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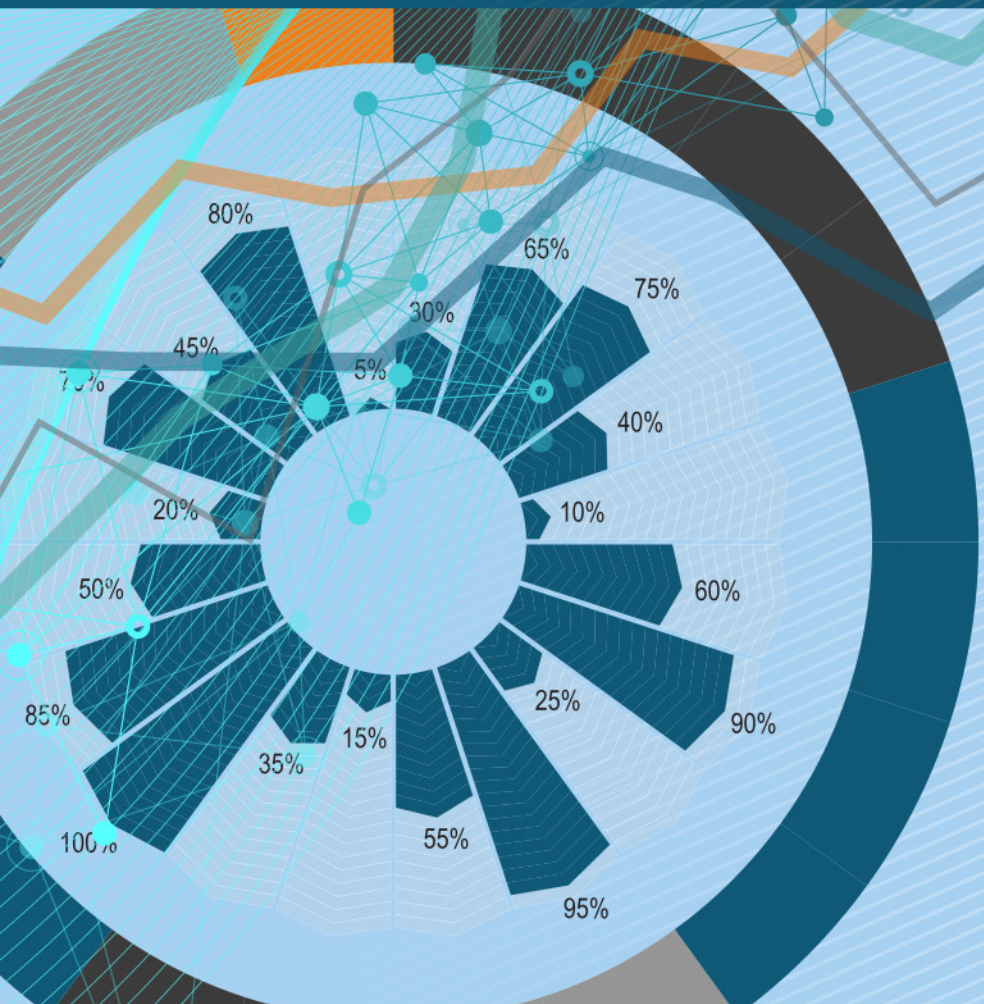

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Contents

Non-functional demand model vs functional demand model: prospects for competitiveness in a transforming world

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ORIGINAL ARTICLE

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Abstract. The purpose of the article is to analyse the problem of changing the relationship between non-functional and functional demand. The main task of the presented research is to define the most competitive model (based on functional or non-functional demand) of consumer behaviour in the conditions of the economy of the 20s of the XXI century. To solve this problem, we studied the structure of consumer demand: functional and non-functional ones. We identified the features of non-functional demand, and considered the reasons for its expansion in modern society. Moreover, paper highlights fixing changes in consumer orientations, which resulted in the search for satisfaction not only of material needs, but also aesthetic, emotional, and social ones. It allowed us to formulate a conclusion on the existence of objective reasons for the spread of non-functional demand. Within the framework of non-functional demand, we perform an analysis of origin and expansion of the downshifting phenomenon through the transformation of the basis of functional demand. The authors believe that qualitative changes in global socio-economic development have revolutionized the theoretical concepts of rationality, which are the basis of the functional demand model. Nevertheless, authors criticise the interpretation of downshifting as a model of irrational consumer behaviour, and put forward a hypothesis on the legitimacy of this new phenomenon to be analysed within the framework of functional demand. The authors consider the assumption of the possibility of changing the objectives of society to be a condition for the realization of this hypothesis. it can cause the transformation of «efficiency» concept over the past 300 years. Paper forecasts increasing of non-economic goals rationality, cooperation, mutual benefits, and the coupling of knowledge and technology to moral, cultural, and ethical principles and norms. As a result, in the contrary to the widespread assessment of downshifting as a deviant form of consumer behavior, there was put forward hypothesis considering downshifting as a part of classical consumer choice matrix, taking into account the transformation of this matrix itself.

Keywords: functional demand; non-functional demand; social demand; speculative demand; irrational and nonrational demand; bandwagon effect; snob effect; Veblen effect; downshifting

JEL codes: B10, B50, D11, E21, E71

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Introduction

Nowadays, the consumption of goods and services plays an important role in the economy and people's lives. It is interpreted by a significant part of theorists as a transition in practice from the "primacy of production" to the "primacy of consumption". However, both "primaces" occurred on the basis of classical political economy [1; 2]. The world became a "consumer society". At first, in the 60-70s of the XXth century, it was formed in the USA, then spread to the East, covering Western Europe, and reaching Russia by the beginning of the XXI century [3; 4]. Development of technology and rising living standards provide consumers access to a wide range of products and services. Moreover, the mass consumption society noted material goods as major onest, adapting the value system of society to this type of consumption.

However, later, as consumers' self-awareness increased, the functional aspects of goods and services lost

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their status as the only criterion of choice. An increasing number of people began to focus on environmental, emotional, social, status, and other factors when choosing a product or service [5]. It caused non-functional demand. There is an issue of phenomenon defining in terms of displacement of functional demand and parallel existence with it on the principles of coexistence. Also this research dwells on the issue of the evolution of modern consumer behaviour rationality. In terms of it, person chooses goods, focusing more on other factors than price and individual consumer pleasure, but considers more significant markers.

This paper concerns with the spread of non-functional demand. It is interpreted by the most modern researchers as a sign of irrationality of modern consumer behaviour. This perspective allows us to raise the issue of the competitiveness of both models of consumer behaviour in the modern economy. On the one hand, functional demand, based on the classical idea of consumer choice rationality; on the other, non-functional demand, which denies this rationality. The authors do not adhere to any of these points of view; they hypothesizing the transformation of "rationality" concept. Consequently, non-functional demand involves into the matrix of classical consumer choice (taking into account the modification of this matrix itself). It neutralises the dilemma.

Main Part

Comparison of " functional demand" and "non-functional demand" concepts

Classical economic models focus on the functional consumers behaviour According to these models, consumers choose of goods and services based on their quality and usefulness; correlates with their budgets [6]. However, non-functional demand takes into account aesthetic preferences, social influence, emotional aspects, etc. It transcends the scope of classical (and neoclassical) economic theory. To better understand the meaning of both terms, we consider the common one.

One of the most important and fundamental concepts of economics is "demand" category. Marshall's definition of demand can be considered superclassical. However, there are several different interpretations of this term in the economic literature.

For instance, demand is defined as a desire supported by purchasing power; it is a market requirement provided with money [7]. The difference between desire and requirement is insignificant, but nevertheless it exists. We believe, desire can be characterized as a meaningful sense of requirement. It is determined by the creation of conditions for human life.

Demand is determined simultaneously by consumer preferences and the level of prices on the market. It is determined both for the product and its substitute, as well as the consumer's internal expectation of a possible change in product prices.

The demand for a particular product shows the consumer's desire to purchase a certain amount of this product. This "desire to buy" distinguishes demand from the usual "desire" to get a particular product, caused by the urgent need to satisfy vital requirements, the desire to look better than other people, or surpass them.

Therefore, "demand" is the requirement for certain goods or services, provided with money and presented on the market.

We also consider the terms "function" and "demand function".

The Ozhegov's Glossary defines "function" as a phenomenon depending on another and changes as those other phenomena changes; as a law according to which each value of a variable quantity (argument) corresponds to a certain definite quantity, and also to this quantity itself; as a role, value of something[1].

The demand function is a function connecting a dependent variable (the quantity of demand Qd) with various independent variables that determine demand, such as the price of a product (P), income (Y), the price of substitute products (Ps), advertising (A), etc. [8]:

$$Qd=f(P, Y, Ps, A, \ldots) \quad (1)$$

Indeed, functional demand is the need for certain goods or services, which depends on independent variables determining a demand.

Functional demand is the demand for goods, which is determined by the consumer characteristics

[1] *Ozhegov, S. I. and Shvedova, N. Yu. Glossary of the Russian language (1997). 4th ed. Moscow: Azbukovnik. 874 p. (in Russian)*

inherent to an economic good (product or service) [9]. Functional demand depends on the utility function of the consumer, on its maximum value. It decreases or increases depending on the qualities of this good, consumer's point of view, or other qualities affecting its utility.

The opposite of functional demand is non-functional demand. It is a demand occurring not due to the consumer characteristics of the product, but due to some other factors. The main and decisive ones are the psychological laws of human behavior (emotions, prestige, social status, individual preferences, etc.).

Types of non-functional demand: current trends

One of the current trends is an increase in the number of allocated types of non-functional demand. It can be interpreted as its expansion. Previously irrational and rational demand were combined into one type, today everyone is developing their own niche. Therefore, we pay special attention to this issue.

The first type of non-functional demand is social demand. Nevertheless, it cannot be independent of certain social attitudes. Social demand includes three types: bandwagon effect, the snob effect, and the Veblen effect [10].

Bandwagon effect is caused by people's desire to follow fashion and conform to consumer stereotypes. This phenomenon implies an increase in demand for goods popular in society. Consider this effect demand graph (Fig.1). On the one hand, when the market industry demand curve (D) shifts to the right (from position D 1 to position D 2), the individual demand curve (d) also shifts to the right (from d 1 to d 2). The stronger the shift of d under the influence of D, the greater the effect. On the other hand, individual demand becomes more elastic: the d curve becomes more flat.

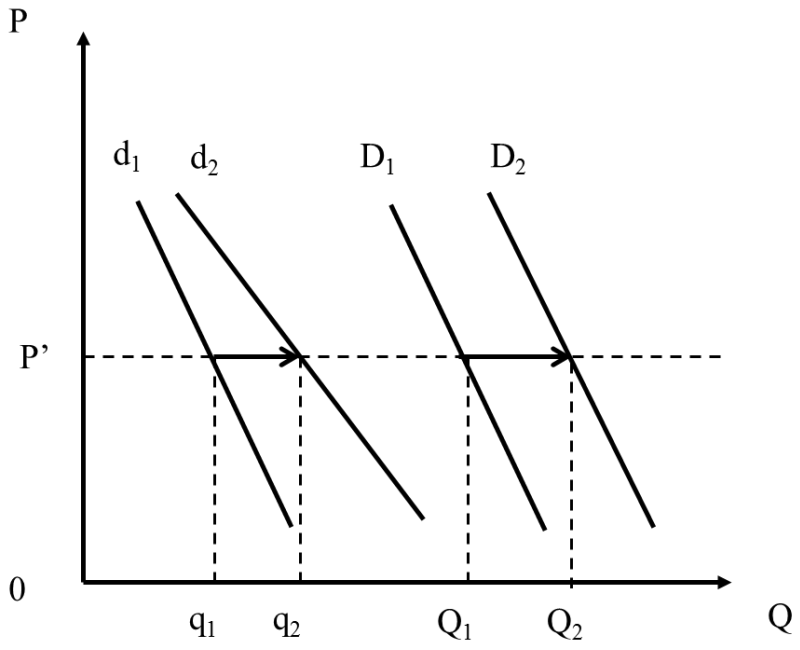

Figure 1. The demand curve with the bandwagon effect

Source: composed by the authors

The snob effect affects the buyer in the opposite way, compared to the bandwagon effect. Desire to differentiate themselves from society and demonstrate their individuality, people refrain from purchasing goods available to the majority (Fig.2). In graphical interpretation, on the one hand, the individual demand curve (d) shift to the left, and the market demand curve (D) shifts to the right. On the other hand, individual demand becomes less elastic: the d curve becomes steeper.

A quantitative assessment of the snob and bandwagon effects can be shown using the elasticity coefficient Eq. It shows the degree of change in individual demand (d) when market demand (D) changes by 1%:

$$Eq=(\Delta qi/qi) : (\Delta Qi/Qi) =(\Delta qi/\Delta Qi) * (Qi/qi) \quad (2)$$

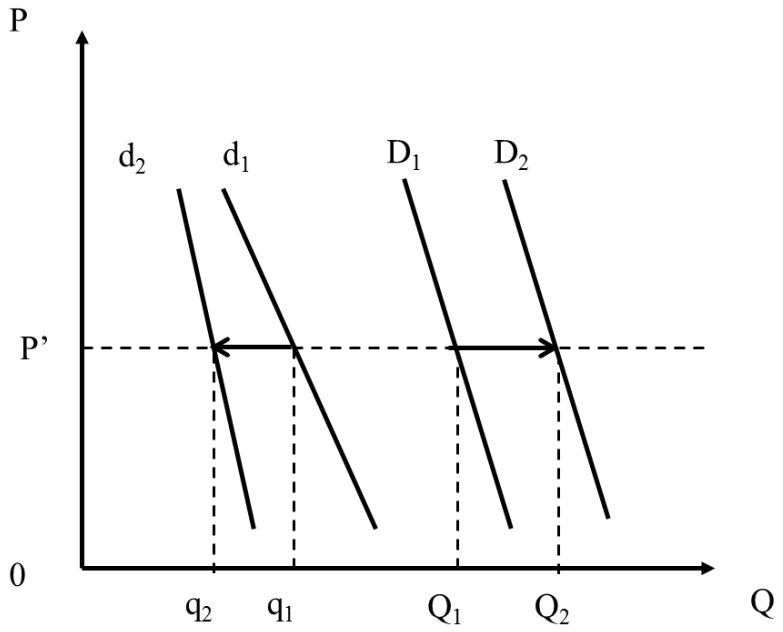

Figure 2. The demand curve for the snob effect

Source: composed by the authors

Here qi and Qi are the size of individual and market demand for product i, respectively. If the coefficient of elasticity has a positive value, then the bandwagon effect is observed. If it is negative, then there is a snob effect.

The Veblen effect is a phenomenon of increasing demand for expensive goods. In this case, the consumer identifies a high price with prestige. Such demonstrative consumption is illustrated in the work "The Theory of the Leisure Class: An Economic Study of Institutions" by T. Veblen [11]. According to T. Veblen, person determines his or her social position by comparing the consumption style with other people.

The demand curve for the Veblen effect above a certain price (P'); it changes its slope to a positive one, whereas below this price the demand curve looks traditionally in the form of a curve with a negative slope, since at low prices a product or service loses its prestigious status, and passes into the category of ordinary consumer goods (Fig.3).

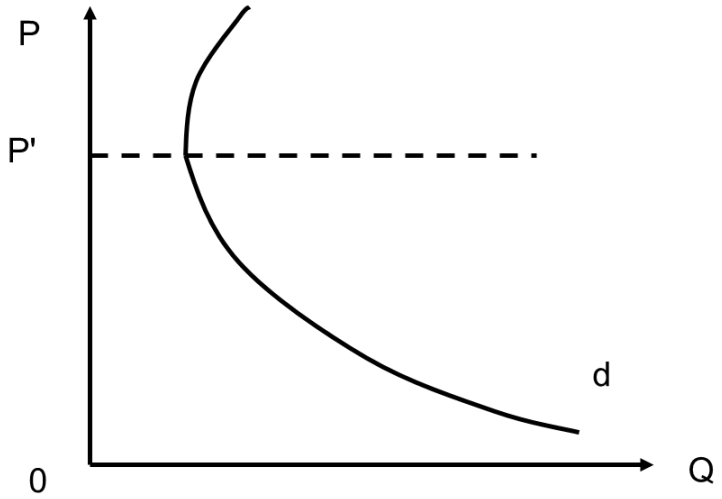

Figure 3. The demand curve for the Veblen effect

Source: composed by the authors

However, some enterprises develop their business on the Veblen effect. They produce expensive branded goods, but they also strive to focus on product quality in order to have a good reputation. Such companies

are Apple, Rolex, Chanel, etc. [12].

The Veblen effect is calculated through the price elasticity of demand:

$$Eq = Q'(P)\frac{P}{Q(P)} \quad (3)$$

The higher the value of the price elasticity coefficient, the stronger the Veblen effect.

The second type of non-functional demand is speculative demand. It is caused by the active purchase of goods in fear of price increase, force majeure, etc. Therefore, the demand curve increases dramatically in a short period of time. An example is the high demand for essential products in crisis. For instance, some hypermarkets place so-called "apocalypse kits" at the entrance. Those kits include buckwheat, flour, pasta, sugar, salt, stew, etc.

The third type of non-functional demand is irrational demand. It includes purchases under the influence of mood changes. Often, a person subsequently cannot explain what prompted him to make a rash purchase.

The fourth type of non-functional demand is irrational demand. This is the demand of one group of consumers for a product that is denied and condemned by another group (alcohol, tobacco, drugs). Moreover, irrational demand fraught with the formation of addiction. Perhaps, this type of non-functional demand is currently subject to the most active modification. On the one hand, it has emerged as an independent type of non-functional demand relatively recently. On the other hand, there are concomitant reasons for its spread. For instance, a campaign to legalize light drugs, or a decrease in the legally established "age of consent", or increasing involvement and, consequently, Internet addiction disorders. Nowadays, the initially declared goal of the Internet – to save time – is drastically changed. The result is a behavioural addiction causing harm to people mental and emotional health.

However, there is also a third party associated with the emergence and spread of an unusual model of consumer behavior – it is downshifting.

Since the Medieval Reformation (XVI – early XVII centuries), success confirmed by high income is one of the main components of a persons' self-actualisation. It is extremely relevant in modern society. A progressive society relies on a culture of consumption; in terms of it everyone strives to achieve success. The image of a successful person, with personal and civil liberties and pursuit of the ideal, has been formed in Western popular culture for centuries and has turned out to be inextricably linked with the market foundations of the economy. The basic concept in this type of culture is success interpreted in terms of capital; it concerns with the basic value orientations of consumer culture, allows a person to climb the social ladder, gives an incentive to accumulate material benefits, expands access to information, etc.

Later, with the formation of monopolies and the industrial model of civilization (XVII-XIX centuries), the individual model of success was transformed into a corporate model of success. It had many advantages: stable income, high social status, full social guarantees. Also there are disadvantages: a shortage of time for personal life, communication with family, etc. As a result, a person lives in a constant stress, neutralising the benefits of a high income, and generating a crisis of personal identity.

This contradiction started the phenomenon of downshifting, designed to realize a persons' desire to live in harmony.

Downshifting is originally a slang term meaning the process of slowing down the pace of life and decreasing income caused by the transformation of value priorities. For instance, an analogy with the concept of "speed reduction" is appropriate: according to automotive terminology, the English term downshift literally means "slow down, go into low gear"[2].

Many downshifters refuse to strive for the generally accepted benefits promoted, the accumulation of material goods, etc. They choose life "the way they want and can in accordance with their individual values and concepts". The attitude of the society towards such a choice is skeptical one.

Downshifting is analyzed in a wide variety of fields of science, but mainly by social psychology and social economics. Hence, downshifting can be considered as a form of alternative behaviour, as a phenomenon

[2] *Ilyin, V. I. (2022). Downshifting. The Great Russian Encyclopedia. Available at: https://bigenc.ru/c/daunshifting-98403 (Accessed 10.01.2024).*

of decreasing social mobility [13, p. 95].

Moreover, downshifting can be characterized as a tendency towards self-actualisation. In termf of it, everyone strives to find ones' own way of life and feel the unity of reality with personal preferences. This approach is based on the idea of "living for oneself" and the rejection of goals imposed by society [14-16]. Furthemore, the issues whether certain specific goals are imposed by society or not is decided subjectively, and based on the individual's personal conclusions. In a sense, this consumer behaviour is similar to the snob effect: if everyone consumes "it", then I will not, thereby highlighting my individuality.

The term "downshifting" gained popularity and came into use after Sarah Bon Breatnach's article "Life in Low Gear: Downshifting and a New Look at Success in the 90s", Washington Post [17, p. 115). This article analysed a special social movement. Its occurrence correlates with the publication of the book "Downshifting: Reinventing Sucess on a Slower Track", published by Amy Saltsman in the USA in 1990 [12; 14].

Originally, the roots of downshifting should be sought in ancient times, starting with Diogenes of Sinope (V-IV centuries BC). He realized the prophecy of the pythia "to overestimate values". It provided his asceticism and life in an amphora. Later, Epicurus (IV-III centuries BC) introduced the idea of an "inconspicuous life"; Diocletian, who refused to rule the Roman Empire in order to grow flowers and cabbage on his estate (III-IV centuries AD). The search for freedom and self-expression at the cost of voluntary renunciation of the well-being and pleasures of the royal court was known not only in Europe, but also in Asia. For instance, legendary Indian Prince Siddhartha Gautama, the founder of Buddhism, known worldwide as the Buddha (VI-V centuries BC).

In medieval Europe, Francis of Assisi renounced a debauched life and chose voluntary poverty (XII-XIII centuries), can be considered a downshifter. Moreover, Paul Gauguin, Leo Tolstoy (XIX-XX centuries) also can be considered downshifters.

Synonyms of the concept of "downshifting" are "slow living", "voluntary simplicity", and "simple living". The first mention of the term "voluntary simplicity" occurred in 1981 in a book by Dwayne Elgin. The author describes "voluntary simplicity" as a rejection of material abundance in favour of inner sacred wealth and a change in priorities for family well-being, leisure, and self-actualisation. This allows a person to gain inner freedom; it is contrasted with forced poverty restricting the person itself [17, p. 115].

Nevertheless, authors criticise the interpretation of downshifting as a model of irrational consumer behaviour and put forward a hypothesis on the legitimacy of this new phenomenon to be analysed within the framework of functional demand. Nevertheless, the consumer's rejection of the goals of society is a serious argument in favour of recognizing the irrationality of such a refusal. However, the assumption of the possibility of transforming the goals of society can change the society mind [18]. Thus, in the XVIII-XIX centuries, the emergence and formation of the industrial economic system (classical economic school) occurred. It also needed a theoretical understanding of the principle of optimization. The criterion of efficiency was declared to be a purely market equilibrium. It oriented the consumer to maximize the overall utility.

In the XXth century, the mixing of neoclassical and Keynesian economic schools cause understanding of efficiency criterion as pseudo-market (social) equilibrium. According to this concept, individual rationality may not coincide with social one, but the orientation towards maximizing utility remained.

In the 21st century, globalization caused an awareness of the vulnerability of the Earth global ecosystem (a new institutional school). As a result, the principle of full optimization has been replaced by the principle of partial optimization (satisfaction); sustainability has become considered the criterion of effectiveness.

Therefore, the evolution of "functional demand" concept has transformed its meaning: from complete rationality to limited, from purely economic to socio-economic-ecological one.

Hence, the phenomenon of downshifting involves perfectly into the study of functional consumer behaviour. We will proveit by using the indifference curve model.

As a benefit X, we propose to consider a job providing an individual with a certain income and social status. Hence, the consumer choosing this benefit is guided by the slogan: "Work to live". This choice is fraught with an increase in anxiety and stress, a decrease in free time for hobbies, family, friends, travel, etc.; it will restrict each person individuality development. Indeed, the standardization is a marker of the mass

consumption society. It causes increasing in labour productivity and makes life much more comfortable compared to the living conditions of previous generations.

As a benefit Y we propose to consider leisure, personal life, self-realization, etc. It provides an individual with the search and acquisition of a new meaning of life. In the contrary, the motivational slogan "Live to work" occurs. The new values are as follows: reasonable time management, family, recreation, personal development and charity. It requires a certain regularity and slowing down the pace of life. In this context, time begins to play a key role; its rational use helps to achieve harmony [19]. Moreover, a person seeks to abandon following the ideas of consumption and finds (or at least seeks to find) ways to achieve a work and personal life balance. Hence, person tries to get rid of the endless and senseless pursuit of financial success. This choice will require compromising income and consumption levels, including expensive travel, higher social status, other pleasures as a consequence of a new interpretation of life's meaning. Moreover, this new concept is now out of work.

This example can be described by the indifference curve "u" (Fig. 4); it shows the same satisfaction of a consumer. The consumer increases (or reduces) consumption of one of the two goods in order to compensate the reduction (or increase) of the other good consumption by one item.

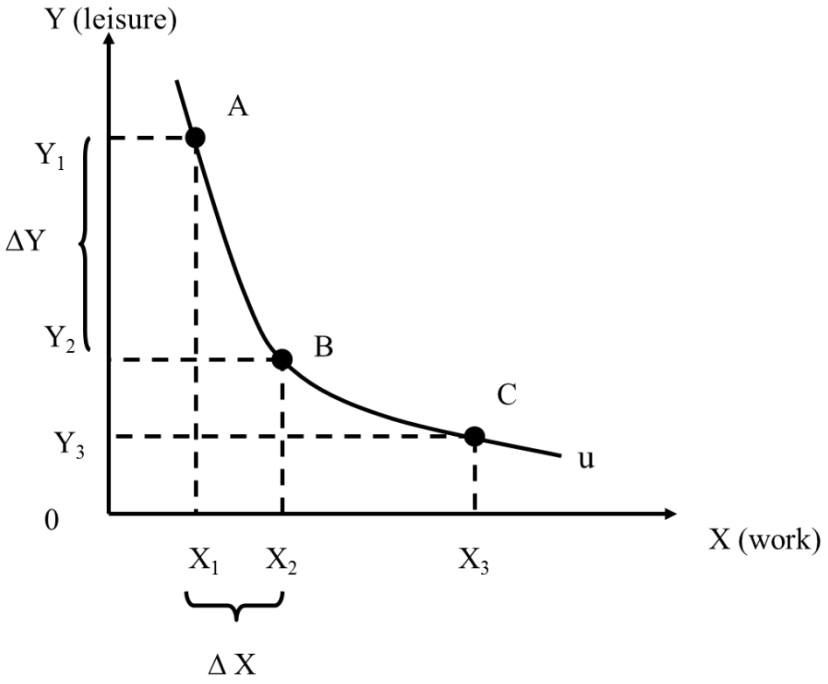

Figure 4. The indifference curve of replacing work with leisure
Source: composed by the authors

Since, on the one hand, no one can increase work without compromising their health by reducing leisure time. On the other hand, increase of leisure time by reducing work as a source of quality of personal life in not reasonable, too. Therefore, Figure 4 requires adjustment in terms of the presence of irreducible amounts of both goods (Xj and Yi) (Fig. 5). At the same time, the shape of the indifference curve "u", after reaching these irreducible amounts, turns into straight lines, limiting the substitution zone to the segment DE.

At X Xi the consumer chooses the workaholic model; Y Yj – downshifter's one.

Features of the downshifting model of consumer behavior

One of the features of the downshifting model of consumer behavior is related to the fact that it can be interpreted both as an example of non-functional demand (if you stay in the paradigm of the classical understanding of rationality), and as an example of functional demand (if you recognize the transformation of the concept of "efficiency" over the past 300 years). As we have explained above, we adhere to the second point of view.

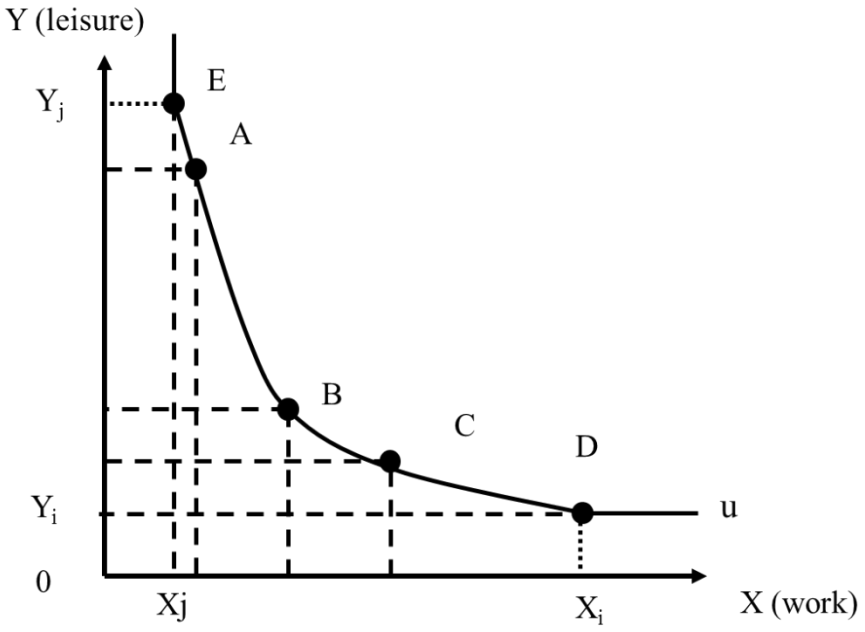

Figure 5. The indifference curve of replacing work with leisure with the allocation of a DE substitution zone
Source: composed by the authors

Another feature of downshifting is related to its structure; it is a two-level one phenomenon. These levels characterize a different degree of immersion in the process of "slowing down life": moderate (light) and deep ones. Moderate downshifting does not require radical changes in lifestyle and environment; deep downshifting implies radical changes – in employment, lifestyle, inhabitation, etc.

The first level of downshifting: dismissal from work and possible change of inhabitation. Downshifters prefer rent out their apartments and live on this money in other place with the lower living standards.

The second level of downshifting: revolutionary changes in employment and type of activity, complemented with change of inhabitation. Some downshifters become freelancers, and work in their free time, only. Other downshifters run their own small businesses, which are mostly hobbies. The desire to live easier life without stress encourages downshifters to change their type of activity, inhabitation, move from large cities to the smaller ones, to other countries, etc. The development of the Internet, remote access information, etc. allows downshifters to get an education, work, and keep up to date without staying in the megacities.

The specificity of downshifting in Russia is the choice of its second level. It involves relocation [20]. As a rule, they prefer Russian villages (the most famous example is the millionaire G.L. Sterligov, co-founder of the first Russian Commodity Exchange; he moved to Mozhaisk district, Moscow region, Russia, and engaged in farming). Moreover, often the decision to move from the city to the countryside is accompanied by a transition to vegetarianism. Therefore, deprivation of habitual material values encourages domestic downshifters to start a household with cattle and a garden.

Finally, the third feature of downshifting is its transient nature: its adherents rarely permanently abandon their former (normal, in the eyes of society) life. Most often, downshifting is considered as a long vacation, a kind of "time-out". Usually, after a year or two, active (in the recent past) people become bored without a dynamic life, a busy work, friends, and relatives they left. But definitely, having returned to their usual society, downshifters try not to turn into workaholics, obsessed with work, which they may have been before. Indeed, it reminds the hippie movement of the 60s and 70s of the last century (the same search for self-exploration, a challenge to social values and apoliticality). However, when the "flower children" grew up, they had to return to the real world to ordinary work.

Conclusion

Hence, our study revealed a competitiveness dilemma of two models of consumer behaviour – functional

and non-functional ones. Scientists have not yet concluded on the predominant kind of demand. As a confirmation we can consider the Nobel Prize for Economics in 2002 awarded to two researchers with the opposite points of view. They are Vernon Lomax Smith, the founder of experimental economics, recognizes the traditional model as more competitive one; and Daniel Kahneman, the founder of behavioural economics relies on an irrational human attitude to risk in decision-making and in managing the consumer behaviour.

Therefore, there is no answer to the paper issue. It all depends on the context in which it is considered. Therefore, we believe that functional demand retains its leadership in the modern world, but only if the transformation of the concepts of "rationality" and "efficiency" although there has been a significant increase in non-functional demand due to the growing importance of satisfying aesthetic, emotional, and social needs.

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The work was done on a personal initiative.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

AUTHORS' CONTRIBUTION

Galina A. Rodina – conceptualization, project administration, writing – original draft.
Vladimir O. Rodin – visualization, writing – review & editing.

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Assessment of prospects for achieving the national goal of halving the poverty rate compared to the 2017

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ORIGINAL ARTICLE

Abstract. The paper presents research on the problem of reducing poverty in Russian Federation. The purpose of the research is to assess the prospects for achieving the national goal of twofold poverty level reducing in Russia by 2030 compared to the 2017. However, in terms of dynamics to the approaches to the poverty, it will be possible to achieve the twofold poverty reduction by 2030 compared to the 2017. It can be implemented in accordance with Presidential Decree No. 474 on 21 July 2020. Moreover, it is not the problem solving; the measurement scale transformation is not the proper tool that can eliminate (or at least reduce) poverty in society. The practical significance of the research is the introduction of a differentiated progressive taxation scale and development of favourable conditions for the intensive development of high-tech and competitive production as the most effective tools for poverty reduction. It will cause an increase in the population's income, strengthening of the national distributive and redistributive functions. Additionally, it allows ones' to reduce the income gap between the richest and poorest segments of the population (reduction of the Gini index).

Keywords: prospects assessment; national goal; poverty reduction; poverty rate

JEL codes: I12, J11, N30

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Introduction

Among the national goals defined by Decree of the President of the Russian Federation No. 474 on July 21, 2020 (Fig.1), aimed at preserving the population, health, and well-being of people, achieving the goal of "reducing poverty by half compared to 2017" is relevant for the society[1].

Traditionally, when solving such problems (e.g. achieving the goal of poverty reduction), there are two types of factors:

– a category of objective factors related to the growth of population well-being;

– a category of subjective factors related to the gradation of population by standards of living (e.g. by the principle of "poor-not poor").

According to Rosstat, in 1995-2022, the population with monetary incomes below the subsistence minimum, considered as the poverty line, decreased at an average rate of 0.62% per year. It reached an absolute minimum in 2022 for the period under study – 9.8%[2] (Fig.2).

Moreover, there is an issue of real poverty level and its dynamics considered by Rosstat.

Therefore, importance of a correct assessment of the poverty level and its dynamics for the population preservation, health, and well-being of people determined the relevance of this study.

Hence the purpose of the study is to assess the prospects for achieving the national goal of reducing poverty in the Russian Federation by 2030 by two times compared to 2017, taking into account the correctness

[1] *Decree of the President of the Russian Federation No. 474 on July 21, 2020 "On the National Development Goals of the Russian Federation up to 2030". Available at: https://www.garant.ru/products/ipo/prime/doc /74304210 (Accessed 09.10.2023)*

[2] *The number of people with monetary incomes below the poverty line (the minimum subsistence level). Available at: https://rosstat.gov.ru/folder/13723 (Accessed 09.10.2023)*

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of the assessment approaches used.

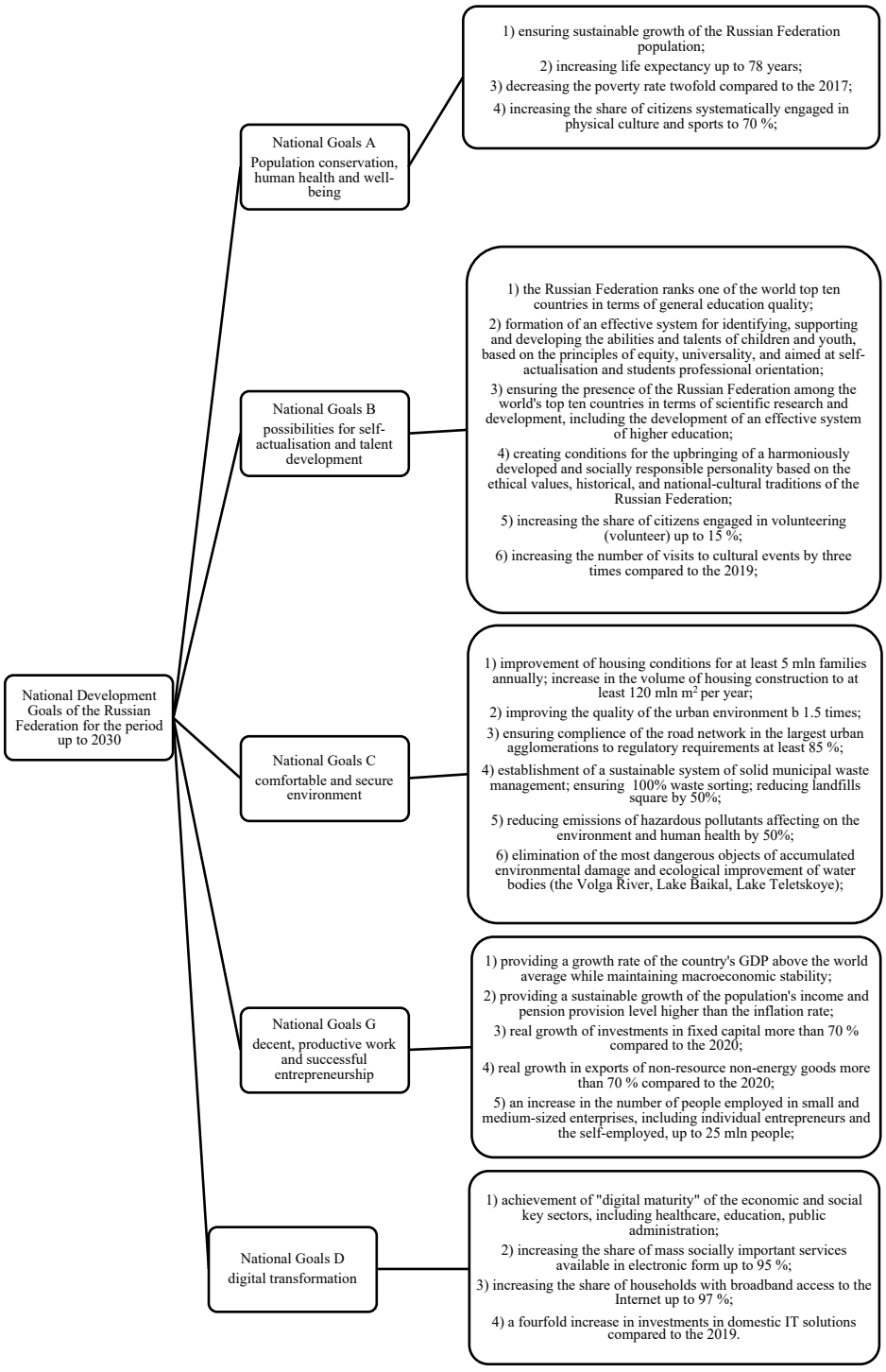

Figure 1. National Goals defined by Decree of the President of the Russian Federation No. 474 on July 21, 2020

Source: composed by the author

Methods

The methodological base of research in introduced by well-known scientific works on the issue of poverty in the XVIII-XX centuries Ch. Booth, V. Lenin, T. Malthus, K. Marx, J. Proudhon, S. Rowntree, E. Reclu, D. Ricardo, A. Smith, G. Spencer, P. Townsend, N. Balagurova[3], M.A. Kurdova & D.A. Buraeva[4],

[3] *Balagurova N. The problem of poverty and ways to solve it. Poor people. Available at: https://fb.ru/article/325856/problema-bednosti-i-puti-e-resheniya-bednyie-lyudi (Accessed 09.10.2023)*

L.T. Pechenaya, T. Panina[4], S.V. Tolkacheva & I.E. Domarev [6], D.Yu. Rudenko [8], A.S. Seliverstov, D.E. Mitrofanov & A.A. Butskaya [7], R. Seligmann[5], A. Tabakh[6], A.A. Urusova [12], R.I. Cherneva [13], etc.

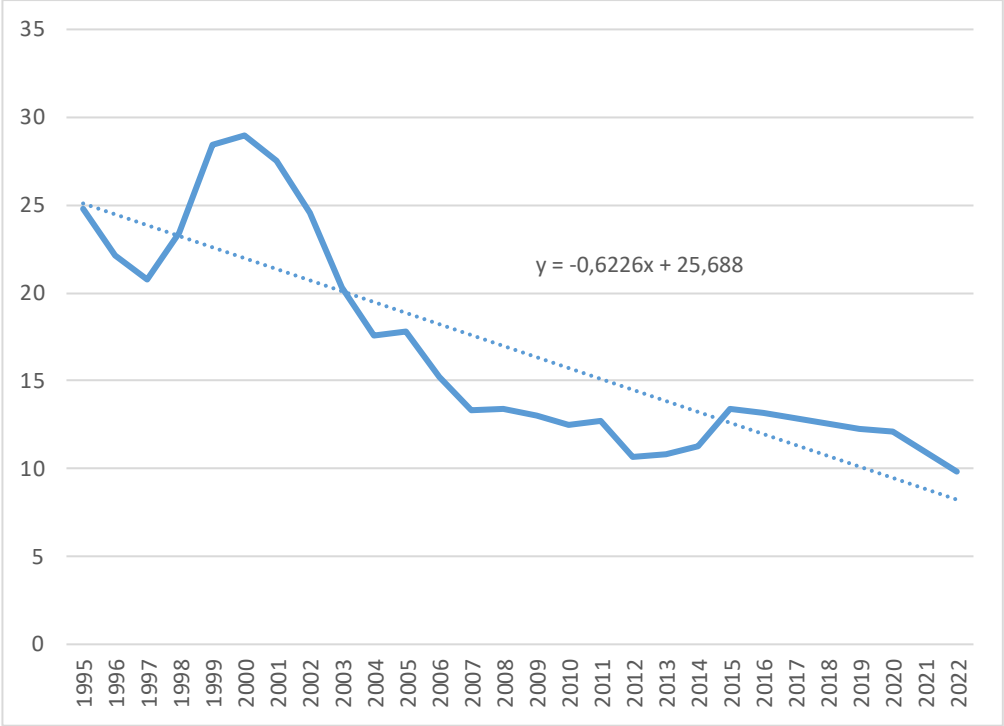

Figure 2. The dynamics of the population with monetary incomes below the subsistence level, considered as the poverty line, in the Russian Federation in 1995-2022, %

Source: Rosstat, 2022

Results

This study is devoted to assessing the prospects for achieving the national goal of "reducing poverty by half compared to 2017". However, it is a logical continuation of the author's research on the problems of achieving National Goals A "Population conservation, human health, and well-being" (Fig.1). In particular, this research considers ensuring sustainable population growth in the Russian Federation [14], and increasing life expectancy to 78 years [3]. At the first stage we will pay attention to the concepts of "poverty", "poverty level", etc.

Indeed, poverty is generally understood to be an economic situation of an individual or a social group in which they cannot meet a certain range of minimum needs necessary for life, retention of labour capacity, reproduction, etc.

According to A. Smith, the nature of poverty is the gap between the social standard of a person's material and actual material provision. It does not allow person to adhere this standard, and provides a sense of social shame of this person for his/her situation [10].

In general, poverty is considered as a relative and a complicated concept. Its interpretation depends on the accepted general standard of living in the society under study.

Indeed, the following main issues related to the problem of poverty have been studied for centuries:

– poverty concept;
– poverty level calculation;

[4] *Panina T. How the state of the economy can reduce poverty in the country. Available at: https://rg.ru/2020/01/21/kak-sostoianie-ekonomiki-mozhet-snizit-bednost-v-strane.html (Accessed 09.10.2023)*

[5] *Seligmann R. The New Contract: how to reduce poverty in Russia. Available at: https://www.forbes.ru/obshchestvo/420735-novyy-kontrakt-kak-snizit-uroven-bednosti-v-rossii (Accessed 09.10.2023)*

[6] *Anton Tabakh. Preferential maneuver: how to reduce poverty in Russia. Available at: https://www.rbc.ru/opinions/economics/14/01/2020/5e1c6bc 19a79475a132c6cd1 (Accessed 09.10.2023)*

– nature of poverty patterns in society;
– governmental interference in poverty problem solving;
– extent of governmental interferences (if any).

There are some causes of poverty traditionally identified by researchers. They are shown in Fig.3.

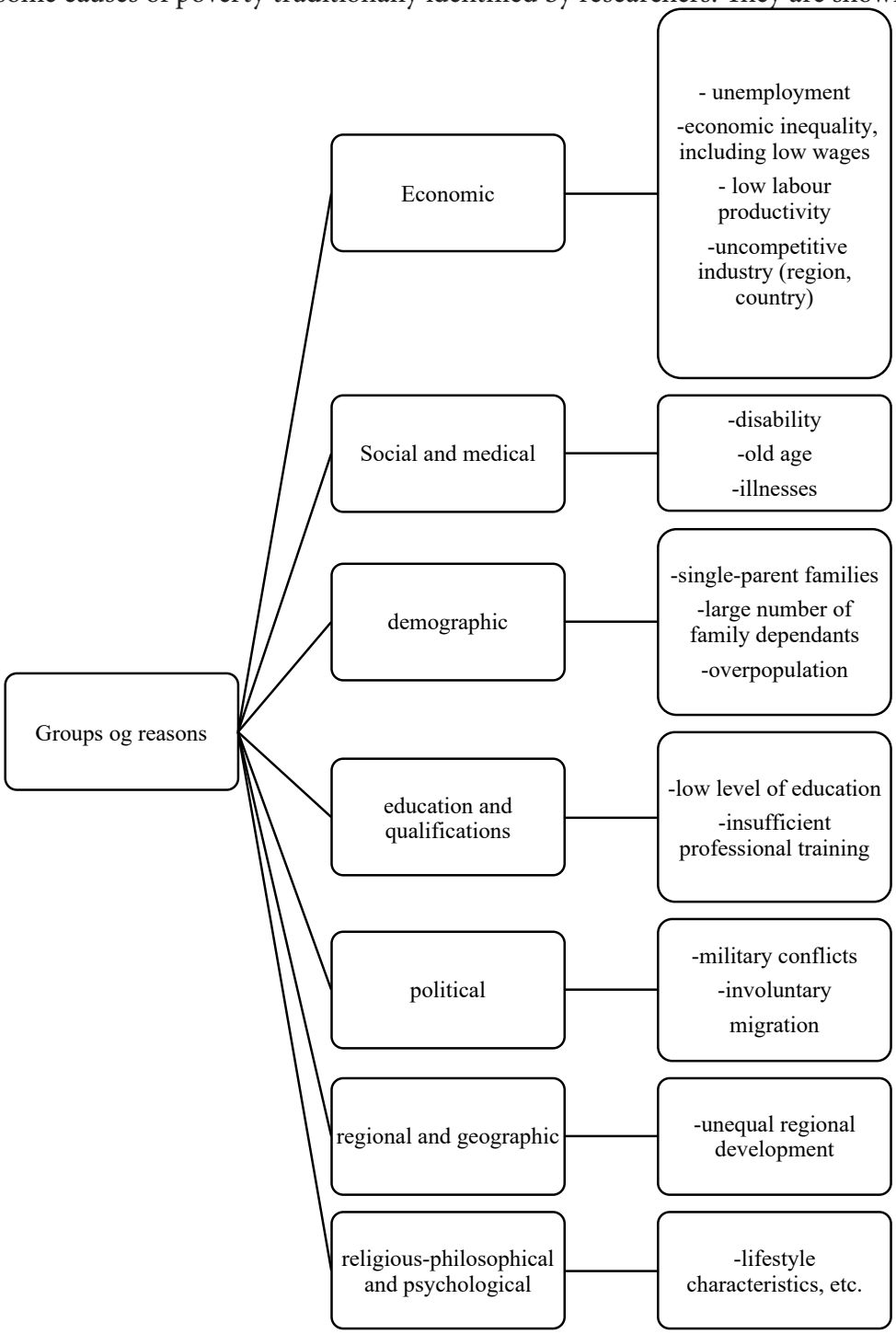

Figure 3. Traditionally distinguished groups of poverty causes

Source: composed by the author

According to researches of poverty issues in Russia made by Tikhonova & Gorshkova (2014) [11] 10 years ago, the causes of poverty are alcoholism and drug addiction, non-payment of salaries and delayed pensions, large flows of migrants or refugees, etc. Nevertheless, the absence of a sufficient number of jobs with decent wages was not mentioned (according to the National Goals of Group D (Fig.1) from the National Development Goals of the Russian Federation up to 2030). It also provides further research on poverty causes.

However, traditionally, in accordance with the recommendations of the United Nations Research Institute for Social Development[7] (UNRISD), standard of living is interpreted as a level concerning degree of people satisfaction with a mass of goods and services used per unit of time[8]. Moreover, in accordance with the recommendations of the United Nations it includes a set of living conditions. They are shown in Fig.4.

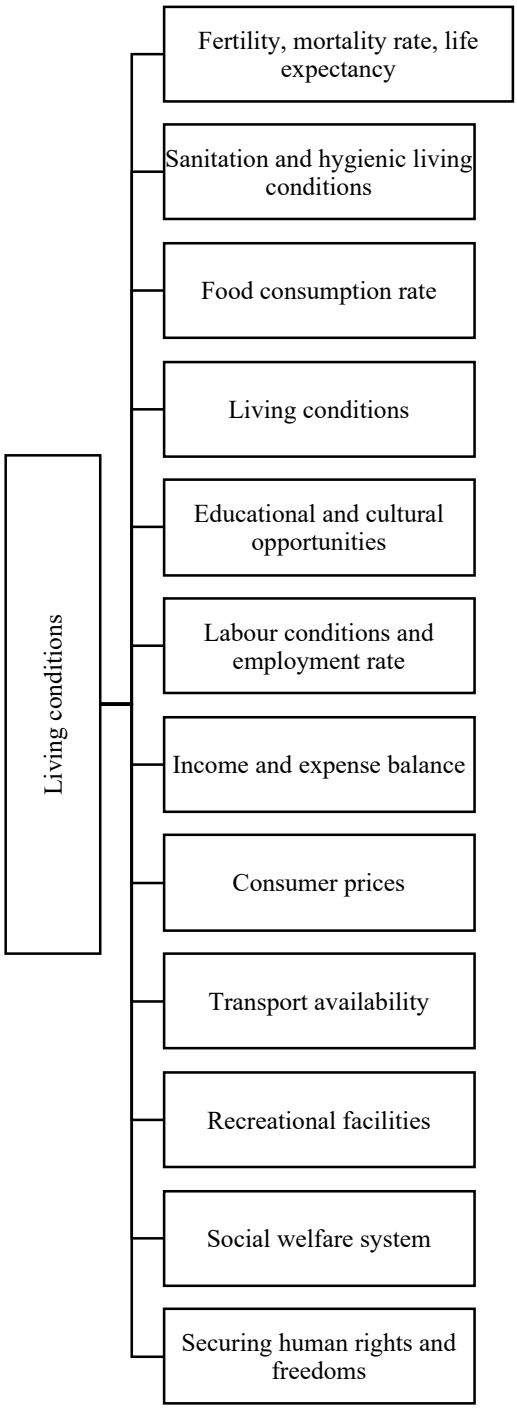

Figure 4. Complex terms of living conditions for assessing the standard of living (UN recommendations)
Source: composed by the author

Generally, there are concepts of primary (absolute) and secondary (relative) poverty. In addition, the concepts of subjective poverty and deprivation poverty are distinguished. It is similar to relative poverty (Fig.5), but different from income one.

[7] *United nations research institute for social development. Available at: https://www.unrisd.org/en (Accessed 09.10.2023).*
[8] *States of disarray: the social effects of globalization: an UNRISD report for the World Summit for Social Development. Available at: https://archive.org/details/statesofdisarray00unit (Accessed 09.10.2023).*

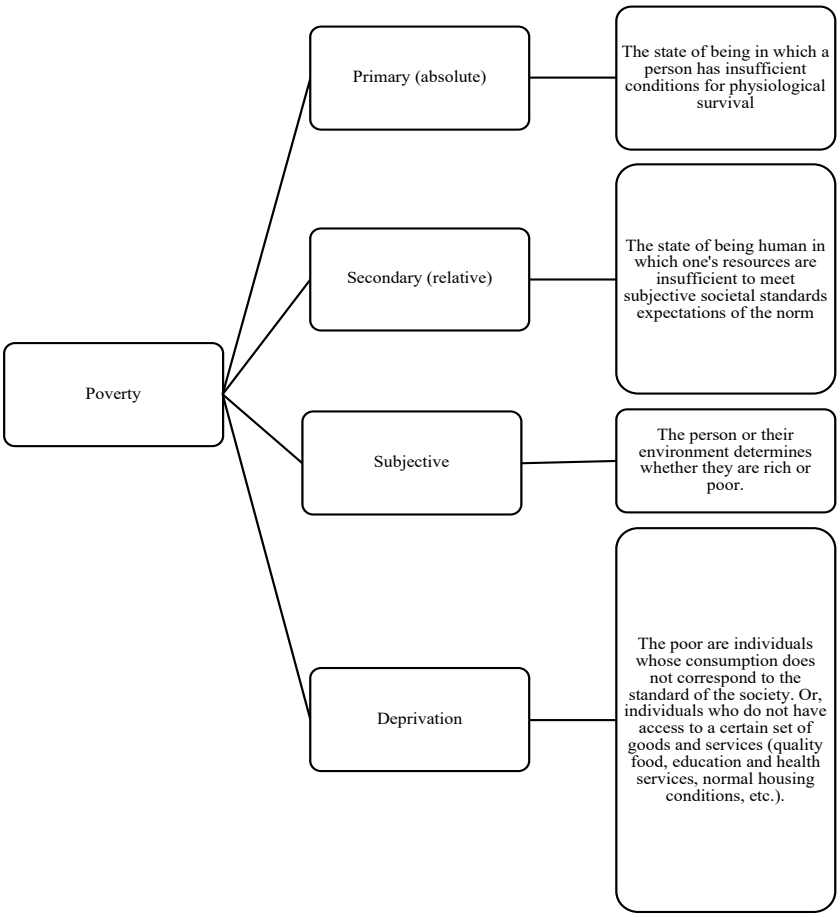

Figure 5. Characteristics of the concepts of absolute and relative poverty
Source: composed by the author

The concept of "poverty line" is used when a person's income level is below the subsistence level.

In regard to the concept of living standards (Fig.4), the concepts of "welfare level" and "consumption level" are traditionally used as synonyms; Corrado Gini Index (Fig.6), Henri Theil Index [1], Anthony Atkinson Index [2], etc. are traditionally used as indicators characterizing them.

Indeed, those indices aimed mainly at determining the degree of irregularity of living standards (stratification of society). They only indirectly characterize the poverty level itself. In this regard, we consider the known indicators of poverty assessment presented in Table 1.

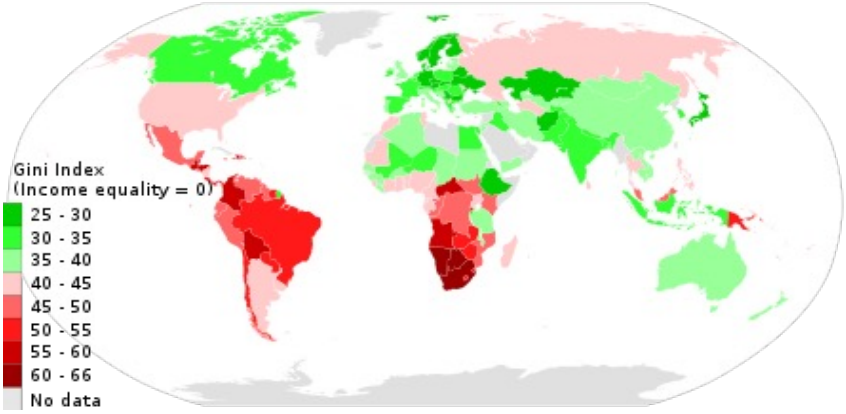

Figure 6. Gini Index demonstrates the level of population stratification by income at 2014*
* For Russia, Gini Index is in the range G=0.4-0.45
Source: Gini index, 2023[9]

[9] *World Bank Database. Available at: https://data.worldbank.org/indicator/SI.POV.GINI (Accessed 09.10.2023)*

Table 1 – The main indicators for assessment of poverty level

Indicator (index)	Calculation formula	Symbols	Indicator (index) characteristics	Note
Generalized poverty indicator	$P_a = \frac{1}{H}\sum_{h=1}^{a}\left(\frac{Z_h - Y_h}{Z_h}\right)^a$	P_a is the overall poverty level, H is the total number of households under study, q is the number of poor households, h is the current number of the household under study, Z h is the poverty line of the h-th household, depending on its composition; Y h is the income level of the h th household; a is a parameter indicates the poverty assessment: a=0 – indicates the poverty coefficient and the level of poverty; a=1- shows the poverty depth index; a=2- shows the poverty severity index.	The indicator was developed by J. Foster, J. Greer, E. Torbeck	basic indicator for assessing the poverty level
Poverty Rate	$P_a = \frac{1}{H}\sum_{h=1}^{a}\left(\frac{Z_h - Y_h}{Z_h}\right)^0$	Similar to formula (1)	Shows the proportion of poor households in the total number of households under study	The poverty level (2) is non-common option of the generalized poverty indicator of J. Foster, J. Greer, E. Torbeck (1) and has limited informative value because characterises the degree of poverty prevalence among households, not allowing to assess the households positions below the poverty line

Indicator (index)	Calculation formula	Symbols	Indicator (index) characteristics	Note
Poverty Depth Index	$P_a = \frac{1}{H}\sum_{h=1}^{a}\left(\frac{Z_h - Y_h}{Z_h}\right)^1$	Similar to formula (1)	The poverty depth index allows ones' to assess the incomes of poor households in terms of the poverty line	The poverty level (2) is non-common option of the generalized poverty indicator of J. Foster, J. Greer, E. Torbeck (1)
Poverty Severity Index	$P_a = \frac{1}{H}\sum_{h=1}^{a}\left(\frac{Z_h - Y_h}{Z_h}\right)^1$	Similar to formula (1)	It is calculated as the average low income interval squared and attributed to the total number of households under study; it has greater weight to the income deficit of poorer households	The poverty level (2) is non-common option of the generalized poverty indicator of J. Foster, J. Greer, E. Torbeck (1)
Synthetic Poverty Index	$S = L\left(N = \frac{d}{P}G_p\right)$	S is the Sen Index, L is the share of the poor population, N is the ratio of the average income deficit to the poverty line, d — average income of poor households, P is the poverty line, G p is the Gini coefficient for poor households.	The synthetic poverty indicator combines three components of the assessment: the prevalence of poverty, the material insufficiency of poor households, and the degree of stratification of poor households by income.	The synthetic poverty indicator was developed by Amartya Sen

Source: composed by the author

According to domestic practice of assessing the national poverty level, until recently it was estimated using the Methodology for Calculating the Indicator "Poverty level" up to 2024[10], approved by the Decree of the Government of the Russian Federation on July 17, 2019 N 915[11]. It is developed "to the absence of a methodological approach to forecasting poverty reduction indicators for the subjects of the Russian Federation". Additionally, to the concepts used (Fig.7), the poverty level associated with the subsistence minimum wage.

[10] *The methodology for calculating the indicator "Poverty level" for the period up to and including 2024, including for the reporting period (current year) and for the planning period of two years following the reporting period. To the Decree of the Government of the Russian Federation on July 17, 2019 N 915. Available at: https://base.garant.ru/72330006/62ca3c9a93aac147338fa0b3dccb5683 / (Accessed 09.10.2023)*

[11] *Resolution of the Government of the Russian Federation on July 17, 2019 No. 915 "On approval of methods for calculating indicators for evaluating the effectiveness of the activities of senior officials (heads of supreme executive bodies of State power) of the subjects of the Russian Federation and the activities of executive authorities of the subjects of the Russian Federation, as well as on invalidation of certain acts of the Government of the Russian Federation" (with amendments and additions) (the document has expired). https://www.garant.ru/products/ipo/prime/doc/72230006 / (Accessed 09.10.2023)*

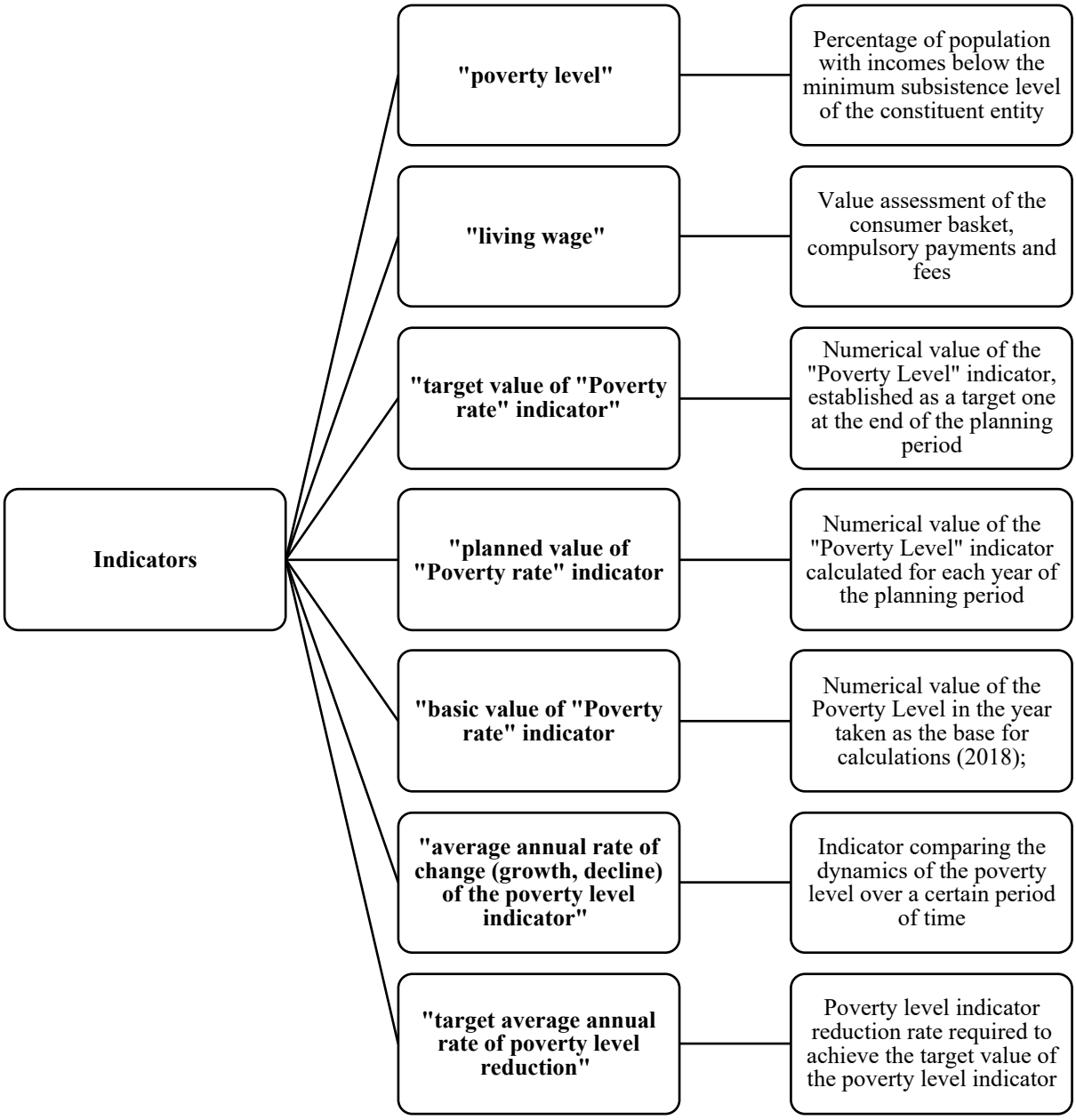

Figure 7. Basic concepts used in the Methodology for Calculating "Poverty level" Indicator up to 2024
Source: composed by the author

On the one hand, the target value of the poverty level indicator in the Russian Federation as a whole was established as the basic value of the poverty level indicator. On the other hand, the task ensures twofold reduction in the poverty level in the Russian Federation as a whole by 2024 – from 13.2% to 6.6%.

The basis for determining the target indicator of the poverty level in the subjects of the Russian Federation in the considered methodology, the value of the population share with monetary incomes below the regional subsistence minimum in the total population of the constituent entity of the Russian Federation in 2018 was taken.

The gradation of the country's regions by poverty level and, accordingly, the poverty reduction coefficients for these regions provided in accordance with the considered methodology are shown in Fig.8.

According to the Methodology for calculating the indicator "Poverty level" for the period up to 2024, the target value of the indicator "Poverty level" for each of the subjects of the Russian Federation was to be determined based on the ratio:

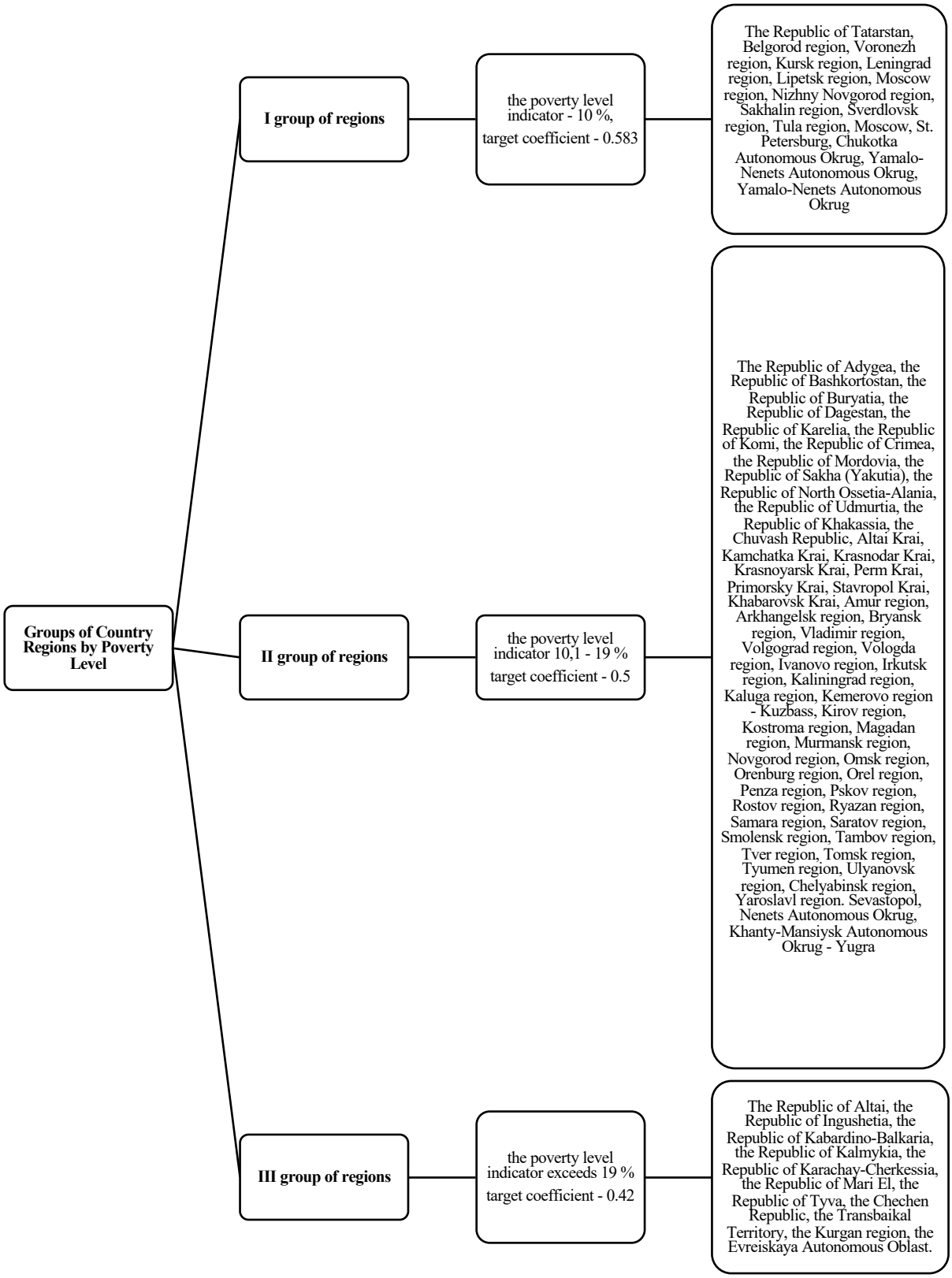

Figure 8. The gradation of the country's regions by poverty level and poverty reduction coefficients for these regions provided in accordance with the Methodology for Calculating the Indicator "Poverty level" up to 2024

Source: composed by the author

$$PL_{TV}(i) = PL_{F2017}(i)*TC(i),$$

where: $PL_{TV}(i)$ is the target value of the indicator "Poverty level" for the i-th region,
PL F2017(i) – the actual value of the indicator "Poverty level" for the i-th region in 2017,
TC(i) is the target poverty reduction coefficient provided for the i-th region (see Fig.4).

Also, the Methodology for Calculating the Indicator "Poverty level" up to 2024 provides the average annual rate of change in the indicator "Poverty level" by region, determined by the ratio:

$$AR_{av}(i)=(PL_{Ft}(i)/PL_{Ft}\text{-}2(i))^{0,5}\times 100\%,$$

where: $AR_{av}(i)$ is the average annual rate of change in the indicator "Poverty level" for the i-th region,
$PL_{Ft}(i)$ is the actual value of the indicator "Poverty level" for the i-th region, recorded in the year t;
PL_{Ft} is the actual value of the indicator "Poverty level" for the i-th region, recorded two years earlier (in the year t-2).

Moreover, Methodology for Calculating the Indicator "Poverty level" up to 2024 provides determining the target average annual rate of the "Poverty level" indicator reduction in the entities of the Russian Federation based on the following ratio:

$$PLtaar(i,t)=exp[ln(PL_{TV}(i)/PL_{BP}(i))/t],$$

where *PLtaar(i,t)* is the target average annual rate of reduction of the "Poverty level" indicator for the i-th region for the t-th year;
$PL_{TV}(i)$ is the basic value of the indicator "Poverty level" for the i-th region, determined as a ratio (6),
$PL_{BP}(i))$ is the basic value of the indicator "Poverty level" for the i-th region, determined as of 2018,
t is the number of years of the planned period, years.

The calculation of poverty level planned values for the I-th region for each year of the planning period (PL PV) in the Methodology for Calculating the Indicator "Poverty level" up to 2024 is proposed to be provided by multiplying the base value of the indicator "Poverty level" for the i-th region. It is determined as of 2018 (PL BP(i)) by the value of the target average annual rate of decrease in the indicator "Poverty level" of the PLtaar(i,t), raised to the degree corresponding to the year number of the planning period t relative to the base year 2018:

$$PL\ PP=PL\ BP(i)*(PLtaar(i,t))^t$$

However, the Methodology for Calculating the "Poverty level" Indicator up to 2024, introduced in 2019, was cancelled in November 2021.The Government of the Russian Federation approved a new procedure for determining the national poverty level[12]. According to it, a new indicator is used to calculate the "Poverty level" – the "poverty line".

The basis of the new model for calculating the subsistence minimum and the minimum wage is not the cost of the food basket, as it was before, but the average median income and median salary per capita.

An aggregated algorithm for implementing a new approach to determining the poverty level is presented in Fig.9.

Indeed, the last calculated value of the subsistence minimum, determined on the basis of a consumer basket cost, is taken as the initial value of the poverty line.

The reasons for the change in the methodology for assessing the poverty level have both objective and subjective components.

The one of the main arguments is the need to ensure data comparability on the poverty level for past periods with current measurements and future estimates. Moreover, there is a reference to the instruction of the President of the Russian Federation "to ensure the comparability of the reported data on the poverty level of previous periods. Those periods the subsistence minimum was calculated on the consumer basket

[12] *Resolution of the Government of the Russian Federation No. 2049 on 11.26.2021. "On Approval of the Rules for Determining the Boundaries of Poverty in the Russian Federation in Terms of "Poverty Level" Indicator, and on Amendments to the Federal Plan of Statistical Work." Available at: http://publication.pravo.gov.ru/Document/View/0001202111270008 (Accessed 09.10.2023)*

basis, current and medium-term data, and the subsistence minimum is calculated on the basis of the median income ratio[13].

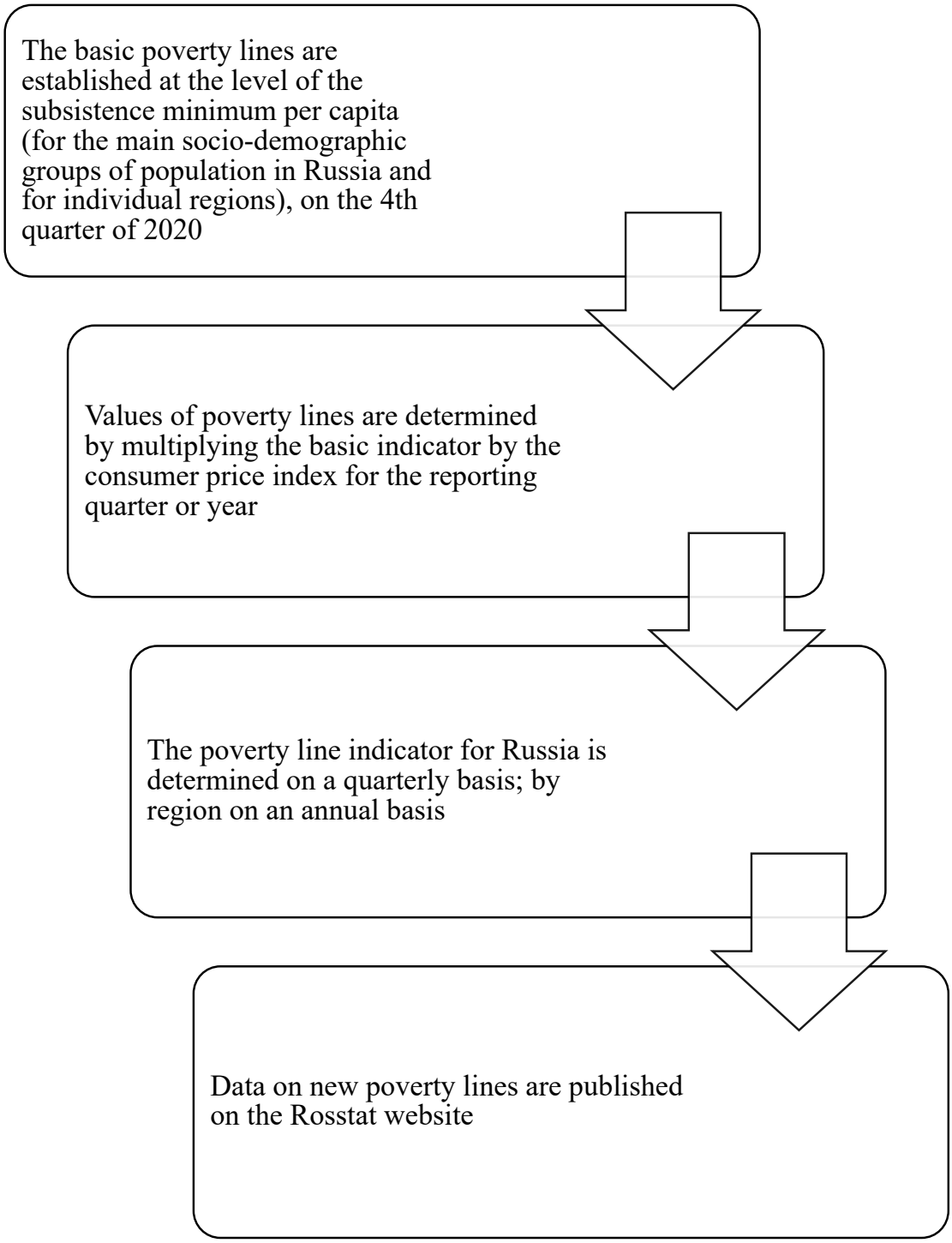

Figure 9. Aggregated representation of the algorithm for implementing a new approach to determining the poverty level

Source: composed by the author

Therefore, "with the introduction of the "poverty line", the President's instruction will be fulfilled: the indicator "poverty level" will be comparable with previous periods and ensure the impact of inflation on poverty"[14].

As critical remarks regarding the content of the new Rules for Determining the Poverty Line, are as

[13] *The poverty line in Russia. https://gogov.ru/articles/standard-of-living/poverty-line (Accessed 09.10.2023)*
[14] *The poverty line in Russia. https://gogov.ru/articles/standard-of-living/poverty-line (Accessed 09.10.2023)*

follows:

Firstly, the transition from calculating the subsistence minimum based on the consumer basket (rightly criticized for underestimating figures for decades) to calculating based on median income is very conditional. The initial value of the poverty line is taken as the last calculated value of the subsistence minimum. It also determined in accordance with a consumer basket cost, and used subsequently as a multiplier. The consumer price index for the reporting period is also determined by calculating the growth of the consumer basket value.

Secondly, many researchers believe that focusing on median income is actually not the best option. Moreover, at a high level the stratification of society by income level (in Russia) it shows better results of the modal approach, demonstrating salary sampling (in this case, in the region of the country) is most common. Focusing on median income is positioned as more objective than calculating based on average earnings (since the latter is overestimated due to high salaries of senior staff). According to the materials, the modal income per capita in almost half of the country's regions is close to the subsistence minimum (higher by 5-25%)[15]. At the same time, if the source of income is lost, the majority of Russians (62%) will have enough money for living for no more than three months[16].

In addition to critical remarks regarding the content of the new Rules for Determining the Poverty Line, there are a lot of quite reasonable issues. The major are the following ones.

Firstly, violation of statistical assessment general principle (principle of results comparability).

Secondly, consider new Rules for Determining the Poverty Line as an achievement.

Thirdly, violation of general principle of statistical assessment – the principle of results comparability for assessing the poverty level can cause obvious changes in this sphere.

Hence a lot of attempts to assess the poverty level is similar to the use of "creative" accounting, highlighted in the methodology of assessing the poverty level by T. Scone [9], or with the advent of a new company office in the ERNST & WHINNEY [14] (now ERNST & YOUNG) methodology, used as diagnostic signs of an enterprise bankruptcy.

Otherwise, there is a high probability of prevalence of the efforts vector aimed at finding acceptable measurements that can ensure demonstration of poverty reduction in the country by 2030 by half of the 2017 figure, in accordance with Presidential Decree No. 474 of 21 July 2020.

Similar examples of changing statistical approaches to improve reporting have already been observed in domestic practice:

– in the transition from the OKVED form to the OKVED-2 form in 2016 e.g. organizations and their geographically separate divisions (legal entities);

– in the transition from the 3rd edition of the Oslo Manual to the 4th edition of the Oslo Manual in 2017 , e.g. statistical assessment of organizations innovative activity level.

According to previously conducted studies, the transition to new concepts (both taking into account the number of organizations and their geographically separate divisions (legal entities), their innovative activity) demonstrated a short-term surge in indicators, providing positive dynamics of reporting, but did not solve the relevant urgent problems. The negative dynamics of these indicators have been preserved.

Therefore, in terms of dynamics to the approaches to the poverty, it will be possible to achieve the twofold poverty reduction by 2030 compared to the 2017. It is in accordance with Presidential Decree No. 474 on 21 July 2020. However, it is not the problem solving, since the measurement scale transformation is not the proper tool that can eliminate (or at least reduce) poverty in society.

Conclusions

Thus, this research conducted on the basis of the analysis of statistical data on the standard of living, incomes, expenditures and savings of the population, social security and social assistance, income distribution,

[15] *The poverty line. I calculated how many regions of Russia live below the poverty line, if we draw it according to European standards. Available at: https://dzen.ru/a/YaIOmD-P6XQU_QAC (Accessed 09.10.2023)*

[16] *The Russians talked about the timing of the depletion of the financial cushion. RBC: most Russians will live on savings for no more than three months with loss of income. Available at: https://lenta.ru/news/2022/02/10/rosnakop / (Accessed 09.10.2023)*

subsistence level, poverty level, consumer expectations, and methodological approaches to determining the poverty level, allowed us to formulate the following conclusions regarding the assessment of prospects for achieving national goals of twofold reducing the poverty level compared to the indicator of 2017.

Firstly, poverty is generally considered as a relative and ambiguous concept, its interpretation depends on the accepted general standard of living in the society under study. It implies a multiplicity of its interpretations and approaches to assessment.

Secondly, twofold reducing the poverty level in Russia by 2030 compared with the indicator of 2017, defined by Decree of the President of the Russian Federation No. 474 on July 21, 2020 as a national goal.

Thirdly, new approach to defining the poverty line cannot be considered without drawbacks due to the following circumstances.

On the one hand, the transition from calculating the subsistence minimum based on the consumer basket to calculating on the basis of median income is very conditional. The initial value of the poverty line is taken as the last calculated value of the subsistence minimum, determined based on the consumer basket cost. Subsequently used as a multiplier, the consumer price index for the reporting period is also determined based on the calculation of the growth in the consumer basket cost.

On the other hand, many researchers believe that focusing on median income is actually not the best option. Moreover, at a high level the stratification of society by income level (in Russia) it shows better results of the modal approach, demonstrating salary sampling (in this case, in the region of the country) is most common. Focusing on median income is positioned as more objective than calculating based on average earnings (since the latter gives an overestimate due to high salaries of senior staff).

Fourth, the conducted studies have shown that the relatively frequent change of approaches to assessing the national poverty level (including the Methodology for Calculating the Indicator "Poverty Level" up to 2024 and the Rules for Determining the poverty line 2021) is similar with the use of "creative" accounting, allocated in the assessment methodology by T. Scone [9], or with the advent of a new office in the methodology of ERNST & WHINNEY [14] (now ERNST & YOUNG), used as diagnostic signs of enterprise bankruptcy.

Fifth, there are well-known examples of changing approaches to statistical accounting to improve reporting indicators in domestic practice. They concern changes in accounting for the number of organizations and their geographically separate divisions (legal entities) during the transition from the OKVED form to the OKVED-2 form in 2016; transition in statistical assessment of organizations innovative activity level from the 3rd edition of the Oslo Manual for the 4th edition of the Oslo Manual in 2017. These measures demonstrated a short-term surge in indicators, providing positive dynamics of reporting, but did not solve the relevant topical problems. The long-term negative dynamics of these indicators remained.

Therefore, in terms of dynamics to the approaches to the poverty, it will be possible to achieve the twofold poverty reduction by 2030 compared to the 2017. It is in accordance with Presidential Decree No. 474 on 21 July 2020. However, it is not the problem solving, since the measurement scale transformation is not the proper tool that can eliminate (or at least reduce) poverty in society.

Hence we can consider the creation of favourable conditions for the intensive development of high-tech and competitive production as the most effective tools for poverty reduction. It will cause an increase in the population's income, strengthening of the national distributive and redistributive functions. Moreover, to reduce the income gap between the richest and poorest segments of the population (reduction of Gini index) it can include the introduction of a differentiated progressive taxation scale.

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CONFLICT OF INTEREST

The author declares no conflict of interest.

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Food stamps: systematisation of Russian practice

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ORIGINAL ARTICLE

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Abstract. The paper presents an analysis of food stamp programmes in Russia. These programmes are funding the purchase of food in the form of directed payments or auxiliary payment instruments. However, there is no unified concept of food stamps. Indeed, the separate regional programs are launched. They controlled both by the State and non-profit associations. Additionally, there are various practices in Russia using similar tools to ensure national food security. The paper attempts to formulate mandatory criteria for food stamps. It also presents a classification for assessment of food stamp programmes structure. Hence the work assesses the organisational changes in terms of digitalisation of food stamp programmes. Nowadays, the Russian Federation is in the process of accumulating experience in the use of food stamps. The independent programs are being launched and assessed in various regions, the regulatory framework for the launch of larger-scale projects are being developed, etc. The most significant change increasing the efficiency of using food stamps is the digitalisation of the process. Modern food stamps have undergone a profound organisational transformation through the use of digital tools. Their use is more convenient for all stakeholders and makes it possible to effectively provide food support to the indigent people. Hence introducing of food stamp programme in the Russian Federation will improve public access to food and contribute to an increase in living standards. Moreover, the programme expands the demand for food products, increases the economic stability of producers, and forms conditions for import substitution programmes for food production.

Keywords: food stamps; food support; food security; the indigent people; food stamp programmes

JEL codes: I31, E65

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Introduction

Food stamps are considered as an effective tool for providing food support to indigent people. They began in the USA in 1939. Nowadays, they are used in many countries [16]. The algorithm of food stamps implementation in the USA includes the following steps [16]:

– citizens or household should confirm the status of an indigent person.

– Authorized organisation issued a debit card for the indigent person; periodic accruals are made on it in monetary terms. Historically, the assistance provided was in the form of paper vouchers of certain denominations available to be used to pay for food.

– The person can use this card can in accredited stores. However, there is a prohibition on the purchase of tobacco and alcohol.

– The accrued funds must be spent within the prescribed period.

The model of using food stamps allows ones to increase the food amount, ensure a healthier composition of the food basket by limiting the products that can be purchased. It is very important, since the indigent do not always have the opportunity to balance their diet [6].

Indeed, this tool is practically not in use in Russia despite the general popularity of the idea worldwide [3, 4, 8]. Apparently, it may be related to the government's concerns to acknowledge the existing problems related to the inability of a considerable part of people to provide themselves with food on their own. According to Rosstat, in the Russian Federation there are about 17 mln people are below the poverty line. Moreover, there is population negative reaction related to the shortages of the Soviet times. Although, in terms of economics, food stamp programmes are fundamentally different from ration cards.

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Nevertheless, rising food prices and generally unstable incomes [12], the need to support the food demand in terms of the development of the Russian agro-industrial complex [15] indicate the expediency of introducing a food stamp programmes in the Russian Federation. However, there are alternative approaches to the implementation of this food aid model (including in Russia). Additionally, other food purchase tools are presented on the food market. Although they have some similarities with food stamps but not the same. To choose the optimal strategy for the introduction of food stamps in our country, it is necessary to consider the alternative approaches and tools.

The purpose of the study is to conduct a comparative analysis of existing practices in the Russian Federation related to the provision of food aid to the indigent people in the form of targeted cash payments or on the basis of the use of auxiliary payment instruments.

Main part

Food stamp programmes are being launched experimentally at the regional level. As a positive example, we can consider the practice of the Kaliningrad region, where a corresponding program was launched in 2020 during the pandemic to support the regional retailers and the most vulnerable categories of citizens [7]. Those times, many people lost their income due to the pandemic (closure of enterprises, transition to part-time work, downtime, etc.) and were eligible for food aid.

The adjusted burden on the regional budget provided for the provision of assistance to 7 000 citizens; the amount of support was 10 000 RUB per person (in two payments of 5 000 RUB).

To get food stamps, a citizen of the Kaliningrad region had to act as follows:

– confirmation of information at the regional employment centre;

– an application for a food card through a special digital platform.

The regional authorities approved a list of 35 goods allowed for purchase to control the targeted use of finance provided to the indigent people. A pool of retailers accredited to sell goods using social cards was also formed. Only five regional retailers were included in this list: in addition to food support for the indigent people, the State also provided support to entrepreneurs of the region. For the convenience of recipients of food support and in order to avoid disputes on the inclusion of a product in the list of allowed purchases the special labelling of permitted goods was introduced. The most successful practice is the usage of blue price tags.

As a result, in 2020, 9 634 people got regional social support including 6 091 using food cards (3 543 people received assistance to their bank accounts. It is associated with technical work on process debugging) [7].

In 2022, the programme was prolonged for 3 months; assistance provided consists in 6 000 RUB (2 000 RUB per month). Almost 53 000 had this assistance, including large families, low-income pensioners, parents with disabled children, parents with many minor children, etc. Moreover, obtaining a food card in 2022 was an additional tool. It does not replace other existing payments and compensations. Also, it has undergone following organizational changes:

– the indigent people created a special account, issued a bank card supporting MIR payment system;

– a specialised organisation independently (without the participation of the indigent person) correlated data with the regional employment centre;

– confirming the indigent person status provides crediting funds to the account;

– in case of passing the confirmation procedure, funds will be credited to the card;

– recipients could buy goods in accordance with the list of goods approved by the regional authorities in partner shops; the goods available for purchase with the social card are specially labelled.

Consequently, in modern Russia there are successful attempts to use the food stamp concept. Indeed, they are rather periodic than systematic in nature.

At 2023 the idea of returning food stamps continues to be discussed in Russia. Additionally, several steps were taken to implement it [5]:

1) Amendments to the legislation, allowing the state to sell products through social certificates.

2) X5 Group (the operator of "Perekrestok" and "Pyaterochka" retail chains) started business processes and information systems to work with those electronic certificates.

Relevant measures made it possible in 2023 to launch test mode purchasing of baby food (about 20 products, including vegetable and fruit purees, dry mixes, dairy products, etc.) in Pyaterochka stores, Nadym and Pandogy, Yamalo-Nenets Autonomous Okrug, Russia [5]. The project includes about 200 families. The payments are as follows:

– 800 RUB per month for pregnant women,
– 6 500 RUB per month for children under the age of 1 year,
– 2 000 RUB per month for children aged 1-3 years.

The certificate is generated in an undeclared manner and directed to one of the parents who have crediting Single Yamal Resident Card. To inform on the availability of an account and the amount of funds service GOSUSLUGI is used. Retailing chain X5 claims the readiness to expand the practice of applying certificates to the entire Yamalo-Nenets Autonomous Okrug. Moreover, other regions are interested in the project.

Hence regional governments informed on the situation in a particular region prospect for using food stamp and their analogues. Taking into account the complete digitalization of the procedure for registration and granting benefits, it is convenient for all key stakeholders (state, retailer, and beneficiary). Probably, the change in federal legislation and the adjustment of business processes by one of the largest players in the food retail market (X5 group) are signals indicating the possible launch of food certificates throughout Russia.

In addition to government food support programmes, there are non-profit organizations providing food support to the indigent people. The largest non-profit organization in Russia in terms of food support is the RusFood Bank. It implements the PRODkarta project. The food card project PRODkarta is similar to the food stamp system implemented in foreign practice of providing food aid. However, it is unique in terms of the provider of funding (non-profit organisation instead of state one). To implement the project, the Fund collects monetary donations, converts them into bonuses (points) from partner stores, individually communicates with the program participant, and transfers funding to specially issued cards of programme participants, determining them independently.

Monthly, each cardholder is credited with the amount of bonuses equivalent to 1 000 RUB. The recommended list of purchased products includes cereals, pasta, flour, vegetable oil, sugar, tea, dairy products, fruits, vegetables, canned food, household chemicals, and personal hygiene products. The list of prohibited products includes alcohol, tobacco, and lottery tickets. When making a purchase of an item from the prohibited list, the card is automatically cancelled; its holder is deprived of the opportunity to receive it further. If the one-time purchase amount exceeds 1 000 RUB, the buyer pays the difference independently.

Interestingly, the Fund negotiated with partner retailers to contribute to the programme: the Fund withholds 7% from each donation of a benefactor required for project management, development and operation of the digital accounting platforms. However, the accounts of the indigent people are still transferred amounts equivalent to the size of the initial donation. The cost of the programme is compensated by the partner retailers.

In addition to launching a programme similar to food stamps, the RusFund is the operator of a number of projects related to the collection and distribution of food support in commodities.

Indeed, the loyalty programmes used by every major retailer can be considered in terms of the perspective of providing food support [10, 11]. In fact, a person who consistently makes purchases in one retail network receives cashback in the form of points. These points then transformed into money at a certain rate and used to purchase products. It allows the consumer to receive an additional amount of food (or other goods) in excess he paid for, i.e. expands the volume of available goods (food stamps have the similar purpose). Of course, the loyalty programme is not a full-fledged food stamp system. First of all, it is a marketing tool. According to it, retailers actually pay customers extra money for retailer goods choice [10, 11]. Moreover, loyalty programmes contradict the nature of food stamps. The loyalty programmes include the number of additional products increasing dependence on the customer's spending in the store, i.e. wealthier customers

have access to a larger volume of additional products. Nevertheless, there are similar features of food stamps and loyalty programs structure.

Special attention should also be paid to the specific type of payment instrument used to purchase food – a school meal ticket (or student cards). This project is being implemented in St. Petersburg. A student's card is a tool for monitoring a child during school attendance: it is necessary for entering and leaving an educational institution and replaces a bank card for a child (since the age of schoolchildren does not allow them to receive full-fledged banking services). The funds are credited to the student's card by the parents through the personal bank account. Parents have an opportunity to limit the student expenditures in 1 day, restrict the purchased products, etc. For instance, the basis for these restrictions may be both a doctor recommendation (allergies), or parents desire to exclude certain dishes and goods from the child diet. Moreover, parents have the opportunity to track their child school attendance, monitor the food and dishes actually purchased through the St. Petersburg Education Portal. Hence the student card is an additional tool to provide feeding. It does not replace social nutrition guaranteed by the State. The mechanism of the student card in terms of ensuring food security is used as an additional one for children who have the right to receive social feeding. Also it is the main for children who, in accordance with criteria established by the state, do not receive social feeding.

The purposes of the student card project are as follows:

– improving the level of safety in educational institutions;
– an increase in the number of children eating hot meals;
– establishing of healthy food culture among the younger generation;
– cash flow control;
– reducing the teachers' non-major workload;
– managing a child feeding;
– reducing the risks of cash use.

Similar programmes for monitoring the student feeding are introduced in other regions of Russia. For example, in Moscow, Yaroslavl, Tver, Novosibirsk, Ivanovo, Tyumen and several other regions of the Russian Federation, the system Ladoshki is used. Indeed, Ladoshkiis less functional than Student Card. It allows ones only to control the child feeding[1].

Thus, traditional food security tools such as food stamps and social feeding in the modern world are becoming more effective due to the digitisation of individual functions.

Therefore, the specifics of schoolchildren feeding is necessary in order to formulate criteria distinguishing food stamps, loyalty programmes, and specific forms of access to food, also formally associated with the use of special payment instruments. In particular, these criteria include:

– special payment instrument to purchase food in retail stores;
– free of charge payment instrument for the user (i.e. this payment instrument is issued or replenished by the State or third party);
– the low level of recipient income (i.e. absence of elitism);
– the payment instrument can be used to pay for food only; its use to pay for other goods or cashing out is prohibited.

Accordingly, a food stamp should comply all of the above criteria at once. Non-compliance with at least one of the criteria results in failing to provide its recipient with the food stamp guarantees. The student cards are not free of charge. Since students do not have income, their expenses are paid by their parents or legal representatives. From the economic point of view, they are not third parties in relation to the student. The parent (or legal representative) not the State tops up the student card account. The points awarded on loyalty cards of grocery stores depend on the total volume of purchases (i.e., in fact, their provision is paid one). Therefore, and any customer of the store can participate in such programmes. In this regard, food stamps play an essential role in support of the recipient.

According to the above review, various food stamp programmes are used in modern Russia. Table 1 shows the main characteristics of modern food payment instrument programmes.

[1] *Ladoshki. Available at: https://xn--80akhbyjw.xn--d1acj3b/ (accessed: 13.12.2023).*

According to Table 1, Russia is dominated by food stamp programmes establishing requirements for the socio-economic status of recipients. It correlates with the global practice of food support organising. However, in Russia there are non-targeted subsidies to the indigent people. These are periodic social payments – money can be spent on any goods and services anywhere out of proper monitoring and control. The absence of monitoring and control causes unfair spending of funds received by indigent people. Therefore, perhaps, the registration of the funds planned and provided for the purchase of food with special food stamp would increase the effectiveness of social support measures.

Table 1 – Classification of food payment tools programmes

Classification criteria	Type of food payment tool	Characteristic	Example
The actor representing the food stamp	Government	Food support is provided by the State (through government agencies)	- governmental food stamps
	Non-profit organization	Food support is provided by collecting resources from third parties and transforming them (if necessary)	- «PRODkarta» (non-governmental food stamps)
The form of food support	Money (bonuses, points, etc.)	Recipients are provided with financial resources, which, according to certain rules, exchange them for products on their own	- governmental food stamps - «PRODkarta»
The formal requirements for the recipient	Formal requirements are present	To receive a food stamp, the indigent should confirm their status	- all state programs of food support for the population - «PRODkarta»
	Indirect requirements (the need to make purchases in the store (points are paid)	There is no control on the socio-economic status of the recipient	- bonus programs for retailers and catering companies
Target use control	There are some restrictions	The behaviour of food stamp recipients and the activities of food stamp operators are monitored (places where food stamps are exchanged)	- governmental food stamps - non-governmental food stamps - «PRODkarta»
	There are no restrictions	Recipients of support can use it in any way (including not for food purchasing)	- retailers bonus programs

Source: composed by the author

Conclusions

Nowadays, the Russian Federation is in the process of accumulating experience in the use of food stamps. The independent programs are being launched and assessed in various regions, the regulatory framework

for the launch of larger-scale projects are being developed, etc. The most significant change increasing the efficiency of using food stamps is the digitalisation of the process. It corresponds to the general trend of digital transformation of the economy and society [9]. Moreover, it allows ones to expand the use of digital tools in all spheres of economic activity [2].

1. For the recipient of support digitalisation is the creation of a single digital channel for registration of food support. However, practice shows both declarative and non-declarative ways of issuing food stamps. Indeed, remote registration of a food stamp reduces the time spent [1], allows a person to hide his/her status (there is no need to execute documents in various institutions), etc. It indirectly affects the formation of a positive image of modern food support programmes.

2. Digitalisation of control over compliance with the rules for the use of food stamps ensures transparency of the process for the supplier (state or a non-profit organization). Additionally, both the store is monitored (lists of products available for sale on food stamps are set in advance), and the recipient (restrictions on payment for non-listed goods are set). It also prevents the possibility of incorrect usage of support.

3. Reducing the cost of managing the food stamp system. It is especially important for a resource provider (state or a non-profit organization), as it allows ones to optimise resources aimed at issuing and controlling the funds.

4. Changing the image of the food stamp. Modern digital food stamps are ordinary bank plastic card. They have no negative associations formed during the shortage period of the past.

Therefore, modern food stamps have undergone a profound organisational transformation through the use of digital tools. Their use is more convenient for all stakeholders and makes it possible to effectively provide food support to the indigent people. Hence introducing of food stamp programme in the Russian Federation will improve public access to food and contribute to an increase in living standards [13, 14]. Moreover, the programme expands the demand for food products, increases the economic stability of producers, and forms conditions for import substitution programmes for food production [15].

In our opinion, the state, in partnership with representatives of food retail, operators of regional food stamp programmes, head of non-governmental programmes, etc. should develop the Federal Food Assistance Programme and a roadmap for its implementation in order to ensure sustainable access to essential food for all population groups. This is an important condition for social stability and social justice in our country.

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CONFLICT OF INTEREST

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Institutional measures to support the Education – Labour Market system in regions of Russia

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ORIGINAL ARTICLE

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Abstract. The paper analyses the dynamics of unemployment in the Central Federal District regions in 2018-2022. The main issues are problems at the Russian labour market in 2020-2023, and measures of their state regulation taken at the federal and regional levels. The paper considers the measures of state support for the Russian labour market during the COVID-19 pandemic and economic restrictions, and describes their consequences. Also there is an assessment of the role of secondary vocational education system, implementation of state programs and national projects, i.e. the federal projects «Professional», «Young Professionals». Paper listed the professions and specialties in colleges of the Ivanovo and Yaroslavl regions. On the example of the Ivanovo region we consider the establishment of educational and production centres (clusters). The study considers goals, objectives, stages, directions of development, institutional environment, services of the National Qualifications System of the Russian Federation, the essence of Independent Qualification Assessment in details. The study also highlights the role of the state for a secondary vocational education system development.

Keywords: labour market; staff shortage; secondary vocational education; federal projects «Professionalism», «Young Professionals», «Abilimpics»; System of National Qualifications; Independent Assessment of Qualifications; Central Federal District; Ivanovo region; Yaroslavl region

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Introduction

Currently, researchers have an important methodological problem. It related to the search for effective methods of managing the development of the labour market in the short, medium and long term, strengthening the education and training system in terms of the labour market needs. This problem is connected with the development of new tools for state regulation of the labour market and increasing the efficiency of using budget funds.

The main issues are problems at the Russian labour market in 2020-2023, and measures of their state regulation taken at the federal and regional levels.

According to modern researches, over the past 25 years, the dynamics of the main Russian labour market indicators has become cyclical. The modern type of employment in our country is associated with the globalization of the economy, the post-industrial stage of economic development, and the transition to the market [12, p. 268]. Government measures to support and develop the labour market play an important role in regulating its fluctuations. Recently, in the context of the pandemic, additional economic sanctions have been used, including new measures to deal with the labour market problems. The institutional environment of the regions plays an important role. For example, E. Patrusheva, D. Solovyova, and K. Podgornova consider the important role of regional development institutions in the promotion of investment projects, in particular – the Regional Development Corporation; its effective activities are based on the use of regional investment

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standards [9].

The new problems appeared at Russian labour market during the COVID-19 pandemic [4]. Indeed, I. Antonova and I. Sartakov consider advantages and disadvantages for economic and employment in terms of the pandemic consequences [2]. A. Babushkina, A. Bulanova, and M. Gruzdeva study the non-standard measures for making decisions to overcome a new type of crisis. Moreover, they use a qualitatively new approach to the implementation of anti-crisis measures, including in the labour market [3, p. 105]. G. Rodina based her work at Arthur Oaken's approach. However, examining the statistics of employment and unemployment, the sectoral economy of the Yaroslavl region, she highlights the high role of state support measures during the COVID-19 period, and destruction of the relationship between the unemployment rate and GDP/GRP [10, p. 72].

At a meeting on the state of the labour market in Russia (May 2023), Russian President Vladimir Putin noted: "the coronavirus epidemic and related restrictions ... have negatively affected the economies of all countries of the world, without exception: demand has fallen, business activity has decreased, many collaborations and investment plans failed"[1]. Excluding the seasonal factor, the industries with the highest number of redundancies during the pandemic were non-food retailing, catering and hospitality. From the very beginning of the epidemic, preserving jobs and the incomes of Russian families have been stated as the most important priorities in the measures of state regulation of the Russian national economy. During the pandemic, as unemployment increased, the government imposed a number of measures on businesses in the most affected sectors of the economy to keep companies operating and their employees employed:

– preferential loans (at 2% per annum with government subsidies);

– interest-free loans and grant presidential support for salaries and other urgent needs, etc.;

– reducing the tax burden, providing a deferral for all taxes except VAT for the most affected small and medium-sized businesses;

– 2-fold reduction in insurance premiums for small and medium-sized businesses in the amount of wages exceeding the minimum wage (from 30 to 15%);

– direct subsidies for the payment of salaries in small and medium-sized enterprises (in the amount of one minimum wage per employee);

– extending the payment of unemployment benefits to citizens lost the jobs previously;

– increasing the availability of other social support measures for the unemployed, when the assessment of family needs did not take into account the previous earnings of citizens lost the jobs;

– for families where one or both parents are temporarily unemployed, an extra payment of 3 000 RUB per month for each minor child should be is established in addition to unemployment allowances;

– 2-fold increase in the minimum amount of childcare allowance for non-working parents;

– Simplifying the procedure for processing federal child benefits for citizens who are unemployed;

– increasing the amount of unemployment allowance to 12 130 RUB with the possibility to apply it remotely, through the portal "Work in Russia", etc[2].

Indeed, portal "Work in Russia" provides online monitoring of the labour market. The regulatory framework for remote, platform employment, and digitalization of personnel records management has been developed.

The economic papers of 2022-2023 explore the impact of economic sanctions on the Russian labour market. Scientists are investigating the parameters and factors of labour market transformation during the numerous sanctions.

By V. Bylkov, despite unprecedented sanctions against Russia, "the parameters of domestic labour market development have relative stability." Moreover, the author highlights the following risks as the prerequisites for economy destabilization [7]:

– departure of foreign companies (direct consequences: decrease in demand capacity by sector, delayed:

[1] *Vladimir Putin held a videoconference meeting on the state of the labour market. Available at: http://www.kremlin.ru/catalog/persons/503/events/63419 (Accessed 18.11.2023)*

[2] *Vladimir Putin held a videoconference meeting on the state of the labour market. Available at: http://www.kremlin.ru/catalog/persons/503/events/63419 (Accessed 18.11.2023)*

finalizing business processes);

– suspension of enterprises due to a shortage of components, debugging of logistics chains;
– sectoral decrease in production volumes, decrease in business activity.

From 2022 the Russian economy has unprecedented staff shortage. St. Petersburg International Economic Forum 2022 involved a panel discussion on "How to provide the Russian economy with qualified personnel?". The "qualification pit" was noted. It is a discrepancy between the skills and competencies of employees to business requirements.

The participants of expanded meeting of the Presidium of the State Council on the issue "On the development of the labour market in the Russian Federation", Veliky Novgorod, Russia, September 21, 2023 noted low unemployment and a shortage of labour resources. The implementation of investment projects in a number of regions of Siberia, the Far East, and the North Caucasus Federal District was noted. It causes the creation of new jobs, including remote employment; the implementation of a professional development program for women who are on maternity leave; support for veterans of a special military operation, including advanced training; job retraining; employment; running own business, etc. There was named a problem of regions "with low quality of employment, where people formally have jobs, but their salaries and incomes seriously behind the national average". The objective is to annually form a 5-year forecast of personnel needs on the national economy level from 2025-2026 academic year to determine the parameters of personnel training with secondary and higher vocational education[3].

However, the problems of labour market effective functioning are relevant primarily for young people. By 2030, according to experts' forecasts there will be 8.3 mln young people in the Russian Federation aged 20-24; in 2035 – 9.7 mln people. It is 2.4 mln people more than at present.

For instance, M. Alpidovskaya and A. Ivannikova show the difference between the number of jobs created and eliminated in Russia from 2017 to 2021 in terms of types of economic activity [1]. P. Semenova, S. Shkiotov, and M. Markin identify the relationship between the population and the dynamics of macroeconomic indicators of the Russian economy development (the relationship between the country's population and migration growth, economic growth rates, labour productivity index, unemployment rate, average wages, poverty level, etc.). They revealed an inverse statistically significant relationship between the population, unemployment rate, labour productivity, etc. [11, p. 122].

An important object of research is the state regulation of the system "education – labour market" T. Shpilkina, A. Kovalev, and N. Filimonova consider the absence of educational and labour balance, weak relationship between demand in the labour market and education, etc. They notice unsatisfied employers demand for professionals and universities graduate specialists [12].

E. Nikolaeva actualizes the problem of universities graduates' employment, difficulties in finding a job in their specialty, due to deindustrialization and low salaries in the economic sectors (services, trade, construction, etc.). Also, the author notes the need to change all institutions related to labour relations, establish new regulatory requirements and laws in terms of the platform economy [8, p. 66, 69].

All above mentioned provides the establishment of state regulation measures in this area, including traditional and new, institutional ones related to a program-oriented approach, project management, etc. aimed at improving the efficiency of the education system on the labour market in terms of the IV industrial revolution.

The system of secondary vocational education (SVE) in our country consists of 3 433 865 students, 86.9% of them studying on a full-time basis. Total number of students in SVE has increased by 391 655 people over the past 3 years. 198,378 people employed in this system – 72.6% of them are teachers, 10.9% are masters of industrial training[4].

According to the Ministry of Education, today more than 60% of schoolchildren choose SVE. It is

[3] *Decree of the Government of the Russian Federation dated October 6, 2021 No. 2816-r "On approval of the list of initiatives for the socio-economic development of the Russian Federation until 2030".*

[4] *Website of the Ministry of Education of the Russian Federation. The Federal Project "Professionalism". Available at: https://edu.gov.ru/activity/main_activities/additional_vocational_education / (Accessed 18.11.2023)*

currently considered as a key link in solving relevant to Russia socio-economic problems[5]. Currently, new measures of state support for the SVE are being implemented in Russia. They increase the prestige of training areas and specialties, train specialists for the labour market, form conditions for young people self-realization, etc.

Methods

In the study of institutional measures to support and develop the labour market, we used Rosstat data from the state collection "Regions of Russia", data from national projects and state programs, information from the meeting of the State Council of the Russian Federation, and the meeting on labour market problems in May 2022, September 2023. When characterizing the unemployment rate, 18 subjects of the Central Federal District were considered as the object of the study. When analysing the implementation of the federal project "Professional", two regions of the Central Federal District became the object of research: Ivanovo and Yaroslavl regions. The methods of comparative, statistical, tabular, graphical analysis are used.

Results

Our analysis of unemployment based on Rosstat data in 18 subjects of the Central Federal District (CFD) showed the following (Table 1):

– in 2020 (the beginning of the COVID-19 epidemic) the number of unemployed in the Russian Federation increased compared to 2019 – by 1.25 times; in the Central Federal District – by 1.35 times; in the Vladimir region – by 1.35 times; in the Ivanovo region – by 2.49 times; in the Yaroslavl region – by 1.35 times. The maximum increase in unemployment was typical for Moscow – almost 2 times;

– the largest decrease in employment to population ratio in 2022, according to sample surveys of the population (60-70% compared to the level of 2021) was typical for the Vladimir, Ivanovo, and Smolensk regions; the smallest (more than 90%) – for the Bryansk, Voronezh, Kaluga, Moscow, Tver, and Tula regions;

– the total number of unemployed in 2022 amounted to 3.9% of the labour force in Russia; 3% in the Central Federal District, respectively; 2-2.9% in Moscow, Vladimir and Ryazan regions; 3-4% in most subjects of the Central Federal District. The minimum value (2.2%) is in Moscow, the maximum (5%) is in the Yaroslavl region.

According to Rosstat, registered unemployment in the Ivanovo region was 6.3 times higher than total unemployment; in the Yaroslavl region – more than 6.6 time. The need of employers declared to the employment service in the Ivanovo region is almost 4.5 times more than the number of registered unemployed. The vacancies are less than the total number of unemployed. It is 71.5% of the total the overall unemployment rate in the region. There are more vacancies in the Yaroslavl region – 2.8 times compared to the number of registered unemployed. However, they are 2.3 times lower than the total number of unemployed [14, p. 148][6].

Table 1 – The total number of unemployed according to sample surveys of the labour force, 2018-2022

Period	2018	2019	2020	2021	2022		
	thousand people				thousand people	in % by 2021	%, workforce
Russian Federation	3,658,5	3,464,8	4,321,3	3,630,5	2,950,7	81.3	3.9
The Central Federal District	620,2	612,1	828,9	743,8	630,4	84.8	3.0
Belgorod region	32,6	31,9	40,6	34,7	30,6	88.0	3.7
Bryansk region	24,0	22,5	23,3	20,1	18,7	92.7	3.2
Vladimir region	33,8	29,2	39,5	27,5	18,6	67.5	2.6

[5] *S. Kravtsov: more than 60% of ninth graders choose colleges. Available at: https://ria.ru/20231004/kravtsov-1900368610.html (Accessed 18.11.2023)*

[6] *The main indicators of the socio-economic situation of the subjects of the Russian Federation in 2022. Available at: https://cdnstatic.rg.ru/uploads/attachments/2023/03/28/13p-table_368.pdf (Accessed 18.11.2023)*

Period	2018	2019	2020	2021	2022		
	thousand people				thousand people	in % by 2021	%, workforce
Voronezh Region	43,3	42,0	50,4	45,3	41,3	91.3	3.5
Ivanovo region	22,1	19,5	27,9	23,7	16,3	68.8	3.1
Kaluga Region	21,4	19,8	25,4	21,6	21,0	97.0	3.9
Kostroma region	14,3	12,6	17,1	13,5	10,3	76.7	3.4
Kursk region	23,0	22,5	27,1	22,7	16,5	72.9	3.0
Lipetsk region	23,0	22,3	25,8	25,3	21,8	86.2	3.7
Moscow region	110,6	114,1	150,3	140,5	129,8	92.4	3.1
Oryol region	18,2	18,5	21,3	16,4	13,6	83.0	4.0
Ryazan region	22,0	21,1	27,6	20,6	15,3	74.2	2.9
Smolensk region	26,2	25,3	25,3	24,2	16,6	68.7	3.5
Tambov region	20,5	19,6	22,8	19,8	16,5	83.1	3.3
Tver region	27,9	26,7	29,0	25,3	23,8	94.1	3.8
Tula region	30,6	29,9	35,1	30,1	28,2	93.7	3.6
Yaroslavl region	36,4	35,0	47,4	39,0	31,9	81.9	5.0
Moscow city	90,1	99,5	193,0	193,5	159,6	82.5	2.2

Source: Regions of Russia. Socio-economic indicators, 2021

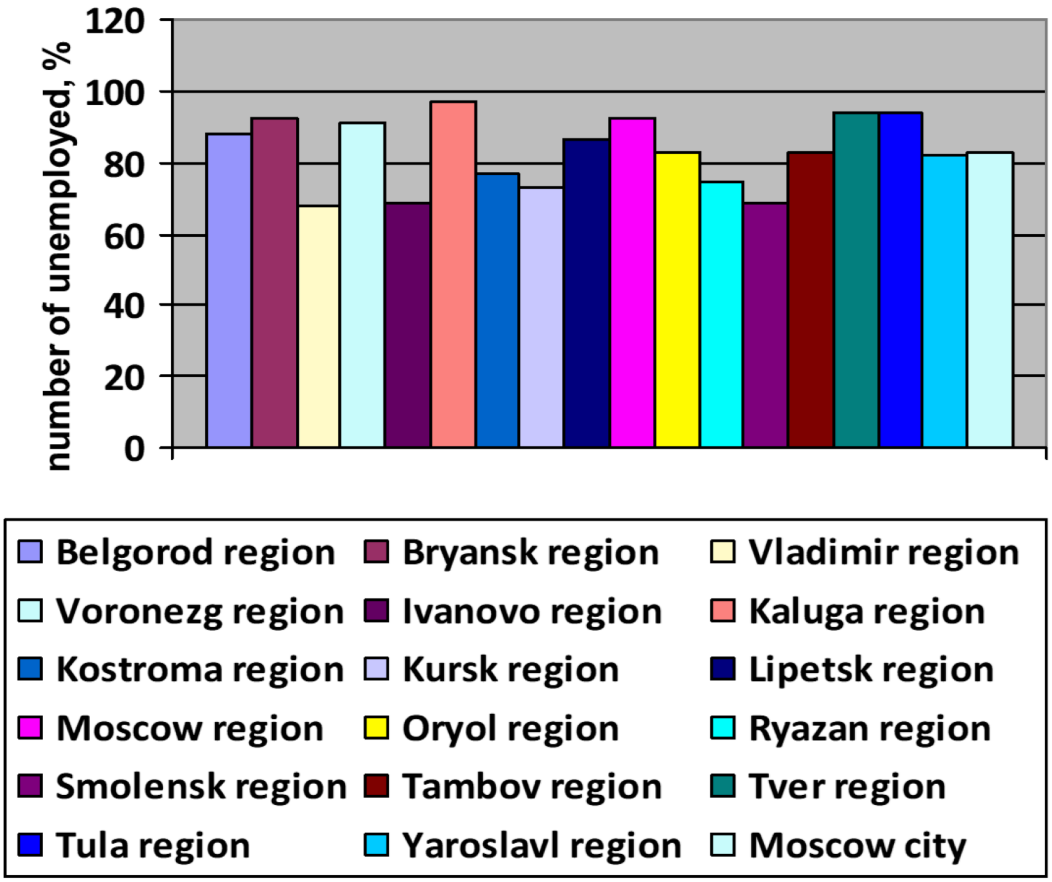

Figure 1. The number of unemployed in the regions of the Central Federal District, 2022 compared to 2021, %
Source: Regions of Russia. Socio-economic indicators, 2021

In recent years, our country has been actively implemented various measures to support the effectiveness of the "secondary vocational education – labour market" system [5; 6].

Primarily, these are government programs promoting the creation of jobs with decent working conditions: "Promotion of Employment", "Economic Development and Innovative Economy", "Scientific and Technological Development of the Russian Federation", "Accessible Environment", etc.

There is an implementation of different national projects, e.g. "Education", "Improving Labour Productivity and Employment support", "Digital Economy", "Small and Medium-sized Entrepreneurship and Support for Individual Entrepreneurial Initiative", etc.

Within the framework of the federal project "Young Professionals" (national project "Education") all colleges are provided with the renewal of infrastructure, new form of certification for students mastered vocational education programs, modernization of vocational education through the introduction of adaptive, practice-oriented, and flexible educational programs, advanced training of teachers (masters) of industrial training and professional retraining of managers in the field of vocational education, etc.

An important part of this project is the establishment of more than 5 000 workshops with modern equipment for teaching the most in-demand jobs, and specialties. It is particularly relevant for small towns and cities.

The federal project "Young Professionals" provides the establishment of 100 centres advanced vocational training (AVTC) by 2024. They are new structures determining the most in-demand competencies of the future, and ensuring close interaction between the educational organization, the employer and the student. Also they will develop educational programs, and perform other functions in terms of vocational education. Moreover, AVTC will actively participate in the training of both young people and citizens of pre-retirement age.

However, the World Skills project was implemented in the regions of Russia until 2021.

The list of initiatives for the socio-economic development of the Russian Federation until 2030 includes projects: "Professionalism", "Russia is an Attractive Country for Study and Work", "Training for IT", "From Start up to IPO", "University Technology Entrepreneurship Platform", "Advanced Engineering Schools", etc[7].

The federal project "Professionalism", as one of the 42 initiatives of the President of the country for the socio-economic development of Russia until 2030, is considered as the locomotive of a comprehensive reboot of the secondary vocational education system. This project is based on an industry-specific training model, primarily for high-demand professions in each specific region. One of the project key initiatives is the involvement of business into the partner management of educational organizations, the training of specialists in-demand professions in a short time, the maximum orientation to practice [13].

The establishment of educational and production centres (clusters) is one of key initiatives of "Professionalism" project. It is the integration of colleges with workshops in the cluster profile and organizations into the real sector of the economy. In this case, they choose a college, select a supporting employer, form new content and structure of educational programs, a new teaching staff, a new management structure. Also the educational and production complexes are formed[8].

For instance, in March 2022, there were announced the winners of the competition for grants in the form of subsidies from the federal budget for state support of educational and production centres (clusters) development. The centres based on the integration of vocational education organizations and companies operating in the real sector of the economy within the framework of the federal project "Professionalism" of the Russian Federation state program "Development of education".

More than 100 applications were submitted from 54 subjects of the Russian Federation in 11 different sectors of the national economy: nuclear and mining industries, metallurgy, mechanical engineering, light industry, chemical, pharmaceutical, aviation and shipbuilding, railway transport, agriculture, etc. 70 educational organizations received grants.

[7] *On approval of the list of initiatives for the socio-economic development of the Russian Federation until 2030: Decree of the Government of the Russian Federation on October 6, 2021 No. 2816-r*

[8] *Website of the Ministry of Education of the Russian Federation. The Federal Project «Professionalism». Available at: https://edu.gov.ru/activity/main_activities/additional_vocational_education / (Accessed 18.11.2023)*

In our research we consider the participation of the Ivanovo and Yaroslavl regions in the project "Professionalism".

In the Yaroslavl region, the project participants were:

– Yaroslavl Industrial and Economic College named after N.P. Pastukhov, Yaroslavl, Russia (since 2022);

– Emperor Alexander I St. Petersburg State Transport University, Yaroslavl branch, Yaroslavl, Russia (since 2022);

– Yaroslavl College of Automotive Mechanics, Yaroslavl, Russia (since 2023);

– Rybinsk Vocational Pedagogical College, Rybinsk, Russia (since 2023).

Educational organizations applied for recognition of workshops: Zavolzhsky Polytechnic College, Zavolzhye, Russia; Rostov Pedagogical College, Rostov, Russia; Yaroslavl Pedagogical College, Yaroslavl, Russia; Yaroslavl College of Commerce and Economics, Yaroslavl, Russia; Yaroslavl College of Radioelectronics and Telecommunications, Yaroslavl, Russia; Lyubimsky Agrarian Polytechnic College, Lyubim, Russia[9].

Indeed, it is planned to establish a cluster of "Mechanical engineering" on the basis of Yaroslavl Automotive College, Yaroslavl, Russia; Tutaevsky Polytechnic College, Tutaev, Russia; Rybinsk College of Urban Infrastructure, Rybinsk, Russia; Rybinsk Industrial and Economic College, Rybinsk, Russia, Yaroslavl College of Management and Professional Technologies, Yaroslavl, Russia in 2023. Yaroslavskiy Zavod Dizelnoy Apparatury, Yaroslavl, Russia and PAO Avtodiesel, Yaroslavl, Russia are the partners of the cluster[10].

Moreover, 9 educational organizations implementing SVE programs became winners in the category "Railway transport", including Emperor Alexander I St. Petersburg State Transport University, Yaroslavl branch, Yaroslavl, Russia.

Table 2 – Admissions of students enrolled in "Professionalism" program in Emperor Alexander I St. Petersburg State Transport University, Yaroslavl branch, Yaroslavl, Russia, 2023-2024

Specialization	intramural form of study	
	9 Grades primary general education	
	budget supported	on a commercial basis
Technical Operation of Railway Rolling Stock	25	25
Railroad Construction, Track and Track Maintenance	25	0
Automation and Telemechanics in Transport (railway transport)	25	0
Power supply (by industry)	25	0

Source: Emperor Alexander I St. Petersburg State Transport University, Yaroslavl branch[11]

Hence in the Yaroslavl region there were established biopharmaceutical and railway scientific and educational clusters in 2022; scientific industrial complex "Mechanical Engineering" was established in 2023.

The Yaroslavl Region developed a program of the federal project "Professionalism" promotion. The target audience of the Program are as follows: 6-11Grades students and their family members; teachers; students of the vocational education system and their family members; vocational education teachers; vocational training masters; curators of vocational education groups.

Recommended participants of the Program:

– regional executive authorities of the Yaroslavl region;

– employment centres; advanced vocational training centres;

[9] *Website of the Institute of Education Development of the Yaroslavl region. The federal project «Professionalism». Available at: http://www.iro.yar.ru/index.php?id=7134 (Accessed 18.11.2023)*

[10] *In 2023 the implementation of the Professionalism project will continue in the Yaroslavl Region. Available at: https://yarsmi.ru/2023/01/11/v-2023-godu-v-yaroslavskoj-oblasti-prodolzhitsya-realizacziya-proekta-professionalitet / (Accessed 18.11.2023)*

[11] *The website of Emperor Alexander I St. Petersburg State Transport University, Yaroslavl branch, Yaroslavl, Russia. Available at: https://yarpgups.ru/?page_id=21797 (Accessed 18.11.2023)*

– educational organizations, including vocational ones;
– curators of vocational education groups.
– social educators / educational psychologists, including vocational education groups;
– enterprises of the economic sectors operating in the Yaroslavl region included into the implementation of the Federal Project;
– federal and regional mass media.

Supplementary participants of the Program:
– educational organizations implementing higher education programs;
– centres for children and youth additional education;
– career centres;
– children's activity centres;
– children's health centres / camps of the Yaroslavl region;
– other commercial and non-profit organizations:
– HR agencies of the Yaroslavl region;
– institutes of upbringing, family and childhood[12].

In the Ivanovo region, colleges training qualified personnel for textile, clothing and footwear industry sectors, are as follows:
– College of textile, clothing and footwear industry, Ivanovo, Russia;
– Industrial and Economic College, Ivanovo, Russia;
– Polytechnic College, Kineshma, Russia;
– multidisciplinary college, Teikovo, Russia;
– multidisciplinary college, Vichuga, Russia;
– multidisciplinary college, Rodniki, Russia;
– Technical college, Furmanov, Russia;
– technological college, Yuzha, Russia[13].

The project provides training at: sewing equipment operator, tailor, knitting and sewing equipment operator, textile technology (by type), design, modelling and technology of sewing products, economics and accounting (by industry), commerce (by industry).

Eight enterprises participate in the "Professionalism" project and invest in the development of vocational education and training, provide a base for the formation of students' practical skills: Tekstilnaya Kompaniya Russkiy Dom, Ivanovo, Russia; Shuiskiye Sitsi, Shuya, Russia; TDL Textile, Ivanovo, Russia; Krasnaya vetka, Ivanovo, Russia; Lidertex, Ivanovo, Russia; Faberlik Fashion Factory, Furmanov, Russia; Biser, Ivanovo, Russia; Atheleria, Ivanovo, Russia [5].

For instance, the Ivanovo Industrial and Economic College (IvIEC) implements 25 programs for training middle-level specialists and programs for training qualified workers and employees (21 in Ivanovo and 4 in the Shuisky branch of IvIEC). They are as follows: Computer Systems and Complexes (basic training), Computer Networks (basic training), Programming in Computer Systems (basic training), Applied Computer Science (by industry) (basic training), Network and System Administration, Information Systems and Programming, Mechanical Engineering Technology (basic training), Maintenance and Repair of Motor Vehicles (basic training), Design, Modelling and Technology of Sewing Products (basic training), Car Repair and Maintenance Master, Economics and Accounting (by industry) (advanced training), Commerce (by industry) (basic training), Finance (basic training), Master of Finishing Construction Works, Radio Mechanic, Car mechanic, Welder (manual and partially mechanized welding), Crane Operator, Cook, Confectioner, Plasterer, Construction Carpenter, etc.

Our research concerns with the program "Professionalism" implemented in the Ivanovo Polytechnic College, Ivanovo, Russia (see Table 3).

[12] *The program of popularization of the federal project «Professionalism» of the Yaroslavl region. Yaroslavl, 2023. 64 p. Available at: https://resurs-yar.ru/upload/medialibrary/1d1/twatl5n0mm7p0kp3cumjcdlflxx97sbo.pdf (Accessed 18.11.2023).*
[13] *The list of educational and production centres (clusters) participating in the Federal project «Professionalism» in 2023 Available at: https://docs.edu.gov.ru/document/d86fca6aeaaa6023ea81ca7677f432db/ (Accessed 18.11.2023)*

Table 3 – Admissions of students enrolled in "Professionalism" program at the Ivanovo Polytechnic College, Ivanovo, Russia, 2023-2024

Future profession	Basic education	Form of study / Duration of study	The number of budget places, 2023-2024	The number of contract places, 2023-2024
Sewing machine operator	11 Grades	intramural form of study 1 0 months.	20	25
A design technologist with extra skills in fashion design	9 Grades	intramural form of study 2 years 10 months.	25	-
Technologist, textile quality controller, textile equipment operator	9 Grades	intramural form of study 2 years 10 months.	20	-
Purchasing agent, manager, merchandiser, seller, entrepreneur	9 Grades	intramural form of study 2 years 7 months.	-	-
Accountant, tax specialist, cashier, cost estimator, tax inspector	9 Grades	intramural form of study 2 years 10 months.		20
Designer	9 Grades	intramural form of study 2 years 9 months.		20

Source: Ivanovo Polytechnic University[14]

The Ministry of Education of the Russian Federation ensures accessibility of vocational education for the people with disabilities. Currently, the Federal project "Professionalism" includes the Abilimpix championships. In May 2023 in Furmanov, Russia on the basis of 6 educational organizations of the Ivanovo region was held the VII regional Abilimpix championship of the presidential platform "Russia – the Land of Opportunities" in 14 competencies in Ivanovo, Kineshma, Kohma, Shuya. However, Ivanovo Industrial and Economic College (IvIEC) was the main competition location. 24 educational institutions of the Ivanovo region took part at the championship[15].

The most important factor in the growth of labour productivity and wages is the increase in the level of employees' qualification.

In the Russian Federation has adopted a Strategy for the Development of the National Qualifications System up to 2030. It defines the goals, priorities, directions, objectives of the national state policy for the formation and strengthening of the human resources, implementation mechanisms, stages, expected results, etc.

The National Qualifications System of the Russian Federation (NQS) is a complex of interrelated regulatory legal and methodological documents, state and public institutions and measures ensuring the improvement of labour resources quality, labour processes optimization, interaction between the vocational

[14] *The website of Emperor Alexander I St. Petersburg State Transport University, Yaroslavl branch, Yaroslavl, Russia. Available at: https://yarpgups.ru/?page_id=21797 (Accessed 18.11.2023)*

[15] *Department of Education of the Ivanovo region. The press centre. Available at:https://iv-edu.ru/info/news/3241/ (Accessed: 09/28/2023)*

education and manufacturing to improve the quality of employee training and their competitiveness in the national and international labour markets. The purpose of NQS development of the Russian Federation is the formation of a modern flexible mechanism for staffing solutions to priority tasks of scientific, technological, and socio-economic development[16].

The stages of NQS development of the Russian Federation are presented in Table 4.

Table 4 – Stages of National Qualifications System development in the Russian Federation

Period	Adopted normative legal acts	Changes and innovations introduced
2012	Decree of the President of the Russian Federation on May 07, 2012 No. 597 "On measures to implement the state social policy"	The basis of the modern national qualifications system of the Russian Federation is defined
2012	Federal Law "On Amendments to the Labour Code of the Russian Federation and Article 1 of the Federal Law "On Technical Regulation" on 03.12.2012 N 236-FZ	Article 195.1 was introduced into The Labour Code1. It enshrines the concepts of "professional standard" and "qualification"
2012	Federal Law on December 29, 2012 No. 273-FZ "On Education in the Russian Federation"	The legal basis of national qualifications system application for vocational education has been established: the development of federal state educational standards based on the requirements of professional standards, professional and public accreditation of professional educational programs for compliance with professional standards, etc.
2014	Decree of the President of the Russian Federation on April 16, 2014 No. 249 "On the National Council for Professional Qualifications at the President of the Russian Federation"	The National Council for Professional Qualifications at the President of the Russian Federation has been established
2016	Federal Law on July 03, 2016 No. 238-FZ "On independent assessment of qualifications"; Resolution of the Government of the Russian Federation on November 16, 2016 No. 1204 "On approval of the Rules for conducting an independent qualification assessment by the Qualifications Assessment centre in the form of a professional exam"	Regulatory framework for independent assessment of qualifications has been developed

Source: composed by the authors according to "The strategy for the development of the national qualifications system of the Russian Federation for the period up to 2030"[17]

A regulatory framework for the independent assessment of qualifications is being developed. "An independent qualification assessment (IQS) is a procedure for confirming the compliance of applicant's

[16] *The strategy for the development of the national qualifications system of the Russian Federation for the period up to 2030 (approved by the National Council for Professional Qualifications under the President of the Russian Federation (protocol of March 12, 2021. N 51). Available at: https://www.garant.ru/products/ipo/prime/doc/400621537 / (Accessed 26.09.2023)*

[17] *The strategy for the development of the national qualifications system of the Russian Federation for the period up to 2030 (approved*

qualifications with the provisions of professional standards or other qualification requirements. IQS is conducted by authorized qualification assessment centres; the exam itself includes of theoretical and practical parts. Successful completion of IQS allows the applicants to confirm their qualifications regardless of the method of obtaining it, expand employment opportunities, and obtain admission to certain types of work".

Therefore, institutional environment in terms of IQS is actively developing. The main subjects involved in IQS activities in the Russian Federation are as follows:

– The National Council for Professional Qualifications at the President of the Russian Federation. It allows representatives of ministries and departments, business associations, trade unions, and leading expert organizations to cooperate.

– The National Agency for the Development of Qualifications (services for IQS participants are available on its website).

– Establishment of professional qualifications councils on the basis of employers' associations in accordance with industrial and professional characteristics. Their functions: e labour market monitoring, development and updating of professional standards, independent assessment of qualifications, examination of educational standards and programs.

– The Russian Tripartite Commission for the Regulation of Social and Labour Relations, employers' associations, federal sectoral regulators – adopted separate decisions to expand the use of professional standards and independent qualification assessment.

– coordinating authorities and regional methodological centres are available in 45 subjects of the Russian Federation in all federal districts (they are determined by the heads of regions for development of the national qualifications system infrastructure).

Currently, more than 1 300 professional standards and more than 2 300 new qualifications are introduced; there are operating 40 industry councils on professional qualifications. The tools and mechanisms of the national qualifications system have become widespread in many sectors of the Russian economy (banking and financial, physical culture and sports, elevator industry and vertical transport, housing and communal services, electric power, construction, folk crafts, textile industry, etc.)[18].

The NQS development trends are presented in Table 5.

Table 5 – Trends of National Qualifications System development in the Russian Federation

Challenges and problems in qualifications development	Trends of NQS development
- introduction of modern technologies, emergence of new industries, professions and jobs are not provided with the necessary number of qualified personnel;	Ensuring the availability of high-demand qualifications for citizens and employers, including those related to the emergence of breakthrough technologies, professions of the future.
- mechanism for updating the nomenclature and content of professions and qualifications does not correspond to the needs of the economy in personnel;	Integration of institutions aimed at obtaining and recognizing qualifications into the unified national qualifications system of the Russian Federation.
- main program mechanisms of national socio-economic development, implemented by national, federal, regional and departmental projects, state programs, etc. are not provided for the necessary staffing tasks decision;	Updating procedures and requirements for admission to professional activities associated with increased threats of harm to the life and health of citizens and (or) significant damage to organizations and the environment.

by the National Council for Professional Qualifications under the President of the Russian Federation (protocol of March 12, 2021. N 51). Available at: https://www.garant.ru/products/ipo/prime/doc/400621537 / (Accessed 26.09.2023)

[18] *Interactive portal of the Ivanovo Region Committee on Labour, Employment Promotion and Labor Migration. On the possibilities of using the mechanisms of the national qualifications system. Available at: https://ivzan.ru/News/Detail/?id=dae25621-4c97-427e-8347-64d90fc34a32 (Accessed 18.11.2023)*

Challenges and problems in qualifications development	Trends of NQS development
- digitalization processes of labour and vocational education are not synchronized;	Ensuring timely response of the personnel training system to changes in labour market requirements.
- accelerated digitalization of economic and social life has exacerbated the demand for employees digital competencies;	Creating conditions for international comparability of qualifications and improving mechanisms for the recognition of Russian qualifications abroad and foreign qualifications in the Russian Federation.
- in the context of globalization, there is a unification of requirements for the skills and qualifications of personnel on an international scale;	Formation of mechanisms to encourage citizens and employers to master and use modern qualifications.
- the participation of employers in assessing the results of student training in secondary vocational education institutions is often formal; there is no possibility of assigning qualifications to students of higher education institutions based on the results of mastering individual modules of the educational program;	
- confirmation by employees of qualifications obtained informally is not regulated and associated with high costs for applicants; etc.	

Source: composed by the authors according to "The strategy for the development of the national qualifications system of the Russian Federation for the period up to 2030"[19]

Currently, the tasks are to improve the regulatory legal regulation of the application of professional standards in the development and implementation of educational programs aimed at obtaining qualifications; determining the powers of the regions for its development; the use by employers of tools of the national qualifications system in the field of personnel management (e.g. in the organization of the employee remuneration system); the development and introduction of legal norms ensuring recognition qualifications in attracting qualified labour, international comparability of qualifications and improvement of mechanisms for recognizing Russian qualifications abroad and foreign qualifications in the Russian Federation, etc.

The main tasks of the state for the effective functioning of the NQS are as follows:

– establishment of various channels for obtaining in-demand qualifications and ensuring their accessibility for citizens and employers;

– development of a personnel training system responding to changes in the labour market;

– support (legal, organizational, informational, financial, etc.) for employers and employees whose economic interests are primarily related to the availability of in-demand qualifications, related to the emergence of new technologies, STEM professions [5; 6]. Therefore, it is relevant to develop incentive mechanisms for both citizens and employers to master and use modern qualifications;

– monitoring and forecasting the economy needs for qualification (by regions, municipalities, industries, and spheres, taking into account the graduation of specialists in institutions of secondary and higher vocational education), including STEM professions, and using modern digital technologies, etc.

In 2023 the final of the High-Tech Championship was held in Veliky Novgorod, Russia. The championship's competencies are as follows: Geospatial Digital engineering, Neural Networks, Flying

[19] *The strategy for the development of the national qualifications system of the Russian Federation for the period up to 2030 (approved by the National Council for Professional Qualifications under the President of the Russian Federation (protocol of March 12, 2021. N 51). Available at: https://www.garant.ru/products/ipo/prime/doc/400621537 / (Accessed 26.09.2023)*

Robotics, Bioprosthetics, Organization and Management of ESG projects, Technology for Cities and Territories Development, etc.[20].

In the regions of Russia, engineering classes are already being created at the school level (a combination of "school – university – enterprise"), agroclasses (a combination of "school – college, university – enterprise"). For instance, the agroclass project started in the Ivanovo region in 2022 and was continued in 2023 for students 5-10 Grades in Kineshemsky, Shuisky, Ivanovsky, Teikovsky districts (Ivanovo region) and school No. 42, Ivanovo, Russia.

The system of national ratings of educational organizations is being developed. It takes into account the employment of the graduates.

Quantoriums are being established in the regions. In Ivanovo, in 2018, on the basis of the Ivanovo Regional Centres enter for the Development of Additional Education for Children, Regional centres for the identification and support of gifted children "Solaris" was established. On its basis in 2023 were implemented the following projects "Bilet v buduschee" (Ticket to the Future), "Bolshie vizovi" (Big Challenges), "Grani" (Edges), "Kazhdiy den – tvoy" (Every day – yours), etc. Moreover, participation in the project "Vrachi buduschego" (Doctors of the Future) allows free of charge participants accommodation in the modern campus[21].

Indeed, investment projects of state corporations and private companies, urban development projects aimed at preserving and creating jobs, and staff training play an important role along with the programs implemented in the VE system. A lot of vacancies in the Ivanovo region are being created within the territories of advanced socio-economic development (TASED) in Navoloki, Yuzha, the special economic zone "Ivanovo".

Conclusion

In conditions of labour shortage in the Russian economy, it is important to develop effective measures of state support for the Education – Labour Market system, to reduce the imbalance between supply and demand in terms of quantitative and qualitative characteristics. The Russian Federation currently uses both traditional measures to support the labour market and new institutional measures. Most of them are aimed at developing the vocational education system, both in the medium and long term. There are following governmental initiatives at the federal level: 42 initiatives of the President of the country, state programs, national projects, federal projects "Abilimpics", "Professional", "Young Professionals", the National Qualifications System of the Russian Federation and Independent assessment of qualifications, high-tech championships, etc. There are following governmental initiatives at the regional level: support and development centres for gifted children, quantoriums, engineering classes, agroclasses, and establishment of educational and production centres (clusters) taking into account the needs of the regional labour market.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

AUTHORS' CONTRIBUTION

Alla B. Berendeeva – conceptualization, project administration, writing – original draft.
Olga S. Berendeeva – data curation, investigation.

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Data envelopment analysis for identification of bank branches appropriate locations in terms of their efficient operation

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ORIGINAL ARTICLE

Abstract. One of the main banking activities is the branch network. It provides the effective banking, the profitability. Choosing the right location of branches is very important for the bank effective operation. Random or intuitively locations can have a negative impact on key performance indicators in the future. The correct and thoughtful choice of the bank branch location ultimately determines its maximum efficiency. The paper concerns with the determining of the bank branch location in terms of thorough mathematical calculation and many factors influencing bank activity. We developed a special calculation method using the DEA (Data Envelope Analysis) methodology, considering financial, branch location, location features, etc. The paper dwells on the issue of one large branch effectiveness comparing to several smaller branches covering a wider consumer area on the example of the branch on A. Sharifzade street, Baku, Azerbaijan. Indeed, it is important to consider the location in terms of its geolocation and landscape. However, one of the main issues is expediency of establishing one large or several small branches in densely populated areas. Moreover, it is necessary to take into account the infrastructure to improve the bank performance. To consider this issue, we use both hypothetical and statistical data of Capital Bank. It is one of the largest banks in Azerbaijan. Also it has a large network of branches. The article examines expediency of establishing one large or several small branches in the area close to the existing branch of Capital Bank on A. Sharifzade street. The efficiency of the current operating branch was compared with the total efficiency of virtual branches in several combinations. We analysed the indicators of the Inshaatchylar branch and virtual branches in different combinations in different locations in accordance with DEA CRS (Constant Return to Scale) method. Additionally, we determined the effectiveness of both the Inshaatchylar branch and virtual branches in various combinations. Thus, the highest score is the most effective one.

Keywords: effective operation of the bank branches; profit and loss forecast; bank expenses; general branch efficiency; Data Envelope Analysis

JEL codes: C67, G14, G17, G21

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Introduction

Regardless of its affiliation to the private or public sector, size, field of activity, etc., the basis of any organization management is assessment and analysis of its effectiveness.

Efficiency assessment is very important for any enterprise management practice. Efficiency involves the quality of activities, viability, competitiveness in a market. Therefore, it is one of the most important areas of theoretical and empirical research. Both the management of organisations and other stakeholders subjected to the business activities. However, the measurement depends on the nature of the analysed activity. It provides on the basis of appropriate conceptual models defining the description of the studied unit activity considered aspect (mainly financial, strategic, or operational). Economics and management studies usually use the individual processes (most often production), operations (improvements), projects (innovations) performed by organizations or their structural divisions as objects of efficiency assessment. Herewith, the objects under study (organizations, divisions) are described by a certain set of characteristics or parameters in terms of their activity. These values, identified in the object description, are used to measure the performance type relevant to the subject of the assessment (researcher, authority, company management, consultant, etc.).

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Methods

Implementation of the enterprise efficiency concept

In the development of the enterprise efficiency concept, it is necessary to distinguish the efficiency and effectiveness of its activities. Firstly, it assesses the extent of goals set for the enterprise. Secondly, comparing the results obtained by the analysed item with the values of the initial factors (usually the cost of resources), it provides an idea of its economic activity. Efficiency has the most general definition as the productivity of an enterprise or productivity in general (performance). Moreover, it corresponds to the concept of profitability.

Indeed, the activity of any organization is usually associated with the consumption of a certain type of resources to create results in the form of products and/or services. Therefore, its effectiveness is usually analysed through comparing the costs incurred and the results obtained. The organization acts as resources converter. It transforms the initial resources (factors/resources, costs, variables / input parameters) into the final products (products / output variables (parameters)). Generally, assessment of the organization effectiveness is determining the effectiveness (productivity) of converting consumed resources into the final goods and services.

Determining the ultimate effectiveness of the branches activities

This research proposed to use a nonparametric analysis method – the Shell Data Analysis Method or Data Envelope Analysis, hereinafter referred to as DEA) [1].

DEA is used to measure performance with multiple inputs and outputs and there are no generally accepted weights for aggregating input and aggregated output data [3; 4].

DEA is the most appropriate research method when examining the efficiency of converting multiple inputs into multiple outputs. For example, the DEA can define alternative input configurations leading to better results without necessarily increasing overall resource usage. DEA is a linear programming method allowing ones to assess best practices based on research objects. In addition, the DEA provides assessment of potential improvements for inefficient facilities.

The effectiveness of the bank branches was assessed using DEA methodology based on the obtained mathematical and economic model. Forecasts have been made to improve the efficiency of bank branches. One of the main issues is the location of branches that will operate profitably in a certain area in the future. Establishing new branches of the bank in a particular perimeter is another relevant issue. Therefore, we use a new methodology, considering the number of branches in a given area (one large branch or several small ones)[5, 6].

We considered Capital Bank, one of the largest banks in Azerbaijan as an example. Therefore, we will consider all details and calculation modes of this mathematical and economic model [2].

Defining the performance results of the bank virtual branches in different combinations

Further, we will use the concept of «virtual branches». This concept means hypothetical branches do not existing physically at the moment. Nevertheless, they are considered as potential branches.

This methodology is general one for different economic entities in different locations. Indeed, we provide our study on A. Sharifzade street, Baku, Azerbaijan. The Capital Bank branch is located on this street. It is a large 2-store branch with a lot of employees. The article consider the most effective bank strategy in terms of its branches – to have one large branch or several small branches on A. Sharifzade street, Baku, Azerbaijan.

Location. This street is located in the Yasamal district. The area has a complex geographical terrain. The Inshaatchylar metro station is located on A. Sharifzade street has a sloping landscape on both sides. On one side the slope is on H. Zardabi («Galaba circle»); on the other side it is Yeni Yasamal. The landscape of the area is hilly. The satellite image is shown in Figure 1 (the yellow line indicates A. Sharifzade street). On this street branches of competing banks are located: UniBank, Bank Respublika, Rabitabank, and Bank of Baku (Fig. 2)

The Inshaatchylar metro station is located on A. Sharifzade street. It is a transport hub in this area. It is located on a hill; Galaba circle is on one side down the hill, and the Bizim Market central market is on the other one. After Bizim Market, the road closes with the Baku Ring Road (in Fig. Dairevi yol). There are no residential or non-residential facilities beyond the Baku Ring Road. Therefore, Sharifzade Street can be

considered as the main destination for the potential establishing of bank branches.

Figure 1. Geographical destinations at the analysed location

Source: google maps

Figure 2. Location of competing banks

Source: google maps

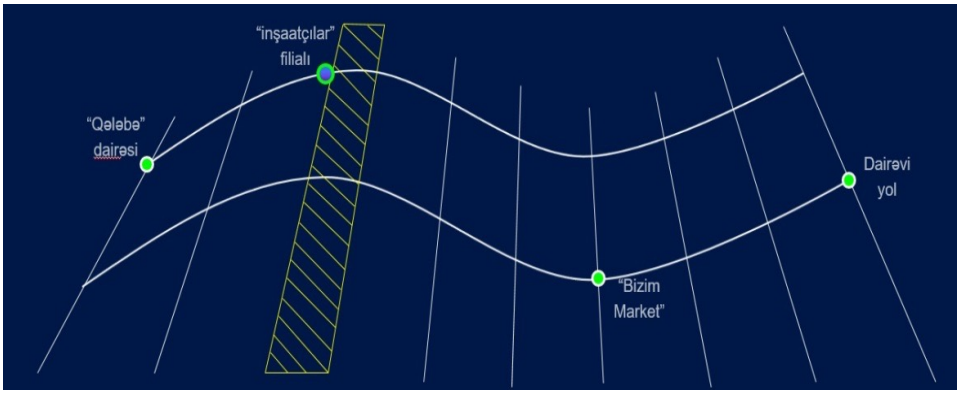

Figure 3. Geolocation and landscape. The yellow shaded stripe indicates A. Sharifzade street

Source: composed by the author

Possible locations of branches are transport hubs and intersections of main streets (establishing a branch on secondary streets is impractical). These points are indicated in Figure 4. The total length of Sharifzade Street is approximately 4 km. The minimum distance between two branches should not be less than 1 km. Otherwise they will be too close to each other. Hence the average distance person will effortlessly walk to the bank is about 1 km. Taking into account this fact, and using the exclusion method, we reduce the number of potential locations for branches to 4. In Figure 4, they are indicated by red circles. The locations of these points are more effective in comparison with other points. Moreover, we are taking into account the terrain, the intersection of streets, the number of commercial and other objects nearby, etc.

Further, we compare Inshaatchylar physical and virtual branches. The comparison will be made in

terms of their efficiency. Therefore, it is necessary to make profit/loss forecasts for branches.

Figure 4. Potential locations for branches (the physical Inshaatchylar branch is located at the point Inshaatchylar)

Source: google maps

Results

To define the most effective locations for branches, it is necessary to make certain calculations. The real financial and other indicators of the Inshaatchylar branch will be taken and calculations will be implemented using the DEA methodology. The stages include following [7; 8; 9]:

1. Defining the branches costs (Inshaatchylar physical and virtual branches).
2. Defining of income (Inshaatchylar physical and virtual branches).
3. Total revenue calculation in terms of income and costs.
4. Defining of different combinations (virtual or/and physical) branches are more effective in terms their revenues, costs, and profits.

Profit and loss forecast

However, bank branches have many categories of costs. For providing the calculations, we divide the branch costs into 3 main parts: rental costs, employee salaries, and other costs (generalized).

The rental price is the rent for the premises of the branch with an area of 150 sq.m. (in current rental prices in the area). Labour costs for salaries. Other general costs, except for rent and wages ones.

Rent in potential locations

The area of one branch was taken 150 sq.m. based on the following minimum requirements: A service hall – 60 sq.m., a bathroom – 4 sq.m., a director's office – 12 sq.m., a server room – 8 sq.m., an archive room – 10 sq.m., a security room – 6 sq.m., a kitchen – 8 sq.m., corridor – 15 sq.m., cash register – 15 sq.m., warehouse – 4 sq.m., other – 8 sq.m. Total area: 150 sq.m.

Location ASAN Xidmət (ASAN – near the ASAN state institution). The monthly rental price in this area is shown in Table 1. The maximum price of 53.3 manats per 1 sq.m was taken. Monthly rent is charged at 53.3 manat x 150 sq.m. = 8 000 manat per month. The annual rent is 96 000 manats.

Table 1 – Prices for renting branches near ASAN

General information	Option 1	Option 2
The size of the object is	150 sq.m.	240 sq.m.
Monthly rent (including 14% tax)	8 000 manat	3 700 manat
Rent per sq.m.	53.33 manat	15.42 manat
Link to the map location	http://tiny.cc/05jwtz	http://tiny.cc/15jwtz

Source: composed by the author

The Inshaatchylar branch Location. According to the study, the monthly rent of the physical Inshaatchylar branch was 33 592 manats (33 592 : 520 sq.m. = 65 manats per 1 sq.m.). Assume a branch with an area of 150 sq.m. at place of this physical branch (i.e. a virtual branch). Therefore, its rent would be approximately 150

sq.m. x 65 manat ≈ 10 000 manat.

Figure 5. 3D visualization of options 1 and 2

Source: composed by the author

Tibb Texnikumu (Medical College) Location. The monthly rental price of 1 sq.m. within a radius of 300 meters ranges from 12-20 manats. The monthly rent is charged at 20 manats. 20 manats x 150 sq.m. = 3 000 manats per month. The annual rent is 36 000 manats.

Bizim Market Location. The monthly rental price of 1 sq.m. within a radius of 300 meters ranges from 10-25 manats. The monthly rent is charged at 25 manats. 25 manats x 150 sq.m. = 3 750 manats per month. The annual rent is 45 000 manats.

Employee costs (salary)

Inshaatchylar branch. According to the profit and loss report, the salary expenses of the Inshaatchylar branch for the 6-month period in 2020 is 126 222 manats. Hence the annual cost of wages is approximately 252 000 manats.

Virtual branches. Since the area of all branches is 150 sq.m., the number of employees will be the same. Thus, staff costs will be the same for all virtual branches. The required number of employees in virtual branches (people):

The operators – 5, the cashiers – 2, the director – 1, the receptionist – 1, the cleaner – 1.

To determine the annual salary value of virtual branches, the average annual salary value was taken from 9 real branches of Capital Bank (which have 10 employees each). The average value is about 210 000 manats.

Other costs

According to analysis of statistical data, other costs for an average of 150% of the amount of rent and staff costs.

Inshaatchylar branch. Other costs are 982 656 manats. Rent 33 592 x 12 = 403 104 manat. The salary is 252 000 manats. (403 104 + 252 000) x 150% = 982 656 manats.

ASAN virtual branch. Other costs are 459 000 manats. The rent is 96 000 + salary 210 000 = 306 000 x 150% = 459 000 manats.

Inshaatchylar virtual branch. Other costs are 495 000 manats. Rent 120 000 + employees 210 000 = 330 000 x 150% = 495 000 manats. To analyse the hypothesis of the research, we establish a hypothetical virtual Inshaatchylar branch on the site of the physical Inshaatchylar branch.

Tibb Texnikumu (Medical College) virtual branch. Other costs are 369 000 manats. The rent is 36 000 + salary 210 000 = 246 000 x 150% = 369 000 manats.

Bizim Market virtual branch. Other costs are 382 000 manats. The rent is 45 000 + salary 210 000 = 255 000 x 150% = 382 500 manats.

Note: The costs do not include interest costs, since they considered by the calculations of FTP (Fund Transferring Price) in the revenue part.

Table 2 – Branches total costs, manats

Branch	Inshaatchylar vranch	ASAN virtual branch	Inshaatchylar virtual branch	Tibb Texnikumu virtual branch	Bizim Market virtual branch
Rental cost	403 104	96 000	120 000	36 000	45 000
Labour costs	252 000	210 000	210 000	210 000	210 000
Other costs (150%)	982 656	459 000	495 000	369 000	382 500
Total costs	1 637 760	765 000	825 000	615 000	637 500

Source: composed by the author based on statistical data and calculations

The reference branch

The concept of a «reference» branch is introduced in order to calculate the financial performance of virtual branches. To select this type of branch, we take into account a reference factor. This branch should correspond to the Inshaatchylar branch, i.e. it should be located on a street with good traffic, in the area of the transport hub, near the exit of the underground stations, with a dormitory suburb nearby. In addition, this branch should be efficient enough to prevent the overestimation of the virtual branches results calculated on the basis of the reference branch. Taking into account all these parameters, Gara Garaev Capital Bank branch is considered as a reference branch. The efficiency calculation on the base based on of a reference branch was provided by DEA method, taking into account the entire Capital Bank branch network.

Population, pedestrian and car traffic

To calculate the precision location we use the following data: number of people in this area, number of pedestrians, and cars directly pass near the point. Figures 5, 6 and 7 show the potential locations of branches and indicate the perimeters of residential areas, the number of people indicated in Tables 3-7.

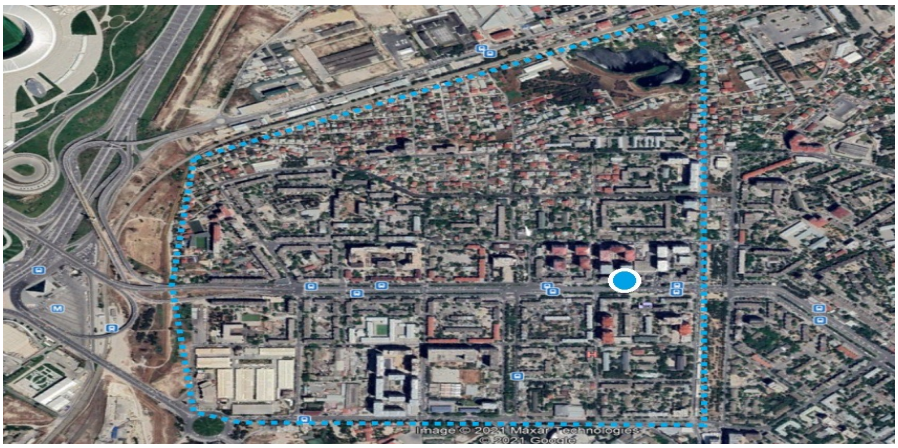

Figure 6. The location of the reference Gara Garaev branch (physical) and the perimeter of the residential area

Source: google maps

Table 3 – Gara Garaev reference branch. The population, number of pedestrians, and cartraffic (people)

Observation hours	Pedestrian traffic	Car traffic	Population
09:00-10:00	1 219	1 725	---
10:00-11:00	1 202	1 696	---
11:00-12:00	1 325	1 768	---
12:00-13:00	1 453	1 833	---
13:00-14:00	1 466	1 920	---

Observation hours	Pedestrian traffic	Car traffic	Population
14:00-15:00	1 735	1 962	---
15:00-16:00	1 691	1 994	---
16:00-17:00	1 836	2 053	---
Total	11 927	14 951	55 000

Source: composed by the author

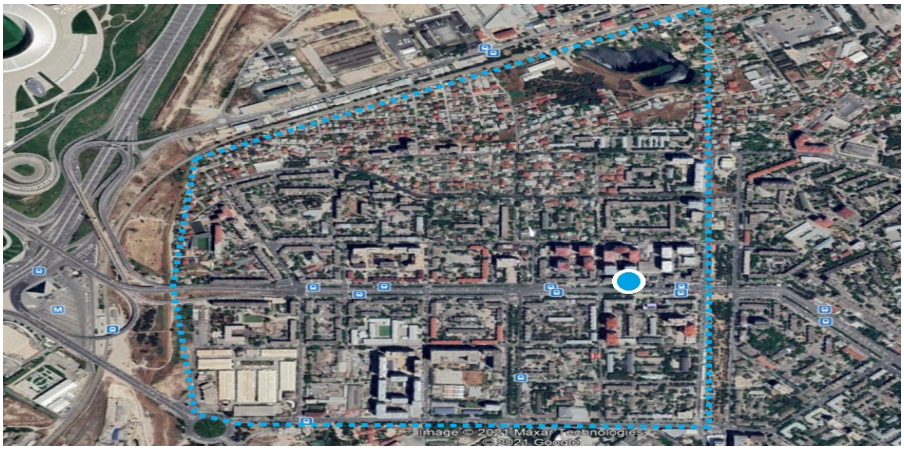

Figure 7. The location Inshaatchylar (pink), Tibb Texnikumu (yellow), Bizim Market (green) virtual branches and the perimeter of the residential areas

Source: google maps

Table 4 – Inshaatchylar virtual branch. The population, number of pedestrians, and car traffic (people)

Observation hours	Pedestrian traffic	Car traffic	Population
09:00-10:00	962	1 035	---
10:00-11:00	1 074	1 138	---
11:00-12:00	1 125	1 096	---
12:00-13:00	1 442	1 207	---
13:00-14:00	1 309	1 285	---
14:00-15:00	1 275	1 227	---
15:00-16:00	1 293	1 176	---
16:00-17:00	1 525	1 254	---
Total	10 005	9 418	75 000

Table 5 – Tibb Texnikumu virtual branch. The population, number of pedestrians, and car traffic (people)

Observation hours	Pedestrian traffic	Car traffic	Population
09:00-10:00	134	904	---
10:00-11:00	158	847	---
11:00-12:00	198	762	---
12:00-13:00	237	839	---
13:00-14:00	211	871	---
14:00-15:00	188	925	---
15:00-16:00	243	874	---
16:00-17:00	362	886	---
Total	1 731	6 908	31 000

Source: composed by the author

Table 6 – Bizim Market virtual branch. The population, number of pedestrians and car traffic (people)

Observation hours	Pedestrian traffic	Car traffic	Population
09:00-10:00	441	1 904	---
10:00-11:00	327	1 847	---
11:00-12:00	495	1 762	---
12:00-13:00	633	1 813	---
13:00-14:00	797	1 871	---
14:00-15:00	814	1 925	---
15:00-16:00	945	1 874	---
16:00-17:00	826	1 939	---
Total	5 278	14 935	107 000

Source: composed by the author

Figure 8. The location of ASAN virtual branch and the perimeter of the residential area

Source: google maps

Table 7 – ASAN virtual branch. The population, number of pedestrians, and car traffic (people)

Observation hours	Pedestrian traffic	Car traffic	Population
09:00-10:00	480	712	---
10:00-11:00	661	902	---
11:00-12:00	679	820	---
12:00-13:00	715	713	---
13:00-14:00	851	844	---
14:00-15:00	836	979	---
15:00-16:00	685	839	---
16:00-17:00	824	940	---
Total	5 731	6 749	45 000

Source: composed by the author

The data on the population was obtained by traversing the area and collecting data using a survey for each residential building. Pedestrian and car traffic was calculated using the hourly monitoring method (the observation hours 09:00-17:00 were specially selected to coincide with the working hours of the bank branch).

Recalculation of reference branch income in terms of FTP

Moreover, it is necessary to recalculate Gara Garaev reference branch income, since FTP (Fund Transferring Price) was not taken into account in banking statistics.

Total income, including FTP (item 1) is an adjustment of interest income and interest expenses of the FTP branch. Since the FTP indicator contains interest income and interest costs (paragraph 4), we deduct

interest income and interest costs (paragraphs 2 and 3) from total income (paragraph 1) and add FTP percentage income indicator (paragraph 4) to it, i.e.: total revenue (including FTP) = total income - (interest income - interest costs) + interest income from FTP.

Table 8 – Income recalculation of Gara Garaev reference branch in terms of FTP, manats

Income	Manats
Total income	5 854 137
Interest income	5 106 555
Interest costs	-869 315
Interest income from FTP	3 829 075
Total income, including FTP	5 445 972

Source: composed by the author

Virtual branches total income calculation

According to necessary information (number of people and pedestrian, car traffic, reference branch income, etc.), we forecast the income of virtual branches. Data on reference branch is average in efficiency. Therefore the forecast calculations will be realistic ones.

The total anticipated revenue of virtual branches (including FTP) is calculated using the DEA's results-based methodology. The number of employees was also introduced into the analysis. Table 9 shows the anticipated revenues of the branches.

Table 9 – Anticipated revenue of virtual branches

Branch	Pedestrian traffic	Car traffic	Population	Number of employees	Real income	Anticipated revenue
Gara Garaev reference branch	11 927	14 951	55 000	22	5 445 972	-
Inshaatchylar branch	10 005	9 418	258 000	14	--	3 430 551
Inshaatchylar virtual branch	10 005	9 418	75 000	10	--	2 475 442
Tibb Texnikumu virtual branch	1 731	6 908	31 000	10	--	790 390
ASAN virtual branch	5 731	6 749	45 000	10	--	2 458 355
Bizim Market virtual branch	5 278	14 935	107 000	10	--	2 409 980

Source: composed by the author

According to the Table, the real income column shows the real income of Gara Garaev reference branch. Calculations were made using the DEA method to forecast the income of virtual branches (column «Anticipated revenue»). In order to present more correct results, the income of physical Inshaatchylar branch was calculated by the same methodology.

Virtual branches profit calculation

To calculate the profit, we subtract costs from income. The amounts of costs for each virtual branch were defined above. The anticipated revenue of the virtual branches were also calculated. We calculate the profit of virtual branches.

Table 10 – Branches profit calculation

Branch	Inshaatchylar	Inshaatchylar virtual branch	ASAN virtual branch	Tibb Texnikumu virtual branch	Bizim Market virtual branch
Total revenue	3 430 551	2 475 442	2 458 355	790 390	2 409 980
Rental costs	403 104	120 000	96 000	36 000	54 000
Employee costs	252 000	210 000	210 000	210 000	210 000
Other costs	982 656	495 000	459 000	369 000	396 000
Total costs	1 637 760	825 000	765 000	615 000	660 000
Income	1 792 791	1 650 442	1 693 355	175 390	1 749 980

Source: composed by the author

To make the calculations more correct, the income of the Inshaatchylar branch and virtual branches were calculated using the DEA method in comparison with the reference branch. We consider the branch operating for many years and has reached its maximum profitability (for instance, Gara Garayev reference branch has been operating for many years) [10].

Efficiency and results

Hence anticipated revenue of the branches were calculated above. However, it is necessary to find the right combination of virtual branches and compare their efficiency with a large branch (a real Inshaatchylar branch).

Combinations of virtual branches

Under combination we mean the combined efficiency of several virtual branches. It can be 2, 3, or 4 virtual branches in different combinations. The comparison of effectiveness with combinations is calculated according to the DEA methodology [11].

In terms of effectiveness:

– virtual branches 1+2 > Inshaatchylar branch. In this case, instead of Inshaatchylar branch it is more profitable to establish 2 small branches;

– virtual branches 1+2+3 > Inshaatchylar branch. In this case, instead of Inshaatchylar branch it is more profitable to establish 3 small branches;

– virtual branches 1+2 +3+4 > Inshaatchylar branch. In this case, instead of Inshaatchylar branch it is more profitable to establish 4 small branches.

The number of combinations is much greater. The combination with the highest efficiency ratio will finally be more successful. Therefore, the establishing of these branches or the retention of the actual Inshaatchylar branch is considered more appropriate one.

Calculation of combinations effectiveness

Table 11 shows the comparative results of calculating of combinations effectiveness of virtual branches and Inshaatchylar branch.

Table 11 – Combinations of virtual branches and Inshaatchylar branch providing their effectiveness

Combination	crste	Income	Employee costs	Rental costs	Other costs
virtual branches Inshaatchylar + Bizim Market +ASAN	0.381	5 093 777	630 000	270 000	1 350 000

Combination	crste	Income	Employee costs	Rental costs	Other costs
virtual branches Inshaatchylar + Bizim Market	0.381	3 400 422	420 000	174 000	891 000
virtual branches Inshaatchylar + ASAN	0.375	3 343 797	420 000	216 000	954 000
Inshaatchylar branch	0.335	1 792 791	252 000	403 104	982 656
virtual branches Inshaatchylar + Bizim Market +ASAN+Tibb Texnikumu	0.295	5 269 166	840 000	306 000	1 719 000
virtual branches Bizim Market +ASAN+Tibb Texnikumu	0.271	3 618 725	630 000	186 000	1 224 000
virtual branches Inshaatchylar + Bizim Market +Tibb Texnikumu	0.267	3 575 811	630 000	210 000	1 260 000
virtual branches Inshaatchylar + ASAN + Tibb Texnikumu	0.263	3 519 186	630 000	252 000	1 323 000
virtual branches Bizim Market +Tibb Texnikumu	0.216	1 925 370	420 000	90 000	765 000
virtual branches ASAN + Tibb Texnikumu	0.21	1 868 745	420 000	132 000	828 000
virtual branches Inshaatchylar + Tibb Texnikumu	0.205	1 825 831	420 000	156 000	864 000

Source: composed by the author

Conclusion

The calculations were performed using the DEA CRS method. In order to provide a more precise overview, the branch combinations were included in the total list of Capital Bank branches [12]. Therefore, the efficiency of all bank branches was calculated. Moreover, each combination acts as a branch.

Table 11 shows only the results of combinations and the Inshaatchylar branch. To compare, the first column shows the ordinal number of this combination/branch in the total list of bank branch efficiency. In the calculations, the costs categories were taken as input data, and the profit as output ones. Thus, the highest score is the most effective one.

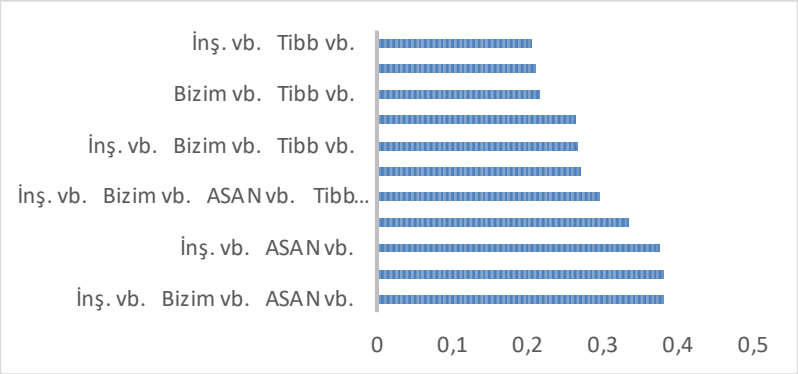

Figure 9. Visualization of results of combinations effectiveness, Inshaatchylar branch (vb means a virtual branch)

Source: composed by the author

Comments on the results:

Ineffective: Inshaatchylar branch +Bizim Market + ASAN +Tibb texnikumu are virtual ones.

Ineffective: Inshaatchylar + ASAN +Tibb Texnikumu virtual branches
Ineffective: Inshaatchylar +Bizim Market +Tibb Texnikumu virtual branches
Ineffective: Inshaatchylar +Bizim Market + ASAN +Tibb Texnikumu virtual branches
Ineffective: Inshaatchylar +Tibb Texnikumu virtual branches
Ineffective: Inshaatchylar + ASAN +Tibb Texnikumu virtual branches
Ineffective: Bizim Market+Tibb Texnikumu virtual branches
Effective: Inshaatchylar + Bizim Market virtual branches
Effective: Inshaatchylar + ASAN virtual branches
The most effective: Inshaatchylar + Bizim Market + ASAN virtual branches

Therefore, two combinations are more effective – Inshaatchylar + ASAN virtual branches and Inshaatchylar + Bizim Market + ASAN virtual branches. Taking into account the higher profit of the combination of Inshaatchylar + Bizim Market + ASAN virtual branches, we consider it the most effective one. According to the study, we can recommend to Capital Bank to replace one large Inshaatchylar branch with three small branches.

The data obtained allow the bank to make decisions on opening and/or relocating its branches. This mathematical and economic methodology can be useful not only in the field of banking, but also in making decisions on the branch network of an economic system.

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CONFLICT OF INTEREST

The author declares no conflict of interest.

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Impact of next-generation Artificial General Intelligence (AGI) on international relations

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ORIGINAL ARTICLE

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Abstract. The new generation of artificial intelligence technologies occurrence represented by ChatGPT is the beginning of the Artificial General Intelligence (AGI) era. In contrast to the impact of weak AI technologies on international relations discussed in the previous era, AGI is no longer just a tool in the traditional sense. The human-computer integration facilitated by AGI technology will rapidly and deeply penetrate into all areas of social policy and economy. It also may change the mode of social production and economic development, influence international relations and geopolitics by transforming the comprehensive state capacity, and simultaneously force new challenges in global governance. The acknowledgement of a new generation of AGI technological qualitative changes' impact on future changes in international relations is no longer the fantasy; the underlying AGI changes in labour productivity will certainly lead to a disruptive reconfiguration of future international relations.

Keywords: ChatGPT; General Artificial Intelligence; digital technology; international relations

JEL codes: O30, O33

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Introduction

Currently, in terms of international politics, the geopolitical crisis effects on the international relations; in terms of the international economy, restructuring of the global value chain and the increase in hidden threats to energy and food security are the issues of the global management. There are great changes in the superstructure of international relations, which have not been seen for a hundred years. Therefore, a new historical technological revolution emerges. It provides the development of new generation of artificial intelligence, represented by ChatGPT. It shows the influence of artificial intelligence (AGI) technology on human socio-political and economical life with unprecedented speed. Moreover, it will certainly affect international relations through a change in productive forces. Certainly, it will play a role in the future profound evolution of international relations through the transformation of production relations by productive forces. At the same time, more important and demanding attention is the issue of the «technological singularity» of AGI, represented by the ChatGPT model; the features of its influence on international relations and geopolitics. Also there is an issue of the extent and paradigm of the new generation of AGI; changing and rebuilding of international relations under AGI influence.

Main Part

I. Characteristics of the next generation of AGI

Indeed, in terms of AI stage of development, the existing achievements in the field of international relations are mainly based on the perspective of weak artificial intelligence, as well as on research and analysis with a starting point of «datalism». However, in order to investigate the disruptions and differences generated by AGI, it is necessary to assess the history of AI development, and the changes caused by the technology self-creation.

1.1. History of next-generation generic artificial intelligence technology development

The 1956 Dartmouth Conference marked the beginning of AI development; it initiated research in the field of AI technology. The 1950s and 70s were the golden age of AI. Those time many disciplines related to

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computer science, physiology, and philosophy integrated into AI. It helped to transform it into an important interdisciplinary field. However, AI reached a low point in the 1970s and 1980s: AI research progressed slowly due to technical constraints and funding cutbacks. Nevertheless, between 1980 and 1987 the second period of AI development began. Indeed, there was a boom caused by significant investments from the Japanese government and the revival of neural network theory. Between 1987 and 1993, AI development was recessed; there were the reduction of investments and programmes. However, since 1997, the development of AI rapidly started/ the main reason was the victory of the Deep Blue computer over the world chess champion. More and more researchers have begun to focus on syntactic analysis and use mathematical tools. In addition, AI plays an important role in any industry. Its breakthroughs in big data, cloud computing, and the Internet of Things influence both theoretical research and practical applications.

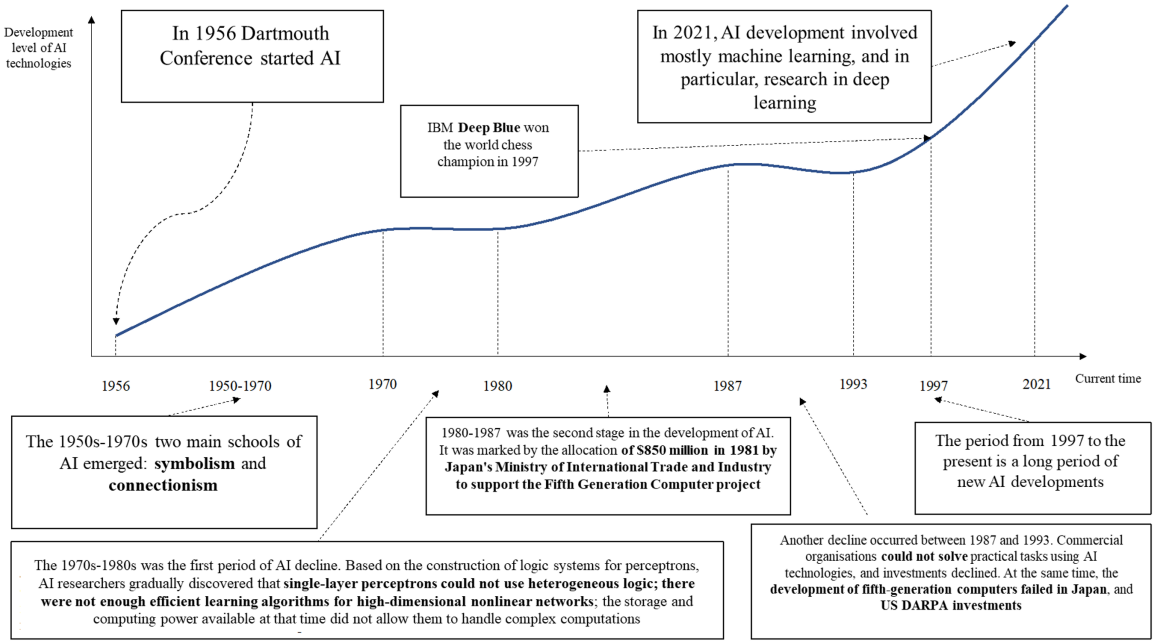

Figure1. The history of new generation AGI technologies development
Source: composed by the author

1.2. Difference of the new generation of general artificial intelligence from the previous one

The formation and restructuring of international relations under the influence of technological development correlate with the history of international relations. This is evidenced by the historical change of the «hegemonic states», corresponding to the historical process of the three previous industrial revolutions. If the iterations of AI technological development listed above are considered as a «technological change of power», then the current AGI represents a qualitative leap in a completely different technological form and a fusion of rapid restructuring of productive forces and production relations. It affects the structure of the international relations.

1. AGI has powerful self-iterative, self-learning, and innovative capabilities. It uses large technological corpus and mass learning, and multimodally influence on all areas of human life.
2. AGI differs from the traditional artificial intelligence model.
3. AGI is distinguished from past AI technologies by its strong autonomy and fast iteration, especially in the field of human-computer interaction. It causes the emergence of self-awareness and feedback within the framework of the AGI paradigm. The emergence of AGI made machines the developers of industrial relations, and not only the modifiers of productive forces.
4. In terms of the existing states, society and individuals use AI quite passively (as a tool of production). By the way, in terms of the existing digital economy, AGI can act as an independent partner in all spheres of life of the state, society and citizens. Moreover, it can establish complicated structures and generate new changes. AGI enhances the managerial capabilities of the state, acts as a new international social actor, spreads

knowledge and information, forms ideologies, creates a new culture, and influences the international balance of power.

5. Under the influence of AGI, the restructuring of labour productivity and production systems can cause the effect of «incremental gain», and comprehensively increase the social productivity. The technological powers of AGI can transfer to the mode of real «machine labour». It allows them to replace human labour in the existing production system, maximize the release and creation of new productive forces, and solve the problems of demography and quality of life. This «technological intergenerational» trend will affect the structure of international power and contribute to the restructuring of international relations.

II. The influence of the new AGI on state restructuring and transformations in international relations

2.1. Qualitative changes in the international political and military potential of the state

The historical process and the existence of the international community have demonstrated the inseparability of the political and military aspects of the activities of State actors at the international level. The history shows that the creation of any technology is either associated with military applications; it can or may eventually be used for military purposes. Technological innovations, in particular AGI, can have a significant impact on the military sphere. For instance, AGI can analyse strategic and tactical data, provide officers with the ability to make accurate decisions, etc. Autonomous drones and automated systems have been developed using AGI to increase operational efficiency and reduce risk to soldiers. Intelligent weapons and missile systems can also be controlled by AGI. It increases the accuracy of strikes, etc. As a result, AGI will cause a qualitative change in the country's military potential based on the «generational difference» between weapons and operational capabilities. It also may create the possibility of a «downward strike» on the military systems of other countries, and might cause the unpredictable deterrence in international politics.

2.2. Strengthening and restructuring the state international financial power

The financial power of a country in the international arena, its financial reserves, payments, and cash capabilities are based on derivative financial instruments and economic basis. Robert Gilpin quoted Kindleberger's theory of hegemonic stability and gave an appropriate explanation of the international political and economic logic of international relations. However, the current rapid expansion of global financial scales and profound changes in the global financial system realized the function of finance as «premium class instrument» in the country's foreign affairs, and in the global financial system. The monetary policy of the Federal Reserve System had an impact on global finances. It is the influence of the market and monetary policy of other countries. Moreover, the current leading countries in the field of digital technologies implemented applications in cross-border payments, supply chain finance, trade finance, inclusive finance, etc. Indeed, differences in technology and regulatory standards established invisible barriers between different payment systems and markets. At the same time, state and non-state actors implement advanced digital payment and settlement systems, and gained more financial stability. Artificial intelligence could develop. And the economic cycle can further strengthen the attribute of the «hegemonic currency» power. This can be seen in the large GPT model currently being developed by Bloomberg. The development and improvement of such large-scale financial models will undoubtedly allow AGI to change the financial sphere.

2.3. Strengthening the international communication of the state

Modern AGI training relies to large models and amounts of data; excellent data and algorithmic capabilities allows it to implement a human-computer communication mode and overcome temporal and spatial restrictions on the transmission of information. Within the framework of the AGI model, the AGI platform can generate targeted speech in large quantities, simulate user speech, and effect on public opinion through the Internet social networks. Moreover, AGI technology can generate fictional events and false information using deep falsification methods, supplemented by a variety of confusing materials. Indeed, the fabrication of political and social information in conditions of technological manipulation can have a direct impact on political sentiment. The spread of unidentified misinformation generated by machines can easily provoke extremism, political skepticism, and discontent. It will negatively affect the stability of public order. Hence, the new generation of AGIs are not able to exert influence in a general political sense. They also

allow countries with powerful AGI technology spread, induce and strengthen their international legitimacy in their own national interests. Thereby, they can obtain a greater ideological result and dominant control. Therefore, when AGI appeared at the level of international communications through the popularized Internet, the power of dissemination and penetration of countries with superior AGI technology clearly increased and intensified. All kinds of information constantly produced by machines flooded cyberspace and effectively blocked artificial information. Thereby, they expand new boundaries of the political and ideological game of the states.

2.4. Strengthening the «technological private rights» of TNCs

Currently, transnational corporations, relying on the global value chain network system in the era of globalization, have gained unprecedented power over the formation of an international political and economic order and structure through the integration of industrial, value and technological chains. The global digitalization causes the emergence of large multinational technology companies. They provide a new logic of capitalist accumulation aimed at extracting data and manipulating behaviour [3]. Currently, data production has become the main basis of capitalist accumulation. Currently, data production, control and algorithms are controlled by technology platforms of multinational corporations. The rapid growth of their asymmetric power is an undeniable fact.

However, since the thresholds of technologies, data, and algorithms required for AI are higher than those required for conventional data production processes, technology platforms are naturally screened out and selected based on their fundamentals and capabilities. Therefore, AGI, like ChatGPT, is not an open source platform and open services; AI is, in fact, the foundation for multinational technology companies creating closed technology platforms, either alone or in alliances. These technological platforms can incorporate their own interests and preferences into their design, feed specific techno-political imaginations, provide strong subjective guidance and formation of ways of sociotechnical development, rules and standards, value judgments, and even complete a set of independent legislative, administrative and judicial bodies, which are a set of closed operating systems of the national efficiency. Therefore, the development of AI will lead to the further formation and strengthening of the «technological private law» of the AGI platform. The implementation and dissemination of such «technological private rights» will create new problems for the management of existing nation-states. It will affect the formation of future international relations.

2.5. New obstacles to trade management in the digital economy

The development of digital technologies, the global regulation of digital trade cause new challenges. Various countries are developing their own digital trade agreements based on their advantages and interests. It causes the fragmentation of the competitive system. Technical barriers and the «siphon effect» of the digital economy ensure the serious differences in interests and principles between countries engaged in close trade, especially in the management of cross-border data flows. Thus, the «controversial multilateralism» in the digital economy will weaken the process of developing rules for global digital trade. It will also cause the further fragmentation of the established international trading system. Despite the USMCA template agreement, the EU GDPR and the DEPA framework agreement already exist, the fragmentation of the global digital trade rule-making process shows the existence of «data problem» based on the national security factor in digital commerce. In addition, the demand for large-scale data and its use by AGI further complicates the problem, providing powerful AI states with additional advantages in terms of high levels of control and use of global data. Thereby, it causes the conflict between digital trade and traditional trade rules, which requires new thinking and strategies.

Conclusion

Breakthroughs in a new generation of large AI model technologies such as AGI indicate the approach of the era of generalized AI. It causes a discussion between technologies and normative documents. The paradoxical resolution of the issue of whether AI will be taken out of human control, in addition to discussing its impact on modern society, it is more important to consider the role of state subjectivity. AI provides additional opportunities for States to form and strengthen their international power. Hence, the widening gap

in the capabilities of states caused by AI will not only change the way established international relations are built, but also in the face of powerful and unprecedented technological forces will require the restructuring and reconfiguration of international relations in accordance with future development.

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CONFLICT OF INTEREST

The author declares no conflict of interest.

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Competitiveness of companies in the design, engineering and construction of nuclear power plants

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ORIGINAL ARTICLE

Abstract. Increasing electricity consumption in the modern world makes the unique nuclear power market. It provides growing secured demand, specific external development factors. However, only four companies involved in the design, engineering, and construction of nuclear power plants (NPPs). The competitiveness of those companies included into M. Porter's theory framework, but has its own characteristics. The purpose of the study is to determine the specifics of companies competitiveness engaged in the design, engineering, and construction of nuclear power plants, and assess the factors and prospects for their development. Besides, we define the theoretical base of international competitiveness with regard to the specific features of this economic sector, characterise the companies operating on the market, and build a model of the competitiveness formation of four representatives under the domestic factors of development. In conclusion, we will present the prospects for ROSATOM development in an internationally competitive environment. The models of competitiveness formation show the positive impact of investments in human capital, ESG agenda implementation, and long-term prospects of R&D projects. The research provides information for developing the theory of competitiveness and improving the company's activities in this economic sector.

Keywords: company competitiveness, international competitiveness of the company, companies in design, engineering and construction of nuclear power plants, nuclear energy, ROSATOM

JEL codes: D47, F63, L25

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Introduction

Globalisation provides increasing of interaction and interdependence between countries. It refers to companies involved in the design, engineering, and construction of NPPs. Moreover, requirements for safety are becoming stricter every year. New production technologies are emerging. Therefore, companies are searching for new international partners to expand their operations. There is a constant increase in electricity consumption. As a result, maintaining market share and international competitiveness is becoming an important companies priority.

Increasing global electricity consumption causes companies to increase power generation and capacity[1]. The IAEA forecasts an increase in energy consumption (electricity is fifth of it) up to 15% in 2021-2030, and 30% in 2021-2050[2]. Nuclear energy accounts for about 10% of the global energy balance.

The largest production of nuclear energy are in the United States (772.22 bn kilowatt-hours, 2022),

[1] *Energy Production and Consumption. Our World in Data. Available at: https://ourworldindata.org/energy-production consumption (Accessed 15.11.2022)*

[2] *Energy, Electricity and Nuclear Power Estimates for the Period up to 2050. International Atomic Energy Agency. Vienna: IAEA in Austria, 2021*

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China (395.35), France (282.09), Russia (209.52), Republic of Korea (167.51), Canada (81.72), Spain (56.15), Japan (51.91). Belarus ranks world 29th in terms of nuclear production – 4.41 bn kilowatt-hours[3]. Meanwhile, the leading countries ranking in terms of the nuclear energy share in the total volume is different (Fig. 1).

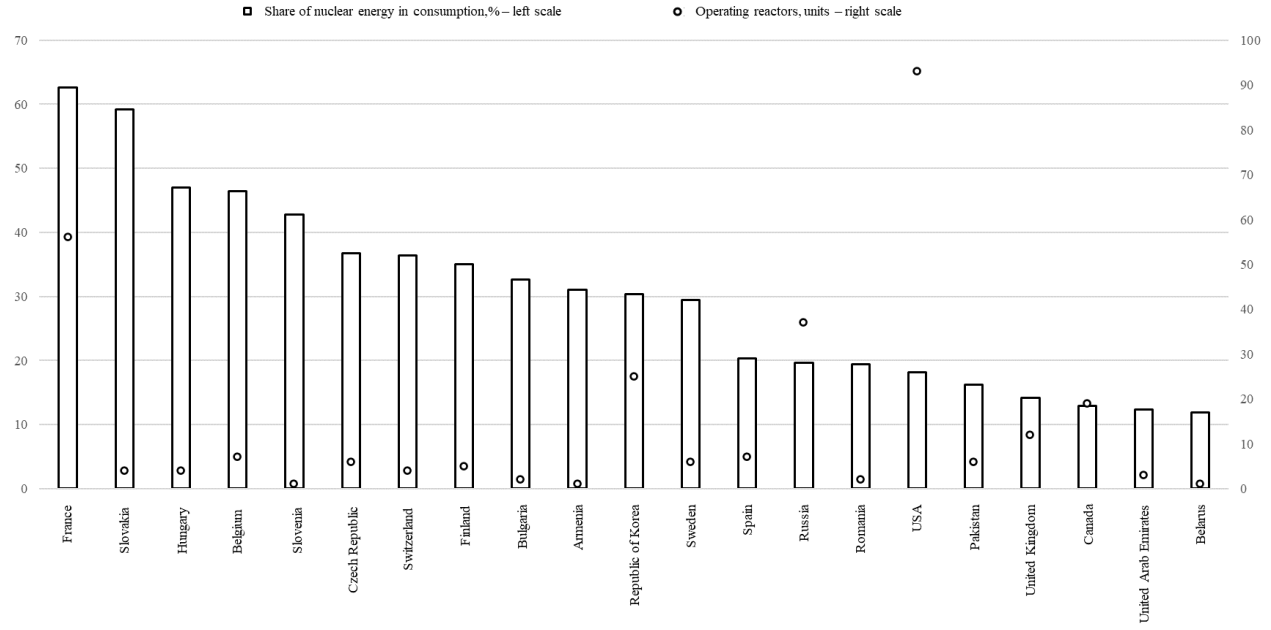

Figure 1. Share of nuclear energy in consumption (%) and number of operating reactors (units) for some world countries, 2022

Source: Nuclear Share of Electricity Generation, 2022

Nuclear power plants (NPPs) are complex technical structures requiring significant financial and human resources for their design, construction, and operation. Geographically, they are located worldwide. Nowadays, there are 192 nuclear power plants with 442 power units in the world[4].

The nuclear power generation market is highly competitive and has its own characteristics. Indeed, NPP design, engineering, and construction companies are actively expanding to new countries and regions, forging the partnerships, etc. To maintain competitiveness, companies are required to possess unique knowledge and technologies, attract high qualified specialists, and follow modern environmental and corporative liability trends.

ROSATOM, Russia is a key player in the Russian nuclear power industry. It incorporates 362 enterprises located in various regions. Moreover, the company has a lot of orders for the construction of nuclear power plants abroad (35 units in 12 countries). Revenue from ROSATOM foreign operations in 2021 was almost $ 9 bn USD; and the volume of foreign orders exceeded $ 140 bn USD[5].

According to the definition of Atomenergomash, nuclear power is a branch of the energy industry engaged in the production of electrical and thermal energy through the use of chain reactions of fission of uranium-235 or plutonium nuclei. Today, nuclear power provides about 15-20% of the global electricity production[6].

However, the main issue is people distrust and apprehension towards this type of energy. It complicates the construction of new NPPs and the development of effective interaction between the nuclear industry and society. Challenges are result of people memory about the consequences of known nuclear power plant

[3] *Nuclear Share of Electricity Generation in 2022. Available at: https://pris.iaea.org/pris/worldstatistics/nuclearshareofelectricityg eneration.aspx (Accessed 23.12.2023)*

[4] *Energy, Electricity and Nuclear Power Estimates for the Period up to 2050. International Atomic Energy Agency. Vienna: IAEA in Austria, 2021*

[5] *State Atomic Energy Corporation Rosatom (ROSATOM). Annual reports, 2009-2021. Available at: https://www.report.rosatom.ru/53 (Accessed 24.11.2022)*

[6] *Nuclear power engineering. Available at: https://aem-group.ru/mediacenter/informatoriy/atom.html (Accessed 16.11.2022)*

accidents. People are afraid of possible accidents and contamination with radioactive waste, which can negatively affect their health, safety, etc. One of the largest disasters of this kind was at the Chernobyl nuclear power plant accident in 1986; its consequences were experienced worldwide. The number of people injured in this disaster is estimated to be around 4,000[7]. The Chernobyl accident was the only one in which there were human deaths from radiation[8]. When discussing safety at nuclear power plants, it is important to note the lowest percentage of fatal accidents recorded at them[9].

For instance, as a result of natural disasters, diesel generators at the Japanese nuclear power plant Fukushima-1 in 2011 were damaged. It causes the shutdown of the cooling system and release of radiation[10], radioactive pollution of the surrounding areas, food, water, and air[11]. Both disasters had a negative impact on people's health. Nowadays, there is a poor public understanding of the safety measures taken at NPPs and the specifics of their operation. It forms a negative attitude towards the construction of new power units.

The second issue is the high cost of electricity generation at nuclear power plants. It is determined by several factors: high safety requirements, location, the cost of construction and subsequent operation of nuclear power plants [12]. According to the OECD, the cost of daily operation of nuclear power plants increased from $ 1.900 to 3.850 USD per kWh between the late 1990s and 2009. In 2020, in various countries these costs ranged from $2.157 to $6.920 USD per kWh. For example, in China it was $2.500 USD per kWh[12].

The company's main challenges in NPP design, engineering, and construction include a number of partner countries, risk management, prevention of emergencies, regular monitoring, and fair assessment of the market competitive position. ROSATOM has only three competitors, they are: Engie, Electricite de France, and Orano (France).

The concept of competitiveness is widely applied in various fields, including economics, marketing, business, international relations, politics, and education. It can capture a development level of a company and identify its advantages and disadvantages.

Competition can be defined as "the economic process of interaction and struggle between firms operating in a market in order to provide the best opportunities to distribute their products to meet different customer needs and maximise profits" [6]. The analysis of many approaches to the definition of competition allows us to identify some common features. Thus, competition is formed at the country level (macro level) [16], industry and regions levels (meso-) [15], enterprises level (micro-) [14], world regions as a group of countries [8], strategic groups [10], and products. All participants activities in a market environment characterized by economic interaction, interconnections, and rivalry between business entities. Competition is a driving force for economic growth, as it encourages enterprises to implement innovative strategies [9]. This process involves compliance with legal norms. Competition occurs between companies producing similar or complementary goods and services. It ensures the competing firms have mutual exposure. In general, competition motivates manufacturers to use and improve their competitive advantages [6].

A competitive advantage is "a set enterprise capabilities ensuring the customers needs have to be satisfied at the highest level compared to the previously existing one" [11].

M. Porter's "Diamond Model" approach determines 4 main factors and 2 additional ones of the international competitiveness.

The first key factor is the strategy of companies, their structure, and competition. A country where

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[7] *The largest accidents in the history of nuclear energy. Available at: https://www.rbc.ru/photoreport/09/02/2017/589c6fda9a79471bb97c44fa (Accessed 20.11.2022).*

[8] *Chernobyl Accident and Its Consequences. Available at: https://www.nei.org/resources/fact-sheets/chernobyl-accident-and-its-consequences (Accessed 20.11.2022)*

[9] *Advantages of nuclear energy. Available at: https://www.rosatom.ru/about-nuclear-industry/preimushchestva-atomnoy-energetiki / (Accessed 22.11.2022)*

[10] *The largest accidents in the history of nuclear energy. Available at: https://www.rbc.ru/photoreport/09/02/2017/589c6fda9a79471bb97c44fa (Accessed 20.11.2022)*

[11] *Environmental impact of the Fukushima accident: Radiological situation in Japan. Available at: https://www.bfs.de/EN/topics/ion/accident-management/emergency/fukushima/environmental-consequences.html (Accessed 22.11.2022)*

[12] *Economics of Nuclear Power // world-nuclear.org URL: https://world-nuclear.org/information-library/economic-aspects/economics-of-nuclear-power.aspx (Accessed 25.11.2022)*

a company is based and the region in which it operates largely determines its development strategies and competitive relationships. Internal competition between companies in the market stimulates their development and increases efficiency. In the nuclear power sector country affiliation is not particularly important, as there are a limited number of companies operating, most of them based in France. In Russia the entire industry is controlled by ROSATOM.

The second group of factors is the conditions themselves, both initial and artificial ones. M. Porter notes their great importance and the role of government in the process. Companies involved in the engineering, design, and construction of nuclear power plants benefit from favourable conditions and government support. It forms prerequisites for a higher level of competitiveness. Such assistance may include the creation of financial mechanisms for investing in large projects, the provision of subsidies and benefits, the governmental orders, accelerated consideration of the licensing process, obtaining permits, etc. This can also include the establishing of a technological and innovative environment for the development of companies, a training system, and guarantees of general security.

The third group of factors includes demand parameters. Demand generates the orders for the provision of services for companies engaged in engineering, design, and construction of nuclear power plants. However, the combined internal and external demand can stimulate companies to innovate and develop new technologies in nuclear energy. Increasing demand strengthens the competitive position of companies, establish additional prospects: they can plan their activities on a long-term basis and invest in the development of new projects. A decrease in demand, on the contrary, provides certain threats to the company competitiveness.

The fourth key factor of competitiveness involves interconnected and supportive industries. Company co-operation can proceed in materials production, technological development, innovation, etc. Interactions between participants in related industries stimulate the exchange of knowledge and experience. It contributes to improving the quality and efficiency of products and services, market expansion, etc. Company co-operation can proceed in materials production, technological development, and innovation. Moreover, the companies involved in the engineering, design, and construction of nuclear power plants in various collaborations allows them to optimize their production processes.

One of the additional factors in the competitiveness formation is the emergence of "unmanageable opportunities" or chances of changing the external environment. For companies in nuclear energy, these may be political, demographic, environmental, legal factors, etc. Certainly, positive changes should be used to increase competitiveness. However, such situations are temporary and provide only visible competitive advantages.

An additional factor in increasing the company competitiveness is the governmental support. Indeed, as in the previous case, this advantage is not permanent one. Moreover, in creating a more favourable environment for the company's activities through protecting them against foreign competition, the government decreases the competitiveness. Companies unable to improve their efficiency, innovate, and survive in the market will lose their market positions. Practically, it often occurs in various industries, including engineering, design, and construction of nuclear power plants.

Consequently, the country global competitiveness as a significant impact on the competitiveness of an individual company, since a company can develop certain competitive advantages affecting its development.

International competitiveness is a phenomenon concerning to several levels of the global market [5]. However, in terms of the market strategy its ultimate goal [3] is achieving of excellent performance by international companies [7] and their subsidiaries [4]. International competitiveness of an enterprise is "a complex organisation's characteristic determined by the level and degree of its competitive advantages use, and have the ability to adapt to the constantly changing conditions of the external and internal environment, while maintaining profitability" [17]. Therefore, factors and conditions of competitiveness development are very interesting ones. There is an issue of organisations international competitiveness in terms of their structural characteristics, strategic elements, tactical implementation, opportunistic behaviour, or a combination of other potential components [2].

According to M. Porter, the importance of each of the competitive forces evolves over time and

represents unique aspects for each industry. These aspects are determined by the specific technical and economic characteristics of each sphere [14]. For example, in the nuclear energy industry entering the market is associated with a number of difficulties. They are: need for significant investments in research, construction, and design of nuclear power plants, negotiations with governments, obtaining appropriate construction permits, etc. Struggling against competitors with years of experience in this field is a major challenge. It is practically impossible to compete with large corporations in tenders for NPP construction. This process requires significant time and financial costs.

The purpose of the study is to determine the specifics of companies competitiveness engaged in the design, engineering, and construction of nuclear power plants, and assess the factors and prospects for their development. Besides, we define the theoretical base of international competitiveness with regard to the specific features of this economic sector, characterise the companies operating on the market, and build a model of the competitiveness formation of four representatives under the domestic factors of development. In conclusion, we will present the prospects for ROSATOM development in an internationally competitive environment.

Methods

Currently, in addition to ROSATOM, three French companies specializing in the design, engineering and construction of nuclear power plants operate on the global nuclear energy market: Électricité de France (EDF), Orano and Engie. They are global ones in nature. Some sources, including ROSATOM annual reports, mention the American company Westinghouse, formerly owned by Toshiba, Japan. Westinghouse has been successfully operating in the global nuclear energy market for a long time, but in 2017 it declared bankruptcy due to problems during the construction of new nuclear power plants in South Carolina and Georgia, USA. The problems were critical delays and construction budget exceeding [1]. After bankruptcy, Westinghouse was acquired by Brookfield Business Partners, Canada[13]. Westinghouse currently provides nuclear power plant maintenance services worldwide and is in the process of being acquired by Cameco and Brookfield Renewables. However, public reporting on its activities and market share is not publicly available, therefore we do not analyse its activity.

Consider each of the companies mentioned:

1. EDF (Électricité de France) is a French company. It was established in 1955. It headquarter is in Paris. In 2021, EDF's revenue amounted to $ 78.7 bn USD; the number of employees was 171 thousand people. According to Forbes (The Global 2000), EDF is one of the world largest public companies, ranking 210th at the end of 2021[14].

2. Orano is a French company. It is a key participant in the nuclear energy sector and operates worldwide. The company was established in 1971 under the name "Areva", but in 2018 it was renamed to "Orano". Its headquarter is in Paris. Orano's revenue in 2021 amounted to 4.7 bn EUR; the number of employees is about 19 thousand people[15].

3. Engie is French company. It was establihed in 2008 as "GDF SUEZ"; renamed to "Engie" in 2015. The headquarters is in Paris[16]. Engie's revenue in 2021 amounted to 57.9 bn EUR; the number of its employees is about 171 thousand people[17]. According to Forbes (The Global 2000), Engie is one the world largest public companies, ranking 171st in 2022[18].

Paying attention to the geographical location of the four companies' activities in design, engineering, and construction of NPPs, all companies operate on the African continent. Indeed, ROSATOM and EDF are the most active in co-operation with African countries. Orano has the least number of partners in African

[13] *The American Westinghouse will be bought for 7.88 billion dollars. Available at: https://strana-rosatom.ru/2022/10/15/amerikanskuju-westinghouse-kupyat-za-788-mlrd-dolla / (Accessed 28.03.2023)*
[14] *Électricité de France (EDF). Available at: https://www.forbes.com/companies/edf/?sh=3020b65a653c (Accessed 02.04.2023)*
[15] *ORANO, 2012-2021. Annual results. Available at: https://cdn.orano.group/orano/docs/default-source/orano-doc/actualites-groupe/2021/cp-finance-21/orano_2020_annual-result_presentation_vdef.pdf?sfvrsn=57e8d5c8_4 (Accessed 26.12.2022)*
[16] *The History of the ENGIE Group. Available at: https://www.engie.com/en/group/history-engie-group (Accessed 07.04.2023)*
[17] *Financial results. Available at: https://www.engie.com/en/financial-results (Accessed 26.12.2022)*
[18] *ENGIE. Available at: https://www.forbes.com/companies/engie/?sh=ee1b79428f2b (Accessed 07.04.2023)*

countries. Only three of four companies are active in Australia; ROSATOM is the exception. ROSATOM was active in Australia but after the sanctions imposed against Russia in 2014 this particular activity failed. Currently, Australia is most actively cooperating with Orano, France. EDF, France and Engie, France also operate here [13]. In Europe and Asia the activity of companies is maximum one. All companies operate in this region. ROSATOM is more East-oriented than the other three companies. The Corporation actively cooperates with Asian countries and builds several nuclear power plants in Asia. It indicates its great interest in this region. For example, in China ROSATOM builds two nuclear power plants[19]. French companies are highly active in Europe. They operate in many European countries.

Some European countries have abandoned or are in the process of abandoning nuclear energy. However, ROSATOM continues to successfully cooperate with those are mutually beneficial. For example, "a joint project was launched to research the long-term storage and processing of highly active radioactive waste" together with Germany[20].

Engie, EDF and Orano cooperate with the USA and Canada in North America. ROSATOM, operates in Mexico. The cooperation in South America is very different. Orano is less active, while other companies are active ones. In Cuba and the Dominican Republic, ROSATOM is the only operator. EDF and Engie have an equal number of partner countries in South America. However, companies on this continent is relatively evenly distributed.

Each of the companies has a significant number of partner countries for cooperation. Only a few countries are present in the list of four companies. Basically, they cooperate with different countries and strive to find new markets. ROSATOM has the highest number of partner countries (about 70); EDF and Engie have 50 foreign partners each; Orano has the lowest (23) one.

Results

The success of companies in this economy segment depends on many factors, including internal ones. To conduct an economic analysis of their impact on the company competitiveness, we build an econometric model. Revenue indicator is the criterion of competitiveness; it is a dependent variable. Consider these indicators in Table 1.

Table 1 – Characteristics of econometric analysis indicators for the companies' competitiveness formation

Variable	Designation	Explanation	Role in models
Company revenue	Revenue	Companies revenue, 2012-2021	Dependent
Company costs on personnel	Personnel	Company costs on personnel, 2012-2021.	Independent
Company costs on environmental protection	Env_costs	Company costs on environmental protection, 2012-2021	Independent
Company costs on R&D	RD_costs	Company costs on R&D, 2012-2021	Independent
Company costs on taxes	Taxes	Company costs on taxes, 2012-2021	Independent
Company cash flow	Cash_flow	Company cash flow, 2012-2021	Independent

Source: composed by the authors

[19] *State Atomic Energy Corporation Rosatom (ROSATOM). Annual reports, 2009-2021. Available at: https://www.report.rosatom.ru/53 (Accessed 24.11.2022)*

[20] *State Atomic Energy Corporation Rosatom (ROSATOM). Annual reports, 2009-2021. Available at: https://www.report.rosatom.ru/53 (Accessed 24.11.2022)*

The function of company income dependence on the selected indicators is as follows:

Revenue = F (Pers_costs, Env_costs, RD_costs, Taxes, Cash_flow).

Descriptive statistics of the given variables are shown in Table 2.

Table 2 – Descriptive statistics of the given variables

	Average	Median	Minimum	Maximum	Standard deviation	Variation
Revenue	39.525	3.6210	3.623	87.117	30.995	0.7842
Costs on personnel	7.120	6296.2	500	14.494	4824.7	0.67763
Costs on environmental protection	685.17	462.5	54.93	5.872	932.01	1.3603
Costs on R&D	346.52	363.07	87	661.51	193.66	0.55887
Costs on taxes	1251.7	952.5	3	3.023	939.51	0.75058
Cash flow	26681.4	2429.5	209	7.262	1851.2	0.69038

	Asymmetry	Excess	5% percentile	95% percentile	The inter-quarter scope	Missed observations
Revenue	0.072656	-1.8094	3689.2	81.861	59.868	0
Costs on personnel	0.058492	-1.6024	1.100	13.949	9858.8	0
Costs on environmental protection	4.4554	22.315	57.172	1569.2	636.42	0
Costs on R&D	-0.0089369	-1.6768	90.35	604.76	376.11	0
Costs on taxes	0.33403	-1.2496	30.3	2862.8	1708	0
Cash flow	0.37251	-0.84456	337.3	5.702	3278.2	0

Source: received by the authors in the gretl programme

The analysis shows that the average income is 39,525. Over the last ten years, ROSATOM, and Orano have never been above average indicators, while Engie and EDF (France) have always remained above average ones. Regarding the independent variables related to investment in R&D, personnel development and environmental protection, the highest average investment is in personnel, i.e. financial investment in employee remuneration. The standard deviation for the variable "personnel costs" is also the highest. It highlights the wide variation in the values of the indicator between companies.

Construct a linear and two logarithmic models (Table 3).

Table 3 – Modelling of company performance indicators

Indicator	Model 1	Indicator	Model 2	Model 3
Dependent variable	Revenue	Dependent variable	l_Revenue	l_Revenue
const	-793.346 (3178.26)	const	1.22776* (0.681021)	0,872228* (0,495173)
Personnel	6.28451*** (0.36049)	l_Personnel	0.910339*** (0.100313)	0.922989*** (0.105584)
Env_costs	0.0225801 (1.75935)	l_ Env_costs	0.334588*** (0.101172)	0.224418** (0.0961240)
RD_costs	-18.6893* (10.1287)	l_RD_costs	–0.151848 (0.104117)	–

Indicator	Model 1	Indicator	Model 2	Model 3
Taxes	-1.72111 (2.38026)	l_Taxes	−0.0699566 (0.0558977)	–
Cash_flow	1.56154 (0.936054)	l_Cash_flow	0.0537965 (0.0655249)	–
R^2	0.939954	R^2	0.939981	0.926713
Constant error	8134.43	Constant error	0.299891	0.317665
Number of observations	40	Number of observations	40	40

*** – the level of significance 1%; ** – 5%; * – 0%. The constant error is indicated in parentheses.

Source: obtained by the authors using the gretl programme

By comparing the three models, we can identify the factors affecting the income of ROSATOM (Russia), EDF, Engie, and Orano (France) companies.

The first model is linear and reflects a linear relation. The second and third models are based on logarithms. The analysis shows the greatest impact of personnel costs on companies revenue. This factor is significant at 1% level for all three models. According to the second and third models, an increase in personnel costs by 1% will increase company revenue by 0.91-0.92%. This is because of the employees potential is the company key indicator. Therefore, companies make efforts to attract qualified specialists and motivate their employees through salary increases, bonuses, and pension payments. For instance, ROSATOM wages are indexed annually to the inflation rate. Therefore, employees do not decrease their living standards. In addition, all analyzed companies provide pension payments to retired employees and bonuses for their employees[21].

Moreover, some factors have a negative impact on revenue, for example, R&D cost. R&D investments do not always ensure profits immediately, but they are necessary to provide the long-term competitiveness of companies. ROSATOM actively invests in R&D and cooperates with leading universities. This regarded in the innovative development program until 2030 and partnerships with technical universities. ROSATOM partner universities are as follows: National Research Nuclear University MEPhI, Moscow, Russia; Moscow Institute of Physics and Technology (National Research University), Moscow, Russia; Bauman Moscow State Technical University, Moscow, Russia; Lobachevsky University, Nizhniy Novgorod, Russia.

Hence, a comparative analysis of the models allows us to identify the key factors forming the companies revenue. This also serves to better understanding the strategies are used to manage the profits and investments[22].

Since the coefficient of determination R^2 is almost the same in all three models and close to 0.93, the selected factors explain the change in the dependent variable quite accurately. Thus, all three models are relevant ones. Meanwhile, the constant error is lower in the logarithmic models. It is indicating more accurate results of models 2 and 3.

The analysis of models 2 and 3 shows positive effects of companies' environmental protection costs on their revenue. However, the nuclear power is considered as one of the most environmentally friendly ways to generate electricity. Therefore, companies actively concern with reducing emissions and protecting the environment. Environmental costs significantly affect the revenue of companies involved in the design, engineering, and construction of nuclear power plants. These plants are often located in places remote from cities. It provides favorable environmental conditions necessary for efficient operation. For example, it is necessary to prevent the negative impact of extreme natural and weather conditions, i.e., forest fires or severe frosts. This can damage the companies operation. Environmental pollution will cause and develop such conditions, and therefore companies are actively investing in environmental projects.

ROSATOM development prospects in an internationally competitive environment

[21] *State Atomic Energy Corporation Rosatom (ROSATOM). Annual reports, 2009-2021. Available at: https://www.report.rosatom.ru/53 (Accessed 24.11.2022)*

[22] *State Atomic Energy Corporation Rosatom (ROSATOM). Annual reports, 2009-2021. Available at: https://www.report.rosatom.ru/53 (Accessed 24.11.2022)*

In a competitive market for the design, engineering and construction of nuclear power plants, ROSATOM should take a complex of actions to maintain and strengthen its market position. These actions are being taken by ROSATOM to increase competitiveness. Therefore, the company can use a variety of strategies aimed at various aspects of its activities.

To determine the sources of an enterprise's competitiveness, one should refer to the Michael Porter model. According to his opinion, these are strategic positioning and operational efficiency [14]. To assess ROSATOM operational efficiency, the following indicators are considered: the asset turnover ratio, labour productivity, income, the quality of products and services provided, customers feedback, business expansion, etc.

Hence, some ROSATOM indicators are the highest ones among competitors: the turnover ratio of assets, intangible assets; others are at a lower level: the labor productivity coefficient. This allows us to identify areas have to be improved by the corporation.

The following indicators to be used to evaluate the corporation efficiency: return on sales by net profit (ROS), return on assets by net profit (ROA), and return on equity by net profit (ROE). They are shown in Table 4.

Table 4 – The coefficients of return on sales by net profit (ROS), return on assets by net profit (ROA), return on equity by net profit (ROE), ROSATOM, 2012-2021

Index, ROSATOM	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
ROS, %	6.7	6.6	4.75	17.16	8.53	10.81	20.05	11.55	13.00	13.39
ROA, %	1.4	1.3	1.11	4.46	2.24	3.04	5.46	3.10	3.32	3.71
ROE, %	2.1	1.8	1.71	6.94	3.49	4.59	8.35	5.10	5.58	6.34

Source: annual reports of ROSATOM State Corporation, 2012-2021

Over the past 10 years, each of these indicators has stable growth. Although there have been some fluctuations, the overall growth trend over this ten-year period is clearly noticeable. For example, there was an increase in the ROS indicator by almost half; the ROA and ROE indicators increased by 2.65 and 3 times, respectively. This indicates the company high efficiency of in providing services in the market and using its capital to generate profits.

ROSATOM has its activities in many countries. For instance, the construction of 12 nuclear power plants, and the successful receipt of tenders for the construction of new power units are clear show the high degree of customer satisfaction to the Corporation. ROSATOM cooperates with those partner countries where no NPPs are being built. Indeed, the company cooperates with them in supplying nuclear fuel, uranium products, developing joint ventures, peaceful use of nuclear energy, etc.

The business expansion is confirmed by the world's largest portfolio of foreign orders for NPP construction, exceeding those of major competitors. In 2021, this portfolio amounted to $139.9 bn USD, compared with $66.5 bn USD in 2012.

ROSATOM is the only company in Russia operating in the field of nuclear energy. The level of support for nuclear energy in the Russian Federation increased from 66% in 2012 to 77.4% in 2021. This shows large public support. All above indicates an increase in approval and confidence in the success of ROSATOM operation[23].

Regarding strategic positioning, Michael Porter defines it as "performing activities that differ from competitors or are provided in a different way" [14]. In nuclear energy, it is quite difficult for companies to act completely differently from competitors. There are common safety and operation standards for the construction and design of nuclear power plants, as well as various requirements for their further maintenance. Failure to meet these standards may have catastrophic consequences.

However, ROSATOM has an undeniable competitive advantage. It is the only company providing a full cycle of its projects for the design, engineering, and construction of nuclear power plants from development

[23] *State Atomic Energy Corporation Rosatom (ROSATOM). Annual reports, 2009-2021. Available at: https://www.report.rosatom.ru/53 (Accessed: 24.11.2022)*

to subsequent maintenance at all operation stages. Some of the services provided by ROSATOM are unique ones.

In addition, ROSATOM produces commodities unrelated to nuclear power. The revenue from its sale in 2021 amounted to 1.9774.1 bn RUB[24]. This is certainly a competitive advantage, as the Company's activities are diverse and not limited to only one field.

ROSATOM is improving labour productivity. This affected a reduction in the employee turnover rate from 14.2% in 2012 to 10% in 2021[25]. Indeed, the number of employees quitting ROSATOM, Russia for various reasons is being reduced.

Salaries at ROSATOM correspond to the best companies in Russia and depend on the employee's performance. In 2021, the average salary in ROSATOM was RUB 96.2 thousand per month. One of the ways to increase productivity is the availability of corporate social programmes, such as insurance, providing employees with vouchers to health resorts and sanatoriums, and improving housing conditions. For these purposes in 2021 were allocated 11.5 bn RUB[26]. ROSATOM also regularly trains its employees: in 2021, the average number of training hours per employee was 42 hours. The 56% employees have higher education[27].

ROSATOM actively cooperates with universities and schools, organises career events for students, and allocates target places in various educational institutions. In 2021 was established a branch of Lomonosov Moscow State University, Sarov, Russia. It will enroll and train specialists in physics and mathematics for ROSATOM.

These measures contribute to the development of ROSATOM as a reliable employer and attract young specialists. The company has repeatedly been ranked as the Forbes "Best Employer". Moreover, the active development of ESG policy in the company contributes to its international competitiveness. ROSATOM aims to reduce emissions of harmful emissions and actively develop closed production cycle technologies. This is consistent with the environmental aspect. The social aspect includes concern for employees and consists of insurance, better working conditions, training, and improved living standards.

The management aspect is evident in the availability of reliable information about the company's activities, the control of corruption and the establishment of an general regulatory system. ROSATOM complies with all necessary requirements by publishing comprehensive annual reports on its website, including coverage of all important aspects of its activities, financial indicators and specific data like number of industrial accidents. Furthermore, the company conducts external audits to assess the quality of internal regulation.

ROSATOM devotes significant attention to the implementation of the ESG agenda. This allows it to be equal to its competitors. The analysis of the company's activities and modeling of competitiveness factors define personnel costs as a key factor. Measures aimed at increasing labour productivity, such as corporate social programmes, are also included in this category.

Environmental protection costs are an important factor. ROSATOM reduces harmful emissions and efficiently uses the resources. The company develops environmental protection strategies every three years. A significant part of environmental protection costs is aimed at ensuring radiation safety and wastewater treatment. ROSATOM actively invests in environmental protection activities of the Russian Federation. This is confirmed by the data on these investments share in the total investments volume.

Conclusion

After considering the characteristics of companies engaged in the design, engineering, and construction of nuclear power plants, we have determined this business has relatively high demand and a relatively low number of competitors in the market. However, conditions for their successful activity are traditional ones.

[24] State Atomic Energy Corporation Rosatom (ROSATOM). Annual reports, 2009-2021. Available at: https://www.report.rosatom.ru/53 (Accessed: 24.11.2022)

[25] State Atomic Energy Corporation Rosatom (ROSATOM). Annual reports, 2009-2021. Available at: https://www.report.rosatom.ru/53 (Accessed: 24.11.2022)

[26] State Atomic Energy Corporation Rosatom (ROSATOM). Annual reports, 2009-2021. Available at: https://www.report.rosatom.ru/53 (Accessed: 24.11.2022)

[27] State Atomic Energy Corporation Rosatom (ROSATOM). Annual reports, 2009-2021. Available at: https://www.report.rosatom.ru/53 (Accessed: 24.11.2022)

Firstly, these are investments into labour resources. The implementation of the ESG agenda has a positive impact due to the high degree of dependence on the natural and climatic environment. Conducting R&D is very expensive, and investments do not return immediately and quickly. Taxes have a negative impact on a company's competitiveness. This provides the prerequisites for state support of this economic sector. The study of new trends in nuclear power company operation will allow one's to correct the assumptions of international competitiveness theory.

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The authors declare no conflict of interest.

AUTHORS' CONTRIBUTION

Svetlana N. Rastvortseva – conceptualization, project administration, writing – original draft.
Anna A. Tikhonova – data curation, investigation.

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On the case study of sustainability of scientific thinking: a book review «Dialogues»

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BOOK REVIEW

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The «Dialogues» [1] is very unusual in the form of content presentation among books on economic issues.

Firstly, the form of content presentation is very interesting. The «Dialogues» includes four parts. The authors have a kind of prophetic style of discussing.

The authors see tomorrow as having already come. This author's approach allows them to make the content complicated as a focus of methodological scientific knowledge.

The essence of the dialogues is the discussion of scenarios for the further civilization development, and the role of Russia in the future world. Indeed, the book «Dialogues» allows us to have precious knowledge about the ideal being, the desire to compare this ideal being with the Russian reality.

The genre of «Dialogues» is a phenomenon of scientific thought. It forms unique Russian philosophy – the philosophy of revelation. This philosophy is a link in the mechanism of formation of the noosphere; the basis of noospherism theory. «Dialogues» is an attempt of two scientists to find the words possible to show the role of social sciences in formation of strategic decision maker consciousness.

The authors try to solve the problem above. At the same time, «Dialogues» is a conversation between people achieved public recognition: both are Honored Scientists of the Russian Federation; both are members of many Russian and foreign scientific public academies; both were honoured with honorary degrees. For instance, A.I. Subetto is a laureate of the Government Prize in Education; V.V. Chekmarev is a winner of the Golden Names of the Higher School of Russia.

These authors analyze long-term socio-economic trends. According to S. Glazyev, the new world economic structure will be based on technical and economic centers. A country aspiring to become one of the central powers needs new relocators. Hence, A.I. Subetto formulates many laws; he is Pavel Florensky ideas follower, and believed that «the Russian concept of the word «law» is not legal and is almost equivalent to Plato's «idea». The law is not a norm of behaviour, but a norm of being itself. Therefore, a crime is a crime – exit beyond «the limits of the norm of human existence, which is essentially inherent in it» [1]. At the same time, traditional laws prescribed the help of one's, and the reliability of the word, thereby creating the possibility of informal but sustainable business practices.

The «Dialogues» is a story with a sequel. This is a book containing thoughts from different years on different objects of discussion.

In their opinion, dialogue is better than a monologue expresses the content of investigation. A.I. Subetto's genesis of capitalocracy is a scientific discovery.

The authors were not afraid to show the readers their views and concepts of different years.

The search for ways to overcome the unipolar mainstream in assessing the phenomena and processes of the beginning of the XXI century in the philosophical and economic scientific support of the noospheric model of society development was the source of dialogues by the authors; it was implemented over more than twenty years of joint creative collaboration of the philosopher-economist A.I. Subetto and the political

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economist V.V. Chekmarev. Dialogues published at different times on the pages of various journals are a kind of community consisting of two doctors of sciences. They consider the necrosphere (the total set of artificially created things), and the noosphere (the future environment of human existence).

The book is a monograph of the dialectical method use in understanding the fundamental problems of the society development. The authors contradictory reconsider the dialectic of productive forces and industrial relations, major principles of scientific research, development of their theoretical and practical aspects, the product form appropriation, and the conditions of its implementation.

Indeed, interviewees respect each other, and transcend their worldview through a three-dimensional image of political and economic reality.

The book is recommended for people who are striving to self-actualisation, self-development under the motto «New Time – New Man – New Opportunities in the Noospheric Future», as well as trying to get an answer to the question of which economic model should be chosen instead of capitalism in the future.

Today, the main threat to capitalism is desynchronisation of the main factors of production. The format of the «labour» factor exceeded the format of the «land» factor, levelled the «capital» factor in its usual meaning and became a hidden threat to the preservation of economic reality. Capitalism changed its essence and began to expand the factors of production and resources in all available ways.

According to «Dialogues» authors, the main threat to the further development of capitalism is the factor of «labour», i.e. an excess of human resources. In order to preserve itself in the new format, capitalism will reduce the population (and is already reducing it), and the main goal of neo-capitalism is to try to prolong its life by destroying and emerging Russia.

Therefore, the dilemma arises: to survive, capitalism must emerge resources of Russia; Russia, in order to survive, must reconsider all the relations with capitalism. Moreover, people engaged in the production of all material goods want to reconsider capitalism paradigm in favour of Russia. Otherwise, Russian oligarchs and entrepreneurs are against of it. Many economists should wonder why the Central Bank of the Russian Federation is artificially weakening the national currency. However, the Central Bank of the Russian Federation is ruining the country's economy, because it is beneficial to oligarchs and commodity producers, since a strong rouble reduces their incomes.

There is an issue of management of economics in Russia and in the world in a whole.

It is a kind of challenge, especially for the classical economists. Indeed, they do not want to see that the former economy simply does not exist, and discuss the secondary issues, for instance, the economy efficiency. All the basic economic laws collapsed: they were not laws anymore, but rules for the redistribution of property formed by government structures. However, economists of various levels do not want to admit this issue.

To understand its nature, it is necessary to understand and recognize the economic agents of different levels are the members of the global economic community.

Economic agents are divided strictly by consumption levels. At the first level is the population of the global economy, involved in consumption only (elderly, children, etc.). These are passive economic agents, since they are consumers of the manufactured product. Other economic agents are divided into levels according to their role: producers of goods, distributors, – managers, financial agents, etc.

Therefore, we can observe a somewhat strange economic pyramid, at the top of which there are financial agents.

Nowadays, most people understand that the industrialisation of productive forces and industrial relations is taking place. However, they do not want to realise the future displacement of human with high technologies. Currently, Artificial Intelligence presents in all economic relations.

The authors of the book show the economic formation change has been launched long ago, but everyone understands it in his own way, or rather according to his place and the role in it. Naturonomists consider situation in terms of human nature, economists in terms of consumption. Economics and natural economics are interrelated categories; equal parts of a single in terms of society development. However, nowadays, the economy is overconsumed. It disturbed the equilibrium, caused social deformations and social disorder.

The reasons for this phenomenon and mechanisms of these deformations are clear to both economists

and naturonomists. The authors claim naturonomists are disengaged from the establishing of the world community and politics. Hence, economists form their consumer community – capitalism, which has begun to destroy.

As a reviewer, I think this extremely relevant and formidable for many people. Nevertheless, at the very beginning of the capitalism formation, Karl Marx considered it a comfortable formation for the economic elite, a stalemate for the world community, conducting to global catastrophe as a whole. Analysing the issue, he concluded that disaster can be avoided only by achieving a higher stage of world community consciousness development – or communism (from the word «commune»). There is an interesting detail: K. Marx first considered the transition from a capitalist formation to a communist one, and as it developed, to a socialist one. Many economists have forgotten about this, or perhaps they never knew it. Moreover, the transition should be provided on a global scale – simultaneously and promptly in all developed countries.

According to «Dialogues», I believe that the rapid collapse of capitalism was delayed by Soviet Russia (USSR), which was trying to change the economic formation in one country. Indeed, the Soviet Union became a donor to dying capitalism and extended its life. Nevertheless, the prediction of K. Marx has retained its power and is being performed in a new technological format. The renewed capitalism provides the unlimited consumption of elite economic agents, and might turn the world economy into the global war.

All these events are real ones, and involve all members of the world community. Today, all members of the global economic community are involved in the development of this drama, often without even realizing it. According to the authors, to delay the final collapse for some time, there is a re-branding of capitalism. For instance, it is launching pandemics and wars, issuing appropriate instructions to economic agents of the government for a pandemic, for sanctions, for a «non-terrible» nuclear war, etc.

However, the earlier humanity (or at least experts) will realize this and understand that the process of optimizing the population has already been launched; more chances there are to escape from the crisis.

It is necessary to support the authors' ideas on changing the economic formation to socialism. Currently, it is necessary to break out of total dependence on this new capitalism. Moreover, there should be new elegant transitional form of social capitalism. It is necessary to think on it, but not to waste time. Capitalism has already launched a labour resources reduction. A.I. Subetto is the designer of the future.

We consider «Dialogues» as a new form of communication: the rhetorical one. This work includes their pre-literary publications establishing links between economics, philosophy, history, psychology, and ancient myths.

Moreover, there is an issue of interrelation of noosphere and bureaucracy and authorities.

We do not assess the negative period of civilization in the beginning-middle of the XXI century. Indeed, we note the distortion of economic time for the implementation of economic activity. We agree with V.V. Chekmarev characterising the above-mentioned distortion as «the curvature of economic time». The example of the economic time curvature from the XXI century economic relations practice could be economic sanctions.

Professor V.V. Chekmarev is a noosphericist, too. But his final thesis concerns with the inability of human relations to be provided outside the common economic space. The economic space is in connection with the limits of economic growth (resources) and development.

A.I. Subetto discusses ecological and economic challenges; V.V. Chekmarev discusses programmatic issues of geopolitics; they both consider contradictions of physical, human, and financial capital.

Therefore, «Dialogues» is a brilliant intellectual work. At the same time, understanding the dialogue between A.I. Subetto and V.V. Chekmarev is an essential work. The essence of their work is the desire to affirm the primary veracity abolishing all differences between man and cosmos, nature and God, science and religion, cultures, nations and civilizations. The authors are apologists for extracultural, synthesizing mind. For them, culture is like a fragment of the (mysterious) integrity representing a private limited manifestation of this particular integrity. Perhaps, in is the path to the universal, outlined earlier by other Russian philosophers.

However, A.I. Subetto's dialogues allow ones' to assert prevailing of messianism over the academic. His attention is focused on external effects.

Some of V.V. Chekmarev's judgments should be called «symphojaz», since they concern the energy of noospherism discovery. The idea of noospherism concerns with other ideas of socio-economic interpretation of the present humanity as a single planetary organism outside its division into races, confessions, etc. Noospherism is presented as part of the historical process of relations development in terms of Nature and Society.

The example of antinoospheric practice is the presence of huge benefits to capital exploiting the subsurface resources not to science and education development. For instance, in 2024 the fuel damper from the budget in favour of oil refinery production is almost equal to the total federal budget expenditures on education, health care, and financial support to the regions.

It is believed that fuel sales within Russia should be subsidized up to the world level (or USA oil prices). As for domestic oil and petroleum prices, it is advisable not to increase them. Indeed, it is profitable only for car owners in the Moscow agglomeration, where 62% of gasoline is sold.

The range of perceptions of noospherism extends from the mystique of capitalism's demise to the area of political conspiracy in the form of socialist noonomics. Hence, Subetto's ideas followers consider him a prophet of a philosopher who exploits the miraculous emergence of an extra-capitalist world economic order based on the ideas of noospherism without presenting mechanisms for its occurrence.

However, A.I. Subetto and V.V. Chekmarev have different manner to discuss controversial issues. A.I. Subetto uses the complicated and sophisticated scientific speech patterns. Indeed, V.V. Chekmarev expresses his opinion straightforwardly and simplistically. Therefore, they complement each other in some respects. They represent a combination of knowledge and reasoning.

The people clearly realize that they need a peaceful life, an increase in income levels, social justice, access to education, high-quality medical care, housing for young families, the authorities support, etc. Hence, people need the harmony of national existence. The book under review answers these questions.

The book states a question of human awareness on the basic laws of existence of the Universe, affecting on the main social laws, etc. The answer is obvious. However, to be limited only by knowledge of the laws of philosophy and religious canons is not enough for the harmony of modern human life. It is necessary to know social, economic, and psychological laws, world culture, religion, democracy, etc.

A.I. Subetto and V.V. Chekmarev are scientists who do not write according to the rules, but those who make these rules.

Afterword

«Dialogues» are for improving people understanding of reality. Moreover, dialogue itself is very interesting form of providing the knowledge. Therefore, musical subheadings-rhythms of «Dialogues» are designed as travelogues. «Dialogues» is the tool for spreading with extraordinary views and sincere feelings. The book includes dialogues of different years, on different topics and published in various journals and books. There are some reasons for it.

Firstly, it issued in honour of A.I. Subetto and V.V. Chekmarev jubilees.

Secondly, dialogues serve for better understanding of their self-actualisation in terms of science and knowledge.

Thirdly is the modernization of the country in a hybrid war. Our country has not only external, but also internal hostiles. The existing economic management are strongly influenced with pro-Western systemic liberal elements. They can only preserve the colonial-dependent type of economy of the Russian Federation. Nevertheless, the principle of buying only is hostile to the national industrialization. It can sabotage the Russian Federation economy.

Fourthly, some of the economists still haven't made up their minds on the issues of theoretical comprehension of reality and the development of a socialist-oriented approach to the organisation of the national economy, a resolute fight against corruption, etc. Moreover, they forgot the wartime experience on the restoration of the weak economy. Indeed, «Dialogues» suggest a lot of decisions. For instance, it could be studied in the educational sphere. We believe, the educational sphere is the most prominent and relevant in

terms of future prospects.

The book contains the dialogues for twenty years. And they are still actual ones.

We suggest they are worth to read the book. Hence, you can follow the changes of the world. Read the «Dialogues» and you will consider the words as the symbols of thoughts. Finally, I expect the authors are geniuses.

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