Financial and Economic Behavior of Consumers and its Impact on the Achievement of Sustainable Development Goals in Russia

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ABSTRACT

Sustainable development of the national economy based on the transformation of the financial and economic behavior of consumers is one of the priorities of the socio-economic policy of the Russian Federation. In this regard, the formation of responsible financial and economic consumer behavior is a leading factor in achieving the sustainable development goals. This paper focuses on the **update** of the problem and the **assessment** of the impact of consumer financial and economic behavior factors on the achievement of sustainable development goals. The **purpose of the study** is to systematize consumer behavior factors and identify promising directions for achieving sustainable development goals based on the formation of responsible financial and economic behavior of consumers. The **subject** of the study is the transformation of consumer behavior and its impact on achieving sustainable development in Russia. Research **methods** include analysis and synthesis, analogy and generalization, compare and contrast, induction and deduction, correlation coefficients, rating assessment. As the **main results of the study**, it is necessary to highlight the substantiation of the relationship between the sustainable development goals and the financial and economic consumer behavior; grouping of consumers depending on age and attitude to purchases (generation X, Y, Z) to determine the reasons and motives of the transition to responsible behavior; assessment of the achievement of sustainable development goals based on an integral indicator; ranking of the impact factors of consumer behavior on the per capita GDP index based on the correlation coefficient; identification of priority directions for the formation of responsible consumer behavior. An important **conclusion** is made about the transformation of the financial and economic consumer behavior in the direction of increasing the impact of waste disposal of production and consumption; digitalization of households, investments in environmental protection, income differentiation and dynamics of real wages of the population on the per capita GDP index.

Keywords: financial and economic behavior of consumers; generations of consumers; rating assessment; sustainable development; environmental sustainability; production models

INTRODUCTION

Consumer behavior is increasingly being used to establish a new socio-economic reality. In the "production — consumption" chain, it is the consumer who has the key, dominant role. Consumer behavior can be defined as the process of selecting and deciding on a set of goods to purchase based on the consumer's available income.

At the same time, in the process of his life activity, the consumer encounters a variety of activities, not limited to the purchase of consumer goods and services. Therefore, the modern man is characterized by financial and economic behavior, which is a rapidly developing area of study.

Development is sustainable when current needs are met without compromising the capacity of future generations to meet their own needs. Sustainable development has been a significant topic due to severe environmental degradation. The impact of the values of sustainable development was most evident since 2016, when specific goals and plans were developed at different levels of government and management. A list of national indicators for achieving the Sustainable Development Goals has been developed in accordance with UN General Assembly resolution A/RES/71/313 of 6 July 2017, taking into account national priorities and local specificities. The high importance of consumer financial and economic behavior and its central sphere, consumer behavior, is confirmed by its inclusion in the goals of sustainable development.

METHODS

The purpose of the present study is to systematize consumer behavior factors and identify advanced directions for achieving the Sustainable Development Goals through the formation of responsible consumer financial and economic behavior. The object of the study is the development of the Russian Federation for 2010–2021, and the subject is the transformation of the financial and economic behavior of consumers and its impact on achieving sustainable development. Economic, mathematical and statistical methods were chosen as special methods of knowledge. In particular, we found practical application rating assessment, and correlation analysis.

The direction under consideration is of great relevance. It is dedicated to numerous studies by domestic and foreign authors, on the basis of which a qualitative analysis of this problem was carried out. Issues of the systematic restart of the Russian economy for achieving sustainable development are studied in the papers of V. V. Ivanter and G. B. Kleiner [1, 2]. Individual aspects of achieving sustainable development in relationship to the transformation of consumer and producer behavior in Russia have been investigated in the papers of A. Sh. Kamaletdinov, A. A. Ksenofontov, P. V. Trifonov, N. A. Cherepovskaya and other domestic authors [3–6]. The authors also explore the impact of business models and import substitution on stability in the Russian economy [7, 8].

The international aspects of factors for achieving the goals of sustainable socio-economic development have been studied by researchers such as N. Huseynli, R. M. Solow [9, 10].

However, there is still no comprehensive study on achieving the Sustainable Development Goals and assessing the impact of consumer financial and economic behavior on them.

RESULTS

It should be acknowledged that most of the national sustainable development goals are directly related to the financial and economic behavior of the consumer and therefore the leading factor in achieving the aforementioned goals is the formation of responsible consumer behavior towards the environment, their own life, education and work, economic resources. We examined
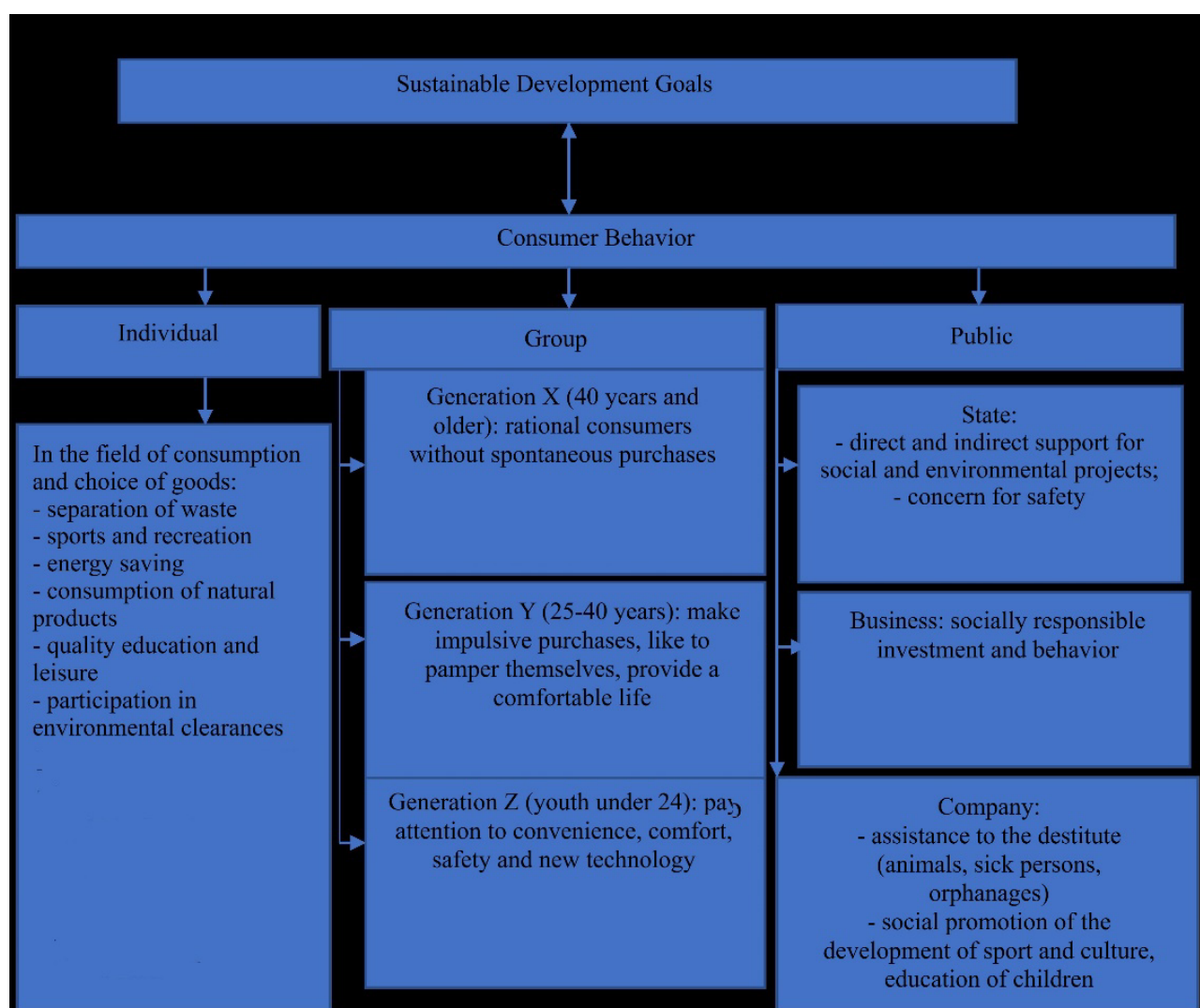
Fig. 1. **The Relationship Between Sustainable Development Goals and Financial and Economic Behavior of Consumers**

Source: Compiled by the authors.

the interrelated impact of the Sustainable Development Goals and responsible consumer behavior. The results are presented in *Fig. 1.*

In general, all consumer segments X, Y, Z are striving for trends towards achieving the Sustainable Development Goals. However, their reasons and motives are different. Generation X, born in Soviet times, was initially raised in the Soviet spirit of responsible attitude to the environment and caring for goods. Generation X mostly puts social values above individual values.

Generation Y was born in the 1990s and values a more comfortable life for themselves and cares less about others. Therefore, the goals of sustainable development as a "event for all" are understood by them, as individual values are more important to them than social values. For Generation Y, the goals of sustainable development must be defined and linked to everyone.

Generation Z is committed to everything new, and the goals of sustainable development are made clear to them by their consistency with current trends. For this generation, both individual and social values are consonant. Social values for them acquire high significance and become individual if they gain wide publicity in society and find public recognition [11, 12].

Thus, different lifestyle attitudes due to differences in raising and education have a significant impact on consumer behavior. The attitude to responsible consumption in different generations of the Russian population differs and is motivated by different methods and tools, but all generations are united in the desire to ensure sustainable development of the country [13, 14].

However, it is important not only to monitor the dynamics of individual indicators, but also to comprehensively assess the impact of consumer behavior transformation on achieving Sustainable Development Goals. In the Russian Federation, a number of systemic problems in achieving the Sustainable Development Goals have been identified over the past 10 years.

Firstly, the achievement of the Sustainable Development Goals of eradicating poverty in all its manifestations is of great concern in the analysis of specific indicators. To date, more than 11% of the population of Russia lives below the poverty line.

Secondly, about 10% of the population still does not have access to quality drinking water, which does not contribute to health and life expectancy.

Thirdly, the share of renewable energy is less than 20%. Growth is ongoing, but within 1% per year.

Fourthly, agricultural output indices, as well as real monetary incomes of the population, have an unsustainable dynamic, being severely influenced by external factors.

At the same time, there is a significant increase in environmental protection and innovation. A gradual increase in the proportion of young people who study and acquire professional skills [15, 16].

We conduct an integrated (rating) assessment of the achievement of the Sustainable Development Goals related to the transformation of consumer behavior. To do this, use the following method.

Firstly, we calculate the actual values of the indicators. It is important to remember that all indicators presented must be one-way. In our case, the higher the value, the better.

Secondly, we choose the optimal value for each indicator for the entire time period. In our case, the optimal value will correspond to the maximum level for the entire period considered.

Thirdly, we determine the relative value of the Ki indicator, which represents the ratio of i-actual value to the optimal, that is, the maximum (formula 1).

$$Ki = \frac{Xi}{Xmax}, \qquad (1)$$

where Ki — relative value of the i indicator; Xi — actual value of the i indicator; $Xmax$ — maximum value of i indicator in the sample submitted.

Fourthly, we determine the value of the rating for each year by the formula (2).

$$Rj = \sqrt[m]{K1j \cdot K2j \ldots Kmj}, \qquad (2)$$

where m — number of indicators used; j — year in which the rating value is calculated.

Thus, the rating value cannot exceed 1. But the closer to one, the better achievement of the Sustainable Development Goals is achieved through responsible consumer behavior. The results of the calculations are presented in *Table 1*.

As a result, there is a positive trend in the development of responsible consumer behavior. In 2021, there was particularly significant progress. For example, of the 21 indicators examined for 11 indicators, the greatest value was achieved in 2021, indicating the state's positive cooperation with the business sector and the public as a whole.

Note that the maximum possible value of the rating is 1.0000. In 2010–2015, the rating value was less than 0.9. In 2017, it reached 0.932. In 2021, it reached 0.9883, and the deviation from the maximum level was 0.0117. Of course, this is a positive phenomenon, characterizing the active
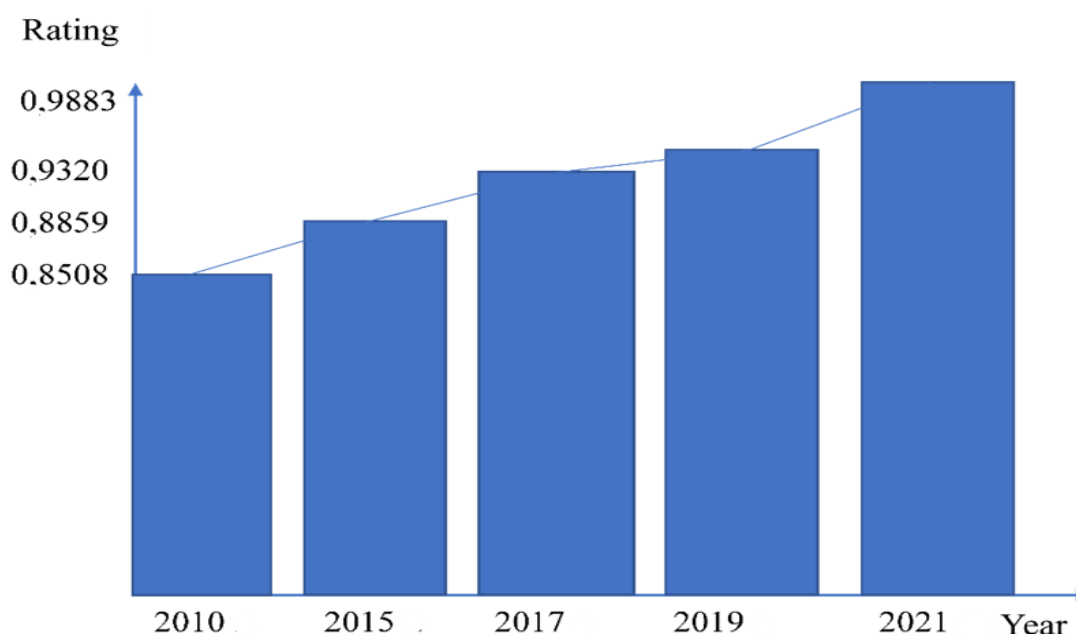
Rating of Achievement of the Sustainable Development Goals Related to Responsible Consumer Behavior

Indicator	Year					Deviation of 2021 from 2010
	2010	2015	2017	2019	2021	
1. Poverty eradication in all its forms						
1.1. Real income of the population, in% to the previous period	1.000	0.910	0.946	0.967	0.985	−0.015
1.2. Share of population with income above the poverty line, %	0.983	0.973	0.979	0.985	1.000	0.017
2. Eradicating hunger, ensuring food security and improving nutrition and promoting sustainable agriculture						
2.1. Agricultural production index in comparable prices to the previous year	0.843	0.979	0.987	1.000	0.957	0.114
3. Ensuring a healthy lifestyle and promoting well-being for all at all ages						
3.1. Number of doctors per 1000 peoples	0.980	0.902	0.922	0.961	1.000	0.020
3.2. Total number of medical personnel per 1000 peoples	1.000	1.000	0.981	0.962	0.953	-0.047
4. Ensuring comprehensive and equitable quality education and promoting learning opportunities for all						
4.1. Share of young people aged 15 to 24 with ICT skills	0.985	1.000	1.000	0.987	0.991	0.006
5. Ensuring the availability and sustainable use of water and sanitation for all						
5.1. Share of the population with quality drinking water, %	0.945	0.945	1.000	0.965	0.983	0.038
6. Ensuring access to affordable, reliable, sustainable and modern energy sources for all						
6.1. Energy yield of GDP per year, million rubles, in current prices per 1 kg of conventional fuel	0.645	0.793	0.826	0.967	1.000	0.355
6.2. Share of renewable energy sources, including hydropower plants, in %	0.805	0.832	0.895	0.921	1.000	0.195
7. Promotion of progressive, inclusive and sustainable economic growth, full and productive employment and decent work for all						
7.1. Physical GDP per capita index, %	0.993	0.930	0.976	0.972	1.000	0.007
7.2. Percentage of high-tech and science-intensive industries in GDP, %	0.991	0.917	0.948	0.965	1.000	0.009
7.3. Real average monthly salary level (in % of the previous year)	0.988	0.854	1.000	0.984	0.981	−0.007

Table 1 (continued)

Indicator	Year					Deviation of 2021 from 2010
	2010	**2015**	**2017**	**2019**	**2021**	
7.4. Percentage of young people (15 to 24 years of age) who study, work and acquire professional skills	0.960	0.980	0.997	0.996	1.000	0.040
8. Ensuring the openness, security, viability and environmental sustainability of cities and settlements						
8.1. Ratio of housing deployment to population growth	0.867	0.894	0.876	0.938	1.000	0.133
8.2. Share of organizations using innovations to improve the recycling capacity of products after consumer use	0.709	0.677	0.741	0.720	1.000	0.291
8.3. Percentage of innovative organizations implementing recycling of waste of production, water or materials, %	0.981	1.000	0.933	0.817	0.989	0.008
9. Gender equality						
9.1. Share of women in the State Duma of the Federal Assembly of the Russian Federation, %	0.883	0.816	0.969	0.988	1.000	0.117
9.2. Percentage of women in the Federation Council of the Federal Assembly of the Russian Federation, %	0.251	0.877	0.877	0.938	1.000	0.749
10. Ensuring the transition to sustainable consumption and production						
10.1. Index of environmental expenditure, % to the previous year	1.000	0.881	0.975	0.982	0.998	−0.002
10.2. Index of equity investments aimed at environmental protection and sustainable management, in %	0.692	0.591	0.730	0.716	1.000	0.308
10.3. Index of number of eco-trails and routes in state nature reserves, in % to the previous year	0.991	1.000	0.935	0.977	0.921	−0.070
10.4. Integrated assessment of achievement of national sustainable development goals on the basis of responsible consumer behaviour	0.8508	0.8859	0.9320	0.9344	0.9883	0.1375

Source: The author's calculations according to Rosstat data. URL: https://rosstat.gov.ru/folder/210/document/12994 (accessed on 11.04.2023).

Fig. 2. **Dynamics of the Rating Assessment of the Achievement of the Sustainable Development Goals Related to Responsible Consumer Behavior**

Source: Author's calculations.

implementation of the values of responsible consumer behavior in order to sustainable growth and development. The State declares "right" socially significant objectives. The entrepreneurial sector aims for social responsibility and, along with the remainder of the population, moves toward reasonable production and consumption behaviors. We will evaluate the total change in rating and provide the results in *Fig. 2*.

However, not everything is so unambiguous. Relative indicators vary unevenly and unidirectionally, complicating the process of achieving the Sustainable Development Goals. Given that the goals are interrelated, the inadequate rate of achievement of one objective reduces the rate of accomplishment of other objectives.

In general, the overall change in the rating for 2010–2021 can be characterized as positive-moderate, since the deviation was 0.1375 and is within the range of 0.1– 0.24. This is a good result, but, as evidenced by the data presented, the objectives of poverty eradication and achieving sustainable economic growth, which

are linked to public policy, are the most vulnerable.

In the near future, it is advisable to prioritize factors of consumer behavior such as ensuring advanced growth in the cash income of the population and the real average monthly wage, expenditure on environmental protection and the formation of ecological routes, development of the health system. This will enable more prompt achievement of the objectives of poverty eradication, the transition to sustainable production and consumption patterns; the promotion of sustainable economic growth, full and productive employment and decent work for all.

From a scientific and practical point of view, it is appropriate to identify how the above-mentioned transformation brings society closer to responsible consumer behavior that ensures sustainable economic development. At the macro level, the physical GDP per capita index can be the generalized indicator of responsible consumer behavior. This indicator, firstly, takes into account the costs of all economic actors, including consumers;

Correlation Coefficient for Assessing the Impact of Consumer Behavior Factors on the Per Capita Physical GDP Index for 2012–2021

Indicators — factors	Correlation coefficient		Assessment of tightness of communication
	2012–2016	**2017–2021**	
1. Disposal of waste of production and consumption, million tons	−0.3244	0.6932	Relationship with reverse changed to straight, noticeable
2. Share of organizations implementing environmental innovation, %	0.7500	0.4125	There is no direct relationship. The strength of the relationship is decreasing. Relationship is visible
3. Investment in capital for environmental protection, billion rubles	−0.876	0.0257	The relationship with the reverse has changed to a direct one. The relationship is very weak
4. Index of real wage, %	0.9521	0.5565	The presence of a direct, visible relationship. Relationship strength decreases
5. Index of labour productivity, %	0.975	0.7294	There is no direct connection. The strength of the connection is decreasing. Relationship is high
6. Share of employed persons aged 25–64 with higher education in the total number of persons employed in the corresponding age group, %	−0.6864	−0.0284	There is feedback. The power of influence is virtually absent
7. Share of organizations implementing technological innovations, %	0.4743	0.0838	Relationship is practically absent
8. Level of digitization of the local telephone network, %	−0.5812	0.2463	Relationship with reverse has changed to straight. Relationship is weak
9. Index of physical investments in fixed assets, %	0.8400	0.9316	Relationship is direct, close to functional
10. Share of healthcare facilities using the Internet, %	−0.9286	0.1235	Very high variation of negative to positive value
11. Share of cultural institutions using the Internet, %	0.1215	0.1399	Relationship is weak, but gradually increasing
12. Share of museum items included in the electronic catalogue with digital images in the total museum fund, %	−0.7866	0.2106	Very high variation of negative to positive value
13. Share of income under the poverty line	−0.7230	−0.4850	Relationship is negative, moderate
14. Share of households with Internet access, %	−0.8460	0.0900	Note high variations from relative to positive
15. Gini coefficient	0.8853	0.0077	There is no relationship

Source: The author's calculations according to Rosstat data. URL: https://rosstat.gov.ru/folder/210/document/12994 (accessed on 11.04.2023).

secondly, it determines the per capita change in population composition; thirdly, the dynamics over a long period of time are well tracked. In Russia for 2012–2021 there is a wave-shaped dynamics of this indicator.

The correlation factor can be used to assess the impact of measurement factors on the performance indicator (index of physical GDP per capita). Following the dynamics of the correlation factor for the five-year periods, 2021–2016 and 2017–2021, it is possible to assess the strength and direction of the influence of individual factors. This will provide a basis for identifying advanced directions for achieving the Sustainable Development Goals through the formation of responsible financial and economic behavior of consumers.

Calculate the correlation of individual indicators — consumer behavior factors with the per capita physical GDP index and present the results in *Table 2*.

Thus, different factors characterizing consumer and producer behavior significantly different in the real per capita GDP index. The highest direct impact on the effectiveness of responsible consumer behavior is the index of the physical volume of investment in equity (relation close to functional). The labour productivity index (above 0.7) also demonstrates a high degree of influence. This means that, in order to ensure sustainable development and maximize the effectiveness of responsible consumer behavior, investment and productivity growth must be increased dynamically.

Furthermore, the impact of the digitization of households, healthcare and cultural institutions on the effectiveness of responsible consumption should be emphasized. If the trend continues, the impact will increase over the next five to ten years. Thus, the national programme "Digital Economy of the Russian Federation" is being actively implemented and has a growing impact on the formation of responsible consumer behavior and achievement of the goals of

sustainable economic development. Digital transformation is the most noticeable trend in consumer behavior in 2017–2021.
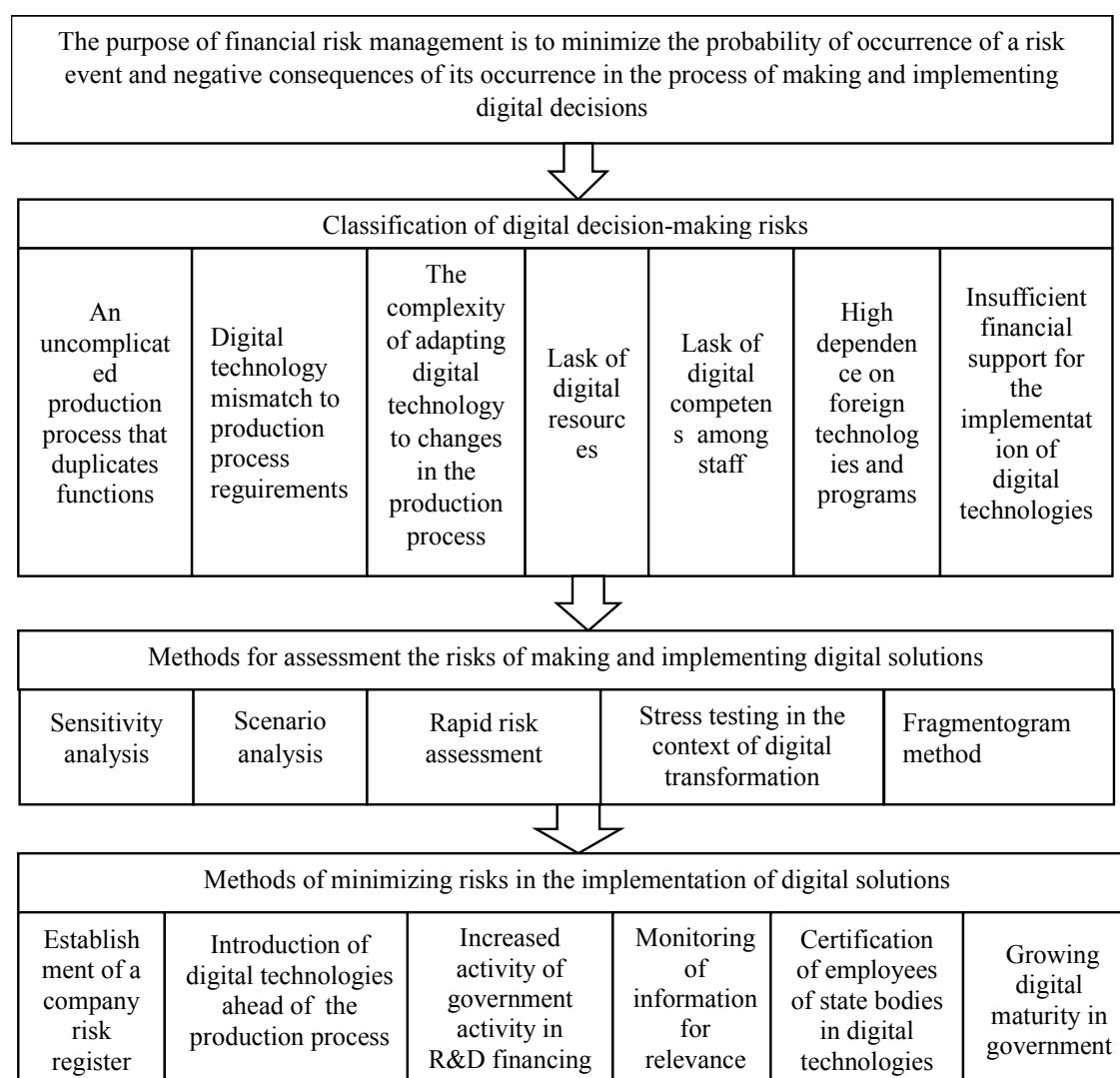
However, digital transformation introduces new information risks that require preventative measures to impact the digital environment. The development of a digital risk management system aimed at identifying, evaluating and minimizing the risks of the negative impact of the potential of digital solutions on the sustainable economic development of the national economy is the most important area for increasing information security. We will examine the key directions of risk management in the Russian Federation and present the results on *Fig. 3*.

The importance of digital risk management is increasing due to the availability of objective factors. The purpose of digital risk management is to minimize the probability and impact of damage caused by information risk. Information risks are the subject of management. The sources of information risks are reliability and qualification of staff, quality of information, reliability of digital technology, the level of technologies are used. The nature of information risks is determined by the action of internal and external factors and, taking into account modern realities, the information component is present in any risk.

It is important to develop the level of education and training of organizations and public administrations in the field of digital technology, which should be focused on the formation of cross-cutting digital competences and be based on a personalized development trajectory, including a synthesis of personal, social, educational and professional components.

CONCLUSIONS

The basis for the development of the theory of responsible consumption should be the transition to rational models of production and use based on the implementation of the principles of minimization of transaction costs, sustainability of obtaining results,

The purpose of financial risk management is to minimize the probability of occurrence of a risk event and negative consequences of its occurrence in the process of making and implementing digital decisions

⬇

Classification of digital decision-making risks						
An uncomplicated production process that duplicates functions	Digital technology mismatch to production process reguirements	The complexity of adapting digital technology to changes in the production process	Lask of digital resources	Lask of digital competens among staff	High dependence on foreign technologies and programs	Insufficient financial support for the implementation of digital technologies

⬇

Methods for assessment the risks of making and implementing digital solutions				
Sensitivity analysis	Scenario analysis	Rapid risk assessment	Stress testing in the context of digital transformation	Fragmentogram method

⬇

Methods of minimizing risks in the implementation of digital solutions					
Establishment of a company risk register	Introduction of digital technologies ahead of the production process	Increased activity of government activity in R&D financing	Monitoring of information for relevance	Certification of employees of state bodies in digital technologies	Growing digital maturity in government

Fig. 3. **Digital Risk Management System for the Implementation of Digital Solutions**
Source: Compiled by the authors.

effective structuring of the civilian population.

The transformation of consumer financial and economic behavior is connected to a significant increase in the impact of waste disposal processes of production and consumption; the digitization of households, health and cultural institutions; investments in environmental protection, income differentiation, and the dynamics of the population's real wages. Separately, we highlight the Gini coefficient, which by 2012–2016 demonstrated a direct and close relationship with the physical GDP per capita index. However, in 2017–2021 there wasn't connection. Maintaining this trend will lead to a negative correlation in 2022–2026. This will mean that the increase in income differentiation will not be justified not only from a social, but also from an economic point of view. Excessive income growth of top managers, middle managers is not economically justified, as it does not ensure the transition to responsible financial-economic behavior of consumers and sustainable economic development. We need to reduce the differentiation in the income of the population by increasing the real wages of engineering and technical workers, workers of the highest and secondary

qualifications, and senior service personnel [17, 18].

In order to promote responsible consumer behavior, it is necessary for our country to carry out a range of activities.

The first is to increase investment in equity. Taking into account the specific characteristics of Russia, it is the most significant factor of real GDP growth per capita, ensuring the most dynamic achievement of the Sustainable Development Goals.

The second is to increase labor productivity and real wages. This direction is very important for the eradication of poverty among the Russian population in all its manifestations.

The third is to boost innovation, including environmental protection and the reuse of waste from production and consumption.

The fourth is to overcome the poverty of the population as a phenomenon and to reduce the unreasonable differentiation of their incomes. Calculations show that an increase of 1% in the proportion of the population with incomes below the poverty line leads to a reduction of 0.5% in real GDP per capita. Therefore, the existence of a poor population is neither socially nor economically justified.

The fifth is to promote the digitization of public institutions of culture and health care, households, enhance the digital culture and form cross-cutting digital competences of workers and the population, ensuring their applicability in all spheres of life. It is also important to promote digital risk management.

In general, it is important for Russia to solve the basic goals of socio-economic development, without which it is impossible to move forward towards sustainable economic growth. Further progress on environmental protection, environmental education and "green" financing in Russia is also needed, which contributes to increasing the resilience of the Russian economy in the face of sanctions pressure from Western countries [19, 20].

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Conflicts of Interest Statement: The authors have no conflicts of interest to declare.