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### IMPACT OF THE DIGITAL FINANCIAL TECHNOLOGY TO THE FINANCIAL LITERACY OF POPULATION

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#### *Abstract*

The article contains results of a preliminary study that verifies the initial hypothesis about the relation between the use of digital financial services and technologies (DFS&T) by the population and its financial literacy. In addition, the authors show the influence of users' activity (in terms of DFS&T use) on the structure of monetary transactions. For this purpose, the initial data on the comparative structure of household expenditure transactions in 2015 and 2019 are presented; the analysis of questionnaires of 929 respondents was carried out in Yekaterinburg to assess the level of the financial literacy, the activity of the use of DFS&T and the availability of savings. Another premise of the study was the search for an answer to the question on the impact of the digital financial services and technologies use by citizens in their everyday life and the level of their financial literacy on the structure of monetary transactions of households. People who actively use digital financial services technology and/or who are financially more literate tend to be more financially disciplined when making financial decisions. The study is based on subjective assessments (survey results) and objective data of the National Payment Association and the Federal State Statistics Service (FSSS), and the Central Bank of the Russian Federation. The main result was the confirmation of the initial research hypothesis about the relations of the digital financial services and technologies use, the level of the financial literacy of the population and the structure of monetary transactions of households.

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**Keywords:** Financial literacy, financial transactions, financial decisions.



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## 1. Introduction

People use digital financial services (DFS) everyday, even those who believe otherwise. Shopping in supermarkets, travel by the public transport, getting salaries and much more involve the use of the DFS. Integration processes in the financial sphere make it almost impossible to isolate any subjects from the system of financial relations: neither the state, nor corporate structures, nor the population. The development of a range of financial instruments is stimulated by the increasing use of digital services by people in everyday transactions. To a large extent, this is due to the convenience of new banking services, the availability of their usage in terms of the time and place. Simultaneously with the availability of digital financial services, the pool of risks associated with their use increases: cyber-attacks on the servers of financial institutions and various fraudulent schemes, loss of personal data of users and a number of others. These risks affect both ordinary operations with the use of bank cards and complex multi-stage transactions.

In the consumer sector is characterized by the growth of non-cash transactions – purchases of goods and services and money transfers using:

- mobile banking applications;
- electronic wallets (Qiwi, Yandex-money, Web money and others);
- electronic services (PayPal; on-line banking and others);
- debit cards (payroll transfer, payment for goods and services, card2card transfers);
- credit cards and other services.

The authors analyzed data of the Central Bank of Russia and the Federal State Statistics Service (FSSS) on the growing trend in the use of non-cash services (table 01), which shows that the share of non-cash payments has increased significantly (from 45 to 67%) from 2015 to 2019.

**Table 01.** Structure of monetary transactions of the population of the Russian Federation in 2015-2019, %

<b>The name of the transaction</b>	<b>2015</b>	<b>2019</b>
Cash transactions	55	33
Non-cash transactions, total among them:	45	67
- consumer purchases	15	23
- utilities payments	4	5
- loan servicing	7	12
- the use of credit cards	5	13
- Internet-shops	2	4
- card2card transfers	4,5	3
- opening of savings deposits, current accounts	2	2
- on-line financial control	0,5	2
- the use of public services	1	3
- payment for communication services	4	2

Source: authors based on the Analytical Center NAFI (Analytical Center NAFI, 2019), the National Payment Association (National Payment Association, 2019), the Central Bank of the Russian Federation (Central Bank of the Russian Federation, 2019), the Federal State Statistics Service (Federal State Statistics Service, 2019).

The increase in the number of non-cash transactions indicates the popularity of electronic gadgets and services that make digital financial technologies more accessible. This fact is associated with some

increase in the level of the financial literacy of citizens. In this study, the authors proceed from the hypothesis that the development of financial services a relation to the knowledge of the population about opportunities and risks associated with their use. Financially literate people tend to form an independent strategy to optimize the structure of financial resources of their households.

## 2. Problem Statement

Taking into account the international importance of projects on the assessment of the financial literacy level and the integration of Russia in these projects, we can see that the Russian Federation is implementing the national strategy for the financial literacy development at the level of the Ministry of Finance of the Russian Federation, carrying out the overall coordination of the work. Functions of the supervisory and coordinating agency are implemented by the Interagency Project Commission (IPC), members of which are the Ministry of Finance, the Central Bank, the Ministry of Education and Science, the Ministry of Economic Development and the Agency for Consumer Rights Protection of the Russian Federation. The responsibility of these structures is to monitor the implementation of the Strategy. The working group of the Ministry of Finance provides administrative support in the process.

Ultimately, the increase in the financial literacy level by the population and the development of digital financial services and technologies can give impetus to the development of the national economy (Rasumovskaya & Lebedev, 2019) and, at the same time, to the greater protection of the domestic financial space of the country from threats posed by international digitalization and integration processes (Ozili, 2018).

The main issues, which the listed state structures deal, are:

- 1) financial literacy of the population by main types of financial relationships and products to reduce the risk from decision making on a disposable income;
- 2) creation of educational content for all groups and categories of the population in the area of the financial education;
- 3) formation of the autonomy by the population in the protection of consumers' rights while using financial services;
- 4) decrease in the socio-economic paternalism in the Russian society.

## 3. Research Questions

It is quite difficult to prioritize the relations between the impact of people's active use of digital financial services and technologies in everyday life on the level of their financial literacy and the structure of monetary transactions of households. Does the financial literacy affect the activity of using digital financial services and technologies or vice versa (the activity of using modern gadgets makes people more financially literate)? Does the financial literacy affect the structure of monetary transactions or, on the contrary, do people become more financially literate and actively use digital financial services while facing with the need to use cashless payments in many transactions? These questions have to be investigated much deeper than the identification of some correlation between these behavioral manifestations.

#### **4. Purpose of the Study**

The main objective of this study is to find confirmation or refutation of the hypothesis about the impact of people's active use of digital financial services and technologies in everyday life on the level of their financial literacy and the structure of monetary transactions of households.

#### **5. Research Methods**

Research on the dynamics of the financial behavior of households is based on two main methods: 1) thematic surveys, which allow to collect information on a wide range of issues and are an adaptive way to change the vector of the study, if necessary; 2) collection and processing of statistical information on the research subject, in this case – on the size, structure and dynamics of incomes and expenditures of the population.

However, both methods have some disadvantages (French & Vigne, 2019): so, the determination of the structure of citizens' non-cash transactions is only possible using the data from commercial banks – card issuers, but such data shall not be disclosed (there is legislation regarding the protection of personal data), and in this case, we can only come from the subjective information obtained from respondents in the survey. Data on expenses in general are contained in forms of the Federal State Statistics Service and demand processing in the necessary format – on separate or enlarged groups.

Methods to obtain reliable and relevant data of value for scientific research are traditionally typed according to certain criteria (Razumovskaya, Isakova, Razumovskyi, Mokeyeva, & Kuklina, 2016):

- 1) by the method of the data collection: contact (interviewing) and contactless (questioning);
- 2) according to the format: oral (by phone, recording on audio devices) and written (filling in formalized questionnaires);
- 3) at the venue: continuous (in crowded places with high traffic – shopping centers, crowded events, transport hubs, etc.) and selective (places of study, work);
- 4) by the competence level: mass (continuous) and expert (in a competent environment);
- 5) by the interaction with respondents: personal (full-time) and impersonal (correspondence).

Conducting surveys involves compliance with the rules that determine the need to obtain complete, if possible – reliable and objective information. The enlarged rules are the following ones (Burke & Fry, 2019; Cardaci, 2018):

- 1) the right choice of the target audience, which contributes to the collection of reliable information, since its equal distortion by a competent audience is hardly possible (the sample of respondents must meet certain criteria: demographic, social, and other relevant ones for the survey subject);
- 2) the survey should be thematic, otherwise it will be difficult to obtain objective information: respondents' answers will be incomplete; switching from one topic to another will reduce the reliability, which is already not quite inherent in this method of research;
- 3) the form of the questions should be brief, clear, not verbose, assume a clear answer; the number of questions should be so that the time of interviewing or filling out the questionnaire does not exceed a few minutes;

4) building a logical structure of the questionnaire so that the questions were not only related, but also would retain the interest of the respondent (in the first part of questionnaires it is necessary to place simple questions, then more difficult ones, but not so that to enter respondents into confusion; in the final part the questions should be simple too to leave an impression of potentiality, achievement of results).

The authors assessed the financial literacy level of the population by contactless written continuous mass personal survey of people in the shopping center. Respondents were offered questionnaires in which, in addition to identification questions about age and gender, there were four thematic questions on the assessment of their financial knowledge and a self-positioning question about the category of usage of digital financial services and technologies.

The chosen complex method is characterized by impartiality in the aspect of mixed criteria of respondents and some uniqueness. Its use can be carried out with any regularity – it provides information on the dynamics by which you can track changes in the level of the financial literacy. In this case, the fact that the respondents will not be the same – does not matter, but, such a format is able to cover through the survey a significant mass of people of different categories: age, income, education, marital status, profession and other characteristics. This means that such a different contingent, to a greater extent than the selected audience, will reflect the representativeness of the sample and serve as a basis for approximating results to other ones (Brounen, Koedijk, & Pownall, 2016).

## 6. Findings

The results of the survey are presented in table 02 and figure 01. The table shows the number of respondents by age groups and by the respondents' subjective assessment of their income level; we indicated the financial literacy for each income and age group at the same time with the symbol "/"; separate columns show the presence of respondents' savings and their activity in using digital financial services and technologies – also, by age groups, but without taking into account the income level.

**Table 02.** Assessment of the financial literacy of respondents by age and income groups

Groups / Results	Number of people	Financial literacy by groups by the respondents' subjective assessment of the income level, %			Savings, %	Activity in using digital financial services and technologies, %	Assessment of the financial literacy, %
		below the average	average	above the average			
18-24	121	42/23	57/34	22/58	1,8	78	13,93
25-32	231	90/26	114/44	27/66	14,1	72	30,46
33-50	285	74/31	142/58	69/78	15,8	84	53,04
51-65	176	103/17	56/51	17/65	9,2	65	19,04
65+	116	57/14	50/41	9/63	4,3	81	11,38
Total	929	366	419	144	-	-	41,3

Source: authors.

The methodology used in this study requires some clarification: questionnaires were evaluated on the principle of a simple majority of correct answers (for this purpose, there is an odd number of questions in the questionnaire – 5), that is, if three or more correct answers are given – a respondent was

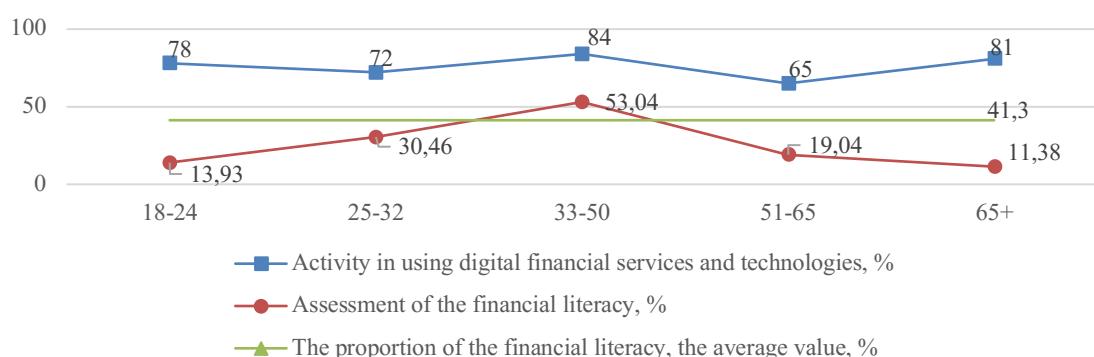
formalized as financially literate and vice versa – three or more incorrect answers mean financial illiteracy of a respondent. The calculation of the generalized value (41.3%) was obtained by the weighted average method:

$$(42 \times 0,23 + 57 \times 0,34 + 22 \times 0,58 + 90 \times 0,26 + 114 \times 0,44 + 27 \times 0,66 + 103 \times 0,17 + 56 \times 0,51 + 17 \times 0,65 + 57 \times 0,14 + 50 \times 0,41 + 9 \times 0,63) / 929 = 41,3$$

The questionnaire questions were adapted for Russian conditions, but then authors used as a basis methodological principles and directions of the financial literacy assessment recommended by the Organization for Economic Co-operation and Development (OECD): understanding of risk and profitableness, and the impact of inflation on prices. Other thematic tasks were deliberately not included in the questionnaire in order not to overload it. But, on these topics, the authors compiled more than one question, to eliminate the factor of surprise, confusion, random errors by answering – people did not expect the examination, coming to the shopping center.

The questionnaire does not include questions about education, profession, marital status, because for the purposes of this study, the priority is the financial discipline – the formation of savings, reflecting not only the knowledge that it is necessary to plan the structure of financial resources, but also the behavior that confirms the adherence to this knowledge. In addition, the questionnaire includes the question of whether respondents consider themselves as active users of financial services and technologies – that is also important to verify or refute the working hypothesis of whether such activity affects the financial knowledge. The question about cases of the consumer rights violation by using financial services is not included in the OECD methodology, but it is included in the Russian methodology for assessing the level of the financial literacy of the population.

The assessment of completeness, reasonableness of answers, logical orientation by the perception and the analysis of tasks conditions were not considered; the ability to count without the help of auxiliary means – was welcomed, but did not influence the assessment.



**Figure 01.** Correlation between the activity of using digital financial services and technologies and the financial literacy of respondents

Figure 01 shows that the average level of the financial literacy in the sample was 41.3%. According to Table 02, the most literate people are 33 to 50 years old, who stated that they had an income above the average. In general, those who classified themselves in this income category answered questions better than other groups of respondents. The same category of respondents reported having

savings (the highest rate is 15.8% of respondents). The lowest rates of the financial literacy in the two extreme age groups (young and older); by the income criterion – the category with incomes below average – below the weighted average by 27.37% and 29.92%, respectively. The financial literacy among schoolchildren is 48% and among people of the retirement age – 43%. The same category of respondents is expected to have the lowest savings rates (1.8% for 18-24 year olds and 4.3% for 65+ year olds). Particular attention should be paid to the indicator of the activity of the using digital financial services and technologies. Figure 01 shows that there is a direct relationship between the financial literacy level and the active usage of digital financial services and technologies . The only discrepancy is in the group of elderly respondents - the rate of active users was 81%. This value is determined by the regular use of pension cards: the transfer of pensions, travel by public transport, registration of social benefits and other services that are associated with the usage of digital financial services and technologies.

## 7. Conclusion

In conclusion, the authors present results of the survey on the range of digital financial services and technologies used by the same sample of respondents (table 03).

**Table 03.** Structure of cash transactions of active DFS&T users

The name of the transaction	Share, %
Cash transactions	12
Non-cash transactions, total among them:	88
- consumer purchases	23
- utilities payments	5
- loan servicing	18
- the use of credit cards	12
- Internet-shops	20
- card2card transfers	3
- opening of savings deposits, current accounts	2
- on-line financial control	2
- the use of public services	3
- payment for communication services	2

Source: authors.

Table 03 shows that respondents who classified themselves as active DFS&T users implement non-cash payment forms in their current transactions by 21%. The interpretation of results obtained in the course of this study indicates that users of digital financial services and technologies are more advanced in terms of awareness of financial relations, mechanisms and tools associated with these relations. Hence, the value of the financial literacy assessment is significantly higher than the national average.

However, the authors believe it is important to note that the study was conducted not in "pure" conditions, leveling side factors, and, therefore, its results are distorted by a number of determinants:

1. We can't consider answers of respondents as objective ones except data from the questions assuming 'right' or 'not right' answers (i.e. as any objective data). Respondents referred themselves to

income categories, stated that they have savings and that they actively use digital financial services and technologies, but it is not possible to verify the reliability of these statements. In addition to unreliability, people can subjectively consider themselves a particular income category, so that they are not considered as losers and to overcome internal dissonances. The above is based on personal psychological characteristics, which are not considered appropriate to analyze in detail within the framework of this study.

2. The structure of transactions (table 03) is based on what respondents themselves refer to digital financial services and technologies, and this fact also carries subjectivity: should the operation (like getting a pension on the card or using it in shops) be considered a criterion of the activity? For further research, the authors intend to formulate some criteria for such an activity, for which it is planned to conduct an analysis of users of public open services (fincult.info, gosuslugi.ru, nalog.ru and others), which would allow to obtain some reliable data on a different user structure of digital financial services and technologies (Razumovskaia, Isakova, Razumovskyi, Mokeyeva, & Kuklina, 2016). For example, it can be payment of taxes, penalties, receiving tax deductions, orders of financial documents for registration of social benefits, mortgages, determination of children in kindergartens.

3. Earlier it was noted that the comparison of indicators of the countries rating and the indicator obtained by the authors based on the results of the survey of Yekaterinburg residents is not quite correct in terms of the assessment periods of the financial literacy.

Overcoming these distortions can provide an objective channel of information on the same positions as the survey:

1. Real data on the volume and structure of transactions with cards available to respondents and other digital channels through which these transactions are carried out.

2. Conducting periodic questionnaires or even questionnaires to assess the level of the financial literacy of the same audience (not a sample) – customers of the shopping center, as a sample that has some signs of categorical generality. It would allow receiving subjective, but more reliable data – all cannot behave equally – it is possible to declare false data, but each time they will be not identical, and by a very considerable number of respondents, the probability of the data reliability will be higher.

3. Expanding questionnaire questions by including data to rank respondents by level of education, profession, availability of assets, liabilities and other parameters, so that the results would allow to draw reasonable and most objective conclusions.

Summarizing the study results, the authors are ready to confirm the hypothesis that there is a connection between the usage of digital financial services and technologies and the financial literacy. The usage of DFS&T enables people to manage their financial resources in a mobile way, plan and monitor the cost structure, to gain knowledge about financial products and their use – this and much more allows households to consciously form a strategy for using financial resources and try to optimize their financial decisions (Rasumovskaya, 2016).

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