

Digital behavior of Russians: the impact of wealth level and the COVID-19 pandemic

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Abstract. One of the key trends in the modern socio-economic development of society and the state is digitalization. The degree of influence of COVID-19 on the digital behavior of the population and their use of the Internet still remains controversial and interesting to study. In this regard, the purpose of the study: to establish the relationship between the level of well-being of citizens of the Russian Federation and digital behavior and its change during the COVID-19 pandemic. Methods: the study is based on the method of constructing stratification scales: by the level of income of the population, by the level of property, by the use of digital technologies. Results: Comparison of the results of constructing the Income and Assets scales with the results of Digital Behavior allowed us to conclude that there is a relationship between the well-being of citizens and their ability to use digital resources, and a comparative analysis of 2019 and 2020 data allowed us to establish, firstly, the impact of the pandemic on the well-being of citizens and the degree of their stratification, and, secondly, the impact of coronavirus on the digital behavior of Russians and their use of the Internet. Conclusions: based on the results of the study, it was possible to establish that by the time the COVID-19 pandemic and the self-isolation period began in 2020, Russians were already actively using various digital resources. The data showed that coronavirus was more of an indicator than a factor, which clearly demonstrated the dependence of Russians' digital behavior on their level of well-being. This happened due to the fact that during the coronavirus period, the stratification of society by income and assets changed somewhat, which increased the gap between different groups of the population and reduced the access of certain categories of citizens to digital resources, while others were pushed to their more active use due to the existing socially significant assets and income.

1 Introduction

One of the key trends in the modern socio-economic development of society and states is digitalization and the widespread penetration of information and communication technologies (ICT) into all spheres of life. There is a common opinion among scientists and analysts about what is the reason for the active involvement of the population in digital technologies. On the one hand, we can talk about the systematic policy of most states on the formation and development of the information society, the formation of a developed digital

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environment and infrastructure, stimulating the digital transformation of such important spheres of society as education, healthcare, housing and communal services, trade, etc. [1]. However, in addition to this, one of the key factors stimulating the active use of digital resources is considered to be the COVID-19 pandemic, accompanied by a period of self-isolation. The lockdown forced even people far from ICT to switch to the use of the Internet, PCs and various gadgets, as well as digital platforms for learning, receiving state and municipal services electronically, purchasing goods, etc. during the period of restrictions on physical movement and interactions [2]. In this regard, the question of the degree of influence of COVID-19 on the digital behavior of the population and their use of the Internet, including in the Russian Federation, remains open and interesting for study.

At the same time, it can be noted that the digital behavior of citizens can be determined by various factors. One of the key ones can be considered the availability of technical capabilities in the form of access to the Internet and a desktop computer or other gadgets for using it. In turn, technical capabilities are predetermined by the level of well-being of the population, that is, the level of income and the availability of their own property. And again, it can be noted that the pandemic period had a significant impact on the level of income of citizens and their employment, thereby affecting the digital behavior of the population.

Thus, we can say that the impact of the COVID-19 pandemic on the active use of the Internet by citizens of the Russian Federation is ambiguous, and therefore seems interesting for study.

In this regard, within the framework of this study, an attempt was made to establish the relationship between the level of well-being of citizens and digital behavior associated with the availability of key digital resources, including access to the Internet. To study the impact of the COVID-19 pandemic, the work will conduct a comparative analysis of the period before the coronavirus and the period of the active phase of the pandemic associated with self-isolation. Thanks to this analysis, it will be established, firstly, the impact of the pandemic on the well-being of citizens and the degree of their stratification, and, secondly, the impact of the pandemic on the digital behavior of Russians, their use of the Internet.

2 Method

At the moment, the topic of the coronavirus pandemic has become less relevant from an everyday point of view: the acute phase of the epidemic has passed, society has adapted to this disease from a social and biological point of view, and therefore new outbreaks of the disease are perceived more calmly. However, from a scientific point of view, the view on COVID-19 still remains ambiguous, which makes the study of this topic still relevant and interesting.

Thus, scientists still pay special attention to the impact of the COVID-19 pandemic on various spheres of society: economic, social, cultural. One of the relevant aspects of the study is the consideration of social deprivation and stratification of society in the context of the COVID-19 epidemic.

Thus, one of the studies analyzed the degree of housing deprivation faced by households in European countries when lockdown measures were taken. The authors of the study found a similar distribution of housing deprivation indicators in European countries with the highest and lowest degrees of deprivation by living space. The study showed the degree of inequality in access to housing in different European countries and demonstrated how self-isolation exacerbated this gap. This led to the conclusion that the consequences of quarantine on social welfare did not affect all Europeans equally, but emphasized the need for government support measures only in certain European countries [3].

This study suggests that the pandemic was a factor that increased the degree of stratification of society and exacerbated inequality in it. In addition to housing, income

inequality is also considered, due to which, during the pandemic, less well-off groups of the population were worse off and had more limited access to health services [4]. Similar results are demonstrated by other studies confirming the exacerbation of inequality in society and the deterioration of the situation of less well-off groups of the population during COVID-19 [5,6,7]. A number of studies also consider the impact of transport or walking distance to individual facilities (for example, schools) on the degree of inequality in access to social benefits [8]. At the same time, Pedro Gullón and his co-authors argue that the most serious social inequality was manifested in 2020 [9]. Other authors come to similar conclusions [5,10].

However, the impact of COVID-19 cannot be viewed so unambiguously. Thus, a study by Enrique López-Bazo demonstrates that during different waves of the epidemic, its impact on socio-economic deprivation in certain areas of Catalonia was inconsistent, and the relationship between morbidity and inequality changed from insignificant to strong, and the direction - from positive to negative [11].

A number of studies talk about the positive impact of the COVID-19 pandemic and its consequences on the development of society. One of the positive aspects is considered to be digitalization. Thus, A. Kiviahio, J. Einolander in their study say that the epidemic stimulated more active use of digital technologies, which allowed residents of rural areas and remote communities to receive many services that were previously lacking in these places. In these conditions, digitalization and the growth of remote work can also bring new opportunities and help overcome the degree of deprivation of residents of certain territories [12].

Thus, we can talk about the ambiguity of the impact of the coronavirus pandemic on various spheres of social life, which makes it relevant to study its impact, including on Russian society and the degree of inequality in it.

In addition to the impact of COVID-19 on society, its individual spheres and social stratification, the topic of our research is also related to other aspects, namely the issue of digitalization. An important aspect of this process is the technical capabilities for the digital transformation of society. One of the key factors ensuring the transition to an information society is the use of the Internet and the technical capabilities of connecting to it. Thus, in the article by J. E. Prieger, it is said that high-speed broadband access to the Internet is becoming increasingly important for the national economy and the personal lives of users. However, empirical estimates based on US data indicate that rural areas have fewer high-speed fixed and mobile providers, which creates a digital divide between the rural and urban population. In this case, one of the factors that increases the degree of digital inequality is the income level of the population [13]. A similar impact of broadband on the degree of digital inequality is considered by other authors [14,15]. Studying the experience of Great Britain, Akiko Ueno, Charles Dennis, Georgios A. Dafoulas also talk about such a factor influencing the ability and desire to connect to broadband Internet as home ownership [16].

In the context of digitalization, owning a PC and access to the Internet affects the digital behavior and future opportunities of citizens. Thus, N. Chairassamee and his co-authors come to the conclusion that in Thailand during the COVID-19 period, access to digital resources was a more significant factor in ensuring the quality of education than the abilities of the students themselves and the interest of their parents in educating their children [17]. Similar conclusions are described and obtained from the results of other studies [18,19, 20, 21, 22, 23].

Thus, the analysis of the literature demonstrates that the scientific community maintains interest in the topics of the COVID-19 pandemic, social stratification and deprivation, including by income level, home ownership, etc., digitalization and the use of digital resources by citizens. This allows us to talk about the relevance of studying the relationship between these phenomena, that is, the level of income of citizens and their provision with

property with the digital behavior of citizens and the activity of using the Internet both in the pre-pandemic period and during the COVID-19 epidemic.

This study is based on the method of constructing stratification scales that made it possible to divide society into different groups. Thus, three scales were constructed: by the level of population income, by the level of property (car, own housing, land, etc.), by the use of digital technologies. Each of the scales was constructed based on indicators, the significance of which in the context of the topic under consideration is confirmed by the studies discussed above [3-8, 13-16].

To construct these subscales, we used data from the annual Russian Longitudinal Monitoring Survey of the Economic Situation and Health of the Population of the Higher School of Economics (RLMS HSE). The monitoring is a series of national representative surveys conducted on the basis of a probabilistic stratified multi-stage territorial sample, which allows us to reflect the objective state of Russian society.

Each of the constructed subscales of social stratification included five intervals. Thus, to construct the first scale "Income", the median income of citizens of the Russian Federation was used. This indicator was considered as the middle of the third interval. Then the boundaries of the scale intervals are determined in 0.4 increments from the middle of the third interval. The boundary between the first and second intervals is set at 50% of the median income. As a result, the first subscale has five intervals. The first interval "0" reflects a low income level, then the second interval "1" - a relatively low income level, "2" - average income level, "3" - above average income, the last fifth interval "4" - high income.

For the second subscale, an indicator of socially significant assets is used that reflect the wealth of citizens and their households. Such assets include their own housing, owning another home, owning one or more cars, and owning a land plot (for example, a summer house) owned by the family. These assets were selected both from the standpoint of ensuring the well-being of the population and from the standpoint of their significance during the COVID-19 pandemic. For example, owning your own home during the self-isolation period ensured a comfortable pastime and the opportunity to work remotely. Owning another residential property made it possible to maintain passive income during the pandemic, even if you were deprived of active income from work. The car provided mobility and access to socially significant facilities, including hospitals, which was important for citizens living in remote areas. When stratifying citizens according to the "Assets" scale, possession of all the specified property allowed the household to be classified in the fifth interval of the scale "4", the presence of three out of four assets - in the fourth interval "3", the presence of two assets - in the third interval "2", the presence of at least one asset - in the second interval "1". The absence of all the above assets in the household corresponds to the first interval "0". For the third subscale, indicators of access to digital resources are used: access to the Internet (low-speed or high-speed), a desktop computer or laptop for Internet access, use of mobile communications, as well as cable or satellite television. This allowed us to draw a conclusion about the technical capabilities of digitalization and the activity of digital behavior of citizens of the Russian Federation. When constructing the "Digital Behavior" scale similarly to the "Assets" scale, the presence of all four digital resources allowed the household to be assigned to the fifth interval of the scale "4", the presence of three of the four digital resources - to the fourth interval "3", the presence of two indicators - to the third interval "2", the presence of at least one - to the second interval "1". The absence of all the above digital resources in the household corresponds to the first interval of the "Digital Behavior" scale ("0").

Comparison of the results of constructing the Income and Assets scales with the results of Digital Behavior allowed us to conclude that there is a relationship between the well-being of citizens and their ability to use digital resources. To determine the change in the impact of income level and asset availability on the digital behavior of citizens in the context of the COVID-19 pandemic, a comparative analysis of 2019 and 2020 data was also carried out.

2019 was chosen for analysis as the extreme period before the coronavirus pandemic in the Russian Federation, reflecting the accumulated result of digitalization before the epidemic. In addition, the 2019 data were considered as information on digital behavior in standard conditions for the population without individual situational factors. 2020 was considered as the year of the active stage of the pandemic, accompanied by a period of self-isolation, during which the use of digital technologies became an alternative to physical access to various goods and services. In addition, the analysis of scientific papers confirmed that in 2020, the impact of COVID-19 on social stratification and inequality was most significant [5, 9,10].

3 Results and discussion

Based on the results of constructing and analyzing the stratification scales "Income", "Assets" and "Digital Behavior" for 2019 and 2020, the following results were obtained.

Initially, we will consider the change in the scales "Income" and "Assets". Comparison of the distribution by these scales allowed us to draw the following conclusion: in 2020, there was some change in the distribution of groups by income. Thus, groups 4 and 5 decreased (by 6.62% and 3.75%, respectively), whose income was above average, while groups 2 and 3 increased. The share of the third group increased by 2.6 percentage points or 8.01% compared to 2019. This indicates a slight decrease in the level of well-being of the population during the pandemic. At the same time, the share of the poorest group of the population decreased slightly from 5.11% to 4.15% of the population in 2020 (by 0.94 percentage points or 18.4% compared to 2019). Such changes against the background of a slight decrease in the level of well-being of Russians during the coronavirus period can be explained by the financial support that was provided to low-income groups during the coronavirus period.

An analysis of the distribution of assets among the population also indicates a slight decrease in the level of well-being of citizens.

Table 1. Distribution of Russian citizens into groups by asset ownership depending on income level in 2019-2020

«Assets»\«Income»	0		1		2		3		4	
	2019	2020	2019	2020	2019	2020	2019	2020	2019	2020
0	7,5	7,25	23,75	24,87	38,33	40,93	28,33	26,42	2,08	0,52
1	4,73	4,35	29,85	32,57	38,77	36,84	25,14	24,58	1,5	1,66
2	3,67	3,31	34,36	34,01	36,52	37,63	22,43	21,85	3,02	3,19
3	3,77	4,93	34,18	36,54	33,85	30,77	23,97	22,6	4,22	5,17
4	2,61	4,12	27,19	22,57	35,16	34,75	26,27	25,41	8,76	7,97

Thus, according to the data presented in Table 1, in 2020, the share of people with three socially significant assets decreased in all categories of citizens and households by income. At the same time, the redistribution occurred mainly in favor of categories with 1 or 2 socially significant assets. This circumstance also indicates that during the pandemic, there was some decrease in the level of well-being of Russians. If we take into account the hypothesis that the level of income and assets directly affects digital behavior and the ability to use the Internet, mobile communications and cable/satellite TV, then it is logical to assume that during the pandemic, the level of digital behavior of the population should have decreased.

To confirm or refute this hypothesis, let us turn to the data describing the digital behavior of Russians in 2019.

Table 2. Distribution of citizens according to the "Digital behavior" scale at the lowest income level in 2019-2020

2019						2020					
Income scale		Asset scale		Digital Behavior Scale		Income scale		Asset scale		Digital Behavior Scale	
	%		%		%		%		%		%
0	5,11	0	7,5	0	00,00	0	4,15	0	7,25	0	0
				1	16,67					1	14,28
				2	22,22					2	50,00
				3	38,89					3	28,57
				4	22,22					4	7,14
		1	23,75	0	8,77			1	24,87	0	8,33
				1	28,07					1	29,16
				2	15,79					2	12,5
				3	21,05					3	25
				4	26,32					4	25
		2	38,33	0	7,61			2	40,93	0	5,06
				1	21,74					1	22,78
				2	18,48					2	17,72
				3	33,70					3	34,17
				4	18,48					4	20,25
		3	28,33	0	1,47			3	26,42	0	0
				1	10,29					1	11,76
				2	25,00					2	19,60
				3	35,29					3	41,17
				4	27,94					4	27,45
		4	2,08	0	0,00			4	0,52	0	0
				1	20,00					1	0
				2	0,00					2	0
				3	40,00					3	0
				4	40,00					4	1

The data presented in Table 2 demonstrate that by 2019, the level of activity in the use of digital resources by Russians was already quite high. Thus, even among the group with the lowest income level, the share of households and citizens who do not have digital resources is significantly lower than other groups. At the same time, in all categories by the presence of assets, the majority of citizens had 3 out of 4 digital assets under consideration, which allows us to talk about the high activity of citizens in using the Internet and various digital resources. In 2020, during the pandemic, the situation did not change much, which indicates a not so significant change in digital behavior against the backdrop of COVID-19. However, the results of population groups that have no assets or only one of the socially significant assets can be considered indicative. In these population groups, there is a redistribution of groups by digital behavior. Unlike 2020, in which, with the lowest income and no assets, people had mainly 2 digital assets, then in 2019 - 3 digital assets, that is, there was a refusal to use digital resources. This can be associated with a decrease in the level of well-being of the population and a decrease in access to digital resources, despite the fact that they were extremely necessary during COVID-19 and lockdown. The situation is similar in the group

with one asset. In the group with three assets, the situation is the opposite, that is, the redistribution occurs in favor of groups with 3 or 4 digital resources in the form of the Internet, mobile network, etc. These results indicate that even against the backdrop of a pandemic and self-isolation, the dependence of the use of digital resources on well-being remains quite significant. This is also confirmed by the results of the population group with higher incomes. In 2020, with an average income, the share of citizens and households with 4 digital resources increases in almost all groups on the "Assets" scale. With a high income and above average income, the relationship remains stable: the share of those who have access to all four digital resources under consideration is steadily growing. These arguments confirm that the level of well-being of Russians has a significant impact on their use of digital resources, even during such a situational factor as a pandemic and self-isolation. The impact of the COVID-19 pandemic itself can be most clearly observed only in the group with the highest incomes, which is reflected in Table 3.

Table 3. Difficulties in obtaining state and municipal services by citizens of the Russian Federation in electronic form, by regions of the Russian Federation in 2021.

2019						2020					
Income scale	%	Asset scale	%	Digital Behavior Scale		Income scale	%	Asset scale	%	Digital Behavior Scale	
4	16,28	0	2,61	0	0,00	4	15,67	0	4,12	0	0,00
				1	10,00					1	10,00
				2	15,00					2	3,33
				3	60,00					3	63,33
				4	15,00					4	23,33
		1	27,19	0	1,44			1	22,75	0	0,99
				1	15,87					1	12,38
				2	8,17					2	12,87
				3	49,04					3	37,62
				4	25,48					4	36,14
		2	35,16	0	1,12			2	34,75	0	1,19
				1	7,43					1	7,91
				2	9,67					2	10,28
				3	47,96					3	36,36
				4	33,83					4	44,27
		3	26,27	0	0,00			3	25,41	0	0,00
				1	4,41					1	3,21
				2	7,84					2	5,88
				3	45,59					3	38,50
				4	42,16					4	52,41
		4	8,76	0	0,00			4	7,97	0	0,00
				1	1,49					1	3,45
				2	5,97					2	5,17
				3	47,76					3	39,66
				4	44,78					4	51,72

Thus, if in 2019, even with a high income level, the availability of 3 digital resources was more common among all groups on the asset scale, then already in 2020 the share of groups with access to 4 digital resources became larger. The only exception is the share of Russians with a high income level who do not have their own assets. For them, it was still more relevant

to use only 3 out of 4 digital resources. This fact suggests that before the pandemic, a larger share among the wealthy strata of the population did not use all digital opportunities and did not think about expanding access to digital resources. In general, the collected data indicate that during the COVID-19 pandemic, digital behavior became more active, but only among those Russians whose income and / or own assets allowed it, while for the rest, with a decrease in well-being, this became a reason to reduce their use of digital resources.

4 Conclusion

The conducted analysis allowed us to draw a number of conclusions regarding the impact of well-being and the COVID-19 pandemic on the activity of Russian citizens in using various digital assets, such as Internet access, mobile network use, etc.:

1. By the time of the COVID-19 pandemic, Russians were already actively using digital resources, that is, the level of digitalization was already quite high, as evidenced by the fact that the share of citizens who did not have a single digital resource in all population groups by income and asset availability remained the most insignificant. The most common in almost all groups was the use of three out of the four digital assets considered, including Internet access;

2. When conducting a comparative analysis of 2019 and 2020, no significant changes were identified that would clearly confirm that the coronavirus pandemic and the accompanying self-isolation really had a significant impact on the use of digital resources by citizens. The only exception was the high-income population group. Here, in the pre-COVID period, despite high income and assets, citizens and households in the Russian Federation mainly preferred 3 digital resources, whereas in COVID-19, the use of all four digital opportunities became more relevant. That is, before the pandemic, even if they had opportunities, Russians did not always think about expanding their digital activity, whereas in COVID-19, this became more relevant;
3. When conducting a comparative analysis of the results for individual groups and for different periods, it was possible to identify a more obvious and stable connection between the level of income and the presence of socially significant assets than the fact of the pandemic and self-isolation. The coronavirus epidemic itself acted rather as an indicator that more clearly reflected the relationship between the digital behavior of citizens and their level of well-being. The pandemic period increased the stratification of society and led to a redistribution of population groups with high income and above-average income in favor of groups with relatively low and average income. The shares of Russians on the stratification scale of assets also somewhat redistributed towards a decrease in the level of well-being. Against this background, the activity of using digital resources in Russian society has also changed. Thus, a stable trend of increasing activity was observed only under the condition of high income and the presence of at least some socially significant assets. With a decrease in income even to the average or above average level, digital activity is manifested only in the presence of 3-4 socially significant assets. With an income below average, only groups with 3-4 assets have the opportunity for relatively active use of digital resources (mainly, the use of 3 digital resources). At the same time, access to 4 digital resources is already less relevant. In the low-income group, only the category with 4 socially significant assets has the opportunity to actively use all 4 digital resources, while with a low income and the presence of only 2-3 assets, Russians already mainly prefer 3 digital resources or even less. At the same time, in the least affluent strata of the population, a refusal to use digital resources was observed, their use was reduced from 3 to 2 or 1 digital resources. Thus, it was possible to establish that by the time the COVID-19 pandemic and the self-isolation period began in 2020, Russians were already actively using such resources as the Internet, mobile communications, cable/satellite TV and related gadgets. The data showed that the coronavirus was not a factor, but rather an indicator that clearly demonstrated

the dependence of Russians' digital behavior on their level of well-being. This happened due to the fact that during the coronavirus, the stratification of society by income and assets changed somewhat, which increased the gap between different groups of the population and reduced the access of certain categories of citizens to digital resources, while others were pushed to their more active use due to existing socially significant assets and income. These results allow us to say that further expansion of Russians' access to digital resources will be associated not so much with situational factors, such as the COVID-19 pandemic, but with their level of well-being, which, even in certain situations, will allow citizens to actively use the Internet and other digital opportunities.

Acknowledgement

The study was supported by the Russian Science Foundation grant No. 23-28-01651, <https://rscf.ru/project/23-28-01651/>

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