueva, T.S. Khrolenko.

The statistical data of the Federal State Statistics Service, the Pension and Social Insurance Fund of the Russian Federation (until 2022, the Pension Fund of Russia), the ConsultantPlus reference legal system for the period from 2010 to 2022 were used in the work.

Such research methods as the method of system analysis, the method of comparative analysis, as well as the structural and functional approach were used in the work. The method of system analysis helped to achieve an understanding of general trends in the field of demographic problems and the silver economy in various countries of the West and East. The method of comparative analysis made it possible to determine the features of the development of the silver economy in our country, as well as to analyze the dynamics of changes in the number of elderly people in Russia, the size of old-age insurance pensions, the size of the subsistence minimum for pensioners, the size of the average monthly salary of employees from 2010 to 2022. The structural and functional approach contributed to the substantiation of the position that despite the insufficient development of the silver economy in our country in comparison with the countries of Western Europe, the USA and China, it is already acquiring the functions of one of the drivers of economic growth and a factor of socio-economic well-being of an aging society as a whole.

For the purpose of secondary analysis, data from three empirical studies were used:

– the results of semi-structured interviews (n=20) with elderly people-members of volunteer communities aged 65 to 73 years living in St. Petersburg and in villages in the south of Karelia (Galkin, 2022);

– the results of a survey conducted to assess the elderly of the Sverdlovsk region of their professional potential, readiness for professional development and

training (n=418) at the age of 50 to 70 years (Kasyanova, 2020);

– the results of the assessment of digital literacy of the population and the level of digitalization of enterprises in the EU countries based on Eurostat data for the composite index of digitalization of the economy and society (9 countries with developed economies and 11 countries with economies in transition) (Smirnykh, 2020).

3 RESULTS AND DISCUSSION

The silver economy is understood as a system of production, distribution and consumption of goods and services aimed at using the purchasing potential of older people and meeting their needs for security, consumption, life and health. In the work of researchers I.N. Oleinikova, N.A. Tepina, the essential features and various interpretations of the silver economy are presented, after analyzing them, it can be concluded that older people as the main consumers of goods and services have specific needs, thereby opening up new opportunities for economic development due to the expansion of the market, consumption and production (Oleinikova, 2021). According to researcher O. V. Zaborovskaya, the silver economy has great potential for the sustainable development of the regions of our country, but first of all, this is due to rethinking the role and understanding that older people can become a new resource for economic development. The author notes that the silver economy also includes active citizenship and volunteering of elderly people. The silver economy is a kind of adaptation of the economy to the age and socio-economic changes of the population (Zaborovskaya, 2023).

The silver economy is a new trend of global development in the context of global population aging, it reveals the benefits that a healthy, active and financially independent population of the «silver age» can give to society (Goroshko, 2021). The most developed silver economy exists in the countries of Western and Northern Europe, the USA and China (Niemczyk, 2023). As researchers B. Lipp & A. Peine from Germany and the Netherlands note in a joint scientific article, the development of the silver economy has indicated a progressive approach to the fact that the aging of the population has been understood in a more positive light than before, despite the long-standing ageist, economic, technocentric problems of the elderly (Lipp, 2022). Studying the silver economy in France, a team of French scientists proposes a new term «gerontological innovation» to denote various forms of innovation designed to meet the needs of older people (Laperche, 2019). Chinese researchers Liu Yanwei and Hu Xiaohui, based on the results of the questionnaire survey Chinese Family Tracking Survey conducted from 2010 to 2018, analyzed the state of family entrepreneurship in China, and found that the average share of silver entrepreneurs in the overall structure is about 26%, and is growing from year to year, with a large role played by their state of health and level of education. According to Chinese scientists, silver entrepreneurship promotes the use of the benefits of the human capital of older people and slows down the effects of aging in general, which leads to the fact that more working people are encouraged to start a business at the middle and late stages of their careers (Yanwei, 2021).

Russia is characterized by an underdeveloped silver economy, but the existing demographic trends have made it possible to realize the needs of its development and ensure healthy and active longevity. The most important indicators of the development of the silver economy in our country are (Kolobova, 2017):

– an increase in the number of working pensioners, despite the fact that the introduction of digital technologies is changing the requirements for jobs, eliminating the need for many traditionally sought-after professions;

– the growth of purchasing and consumer activity of older people, including with the use of digital technologies;

– the growth of services for the elderly in the commercial sector of the economy (silver tourism, sports and wellness services, online education, health monitoring, IT solutions for comfort and safety, gadgets and software, etc.);

- improving the quality and standard of living of the elderly, increasing and expanding their needs and interests.

The most important factor in the development of the silver economy is *the digital literacy* of older people, which remains the lowest and significantly lags behind the digital literacy of the younger population. A high level of digital literacy refers to the possession of digital skills at a level higher than basic – information processing, networking and communication, content creation and solving problems related to digitalization in the framework of their activities (Smirnykh, 2020). Analyzing the cross-country differences in the level of digital literacy of older people, researcher L.I. Smirnykh notes that older people with a high level of digital literacy are the most in Finland, Denmark, the

Netherlands, Sweden and the UK, and the least in France and Italy.

In Russia, the situation with computer literacy of senior citizens is improving over time due to the implementation of various state and partner social programs, projects, grant support. But, as researchers T.I. Kasyanova and L.I. Voronina rightly point out, «in order to obtain a positive learning result, not only the organizational and legal conditions created by the state are necessary, but also the existence of an educational strategy for senior citizens themselves, the element of which is the development of information and digital technologies» (Kasyanova, 2020). In the work of researchers L.A. Sargaeva, V.S. Bakhrunova and E.G. Kopalkina, constructive and destructive strategies of adaptive behavior of older people in the use of digital technologies are revealed (Sargaeva, 2023). In our country, unlike other countries where active Internet users are recognized as those who use the Internet every day, those are considered to be persons who use the Internet at least once a week. According to the annual federal statistical observation in our country, active users mainly use the Internet to receive state and municipal services and to order goods and (or) services.

The next important factor in the development of the silver economy is *the solvency of older people*, mainly low due to the small size of pensions received, which limits their economic demand. Figure 2 shows the size of old-age insurance pensions from 2010 to 2022, in relation to the size of their subsistence minimum set annually by the Government of the Russian Federation, and the size of the average monthly salary of employees in the economy of the Russian Federation as a whole.

Period	The amount of the old-age insurance pension, rub.	The amount of the subsistence minimum for a pensioner, rub.	Average salary of employees, rub.
2022	20 842	11 426	65 338
2021	17 533	10 022	57 244
2020	17 536	9 308	51 344
2019	15 100	9 002	47 867
2018	14 184	8 482	43 724
2017	13 762	8 314	39 167
2016	13 172	8 081	36 709
2015	12 830	7 964	34 030
2014	11 568	6 616	32 495
2013	10 716	5 997	29 792
2012	9 790	5 123	26 629
2011	8 876	5 031	23 369
2010	8 166	4 521	20 952

Figure 2: Dynamics of changes in the size of the old-age insurance pension for 2010–2022 in the Russia.

The table is compiled by the authors on the basis of data from the annual reports of the Pension Fund of Russia for 2010-2021, for 2022 – the Pension and Social Insurance Fund of the Russian Federation. The data on the subsistence minimum for pensioners were presented as average total values, since its value changed in 2010-2020 every three months, in 2021 the value was set for the whole year, and in 2022 the changes occurred twice a year. The size of old-age insurance pensions in 2010 is 1.8 times the size of the subsistence minimum, but less than 2.5 times the size of the average monthly salary of employees. In 2022, the excess of the size of old–age insurance pensions compared to the size of the subsistence minimum is also 1.8 times, but the difference with the size of the average monthly salary of employees has become higher – now it is 3.1 times. A similar research was conducted by the authors A.S. Zueva and T.S. Khrolenko, who also identified the income level of pensioners as one of the fundamental factors of the development of the silver economy in our country, noting that the incomes of Russian pensioners are very different from pensions in developed countries (Zueva, 2019).

Another important factor in the development of the silver economy is the interaction with non-profit structures and the development of volunteering of older people. The use of digital technologies by older people, especially during the coronavirus pandemic, allows researcher K.A. Galkin to single out digital silver volunteering as a special type of activity, and not to consider it as a continuation of volunteering in its traditional meaning (Galkin, 2022). The activities of socially oriented non-profit organizations and the organization of volunteering, in which elderly people participate, make it possible to popularize the modern image of elderly people as active members of society and active consumers (sports, healthy lifestyle, cultural events, tourism, higher education, etc.) and eventually overcome social stereotypes regarding them as unnecessary, sick and infirm people who are only dependent on the state and society, being recipients of various social benefits and living out their almost departed lives.

4 CONCLUSIONS

In conclusion, it can be noted that the increase in the proportion of elderly people in a particular country indicates serious demographic problems, in the study of which various coefficients of population aging are used, such as the scale of demographic aging Zh. God-Garnier–E. Rosseta, the United Nations scale of demographic aging, as well as the system of indicators of population aging in the context of sustainable development, but at the same time, as Moscow researchers A.S. Zueva and T.S. Khrolenko rightly point out, there is no common understanding

of what demographic security is. Until recently, the approach to population aging was mainly negative, focusing on its negative economic and demographic consequences. Over time, many countries began to implement supportive policies for the elderly – benefits, compensation, the development of special programs, the involvement of the non-profit sector, the creation and development of the silver industry (Zueva, 2019).

The prospects for the development of the silver industry and economy in our country are revealed in various scientific works in different ways, ranging from optimistic ones, which state that decisive steps are being taken in our country to support the development of the silver economy by the state (national project «Demography», Strategy of Actions in the interests of Older Citizens in the Russian Federation until 2025, On the national goals and strategic objectives of the development of the Russian Federation for the period up to 2024), and ending with pessimistic conclusions about, that in reality, the current state policy of Russia is aimed at curbing its development. In any case, the development of the silver economy in Russia is associated with such conditions as the development of digital competencies among the elderly, the implementation of a policy to increase the income level of the elderly, state support for business and entrepreneurship of the elderly, stimulating the employment of the elderly and overcoming techno-ageism (Kurochkina, 2020), as well as the technostress of older citizens, the use of positive international experience of the silver industry and economy.

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