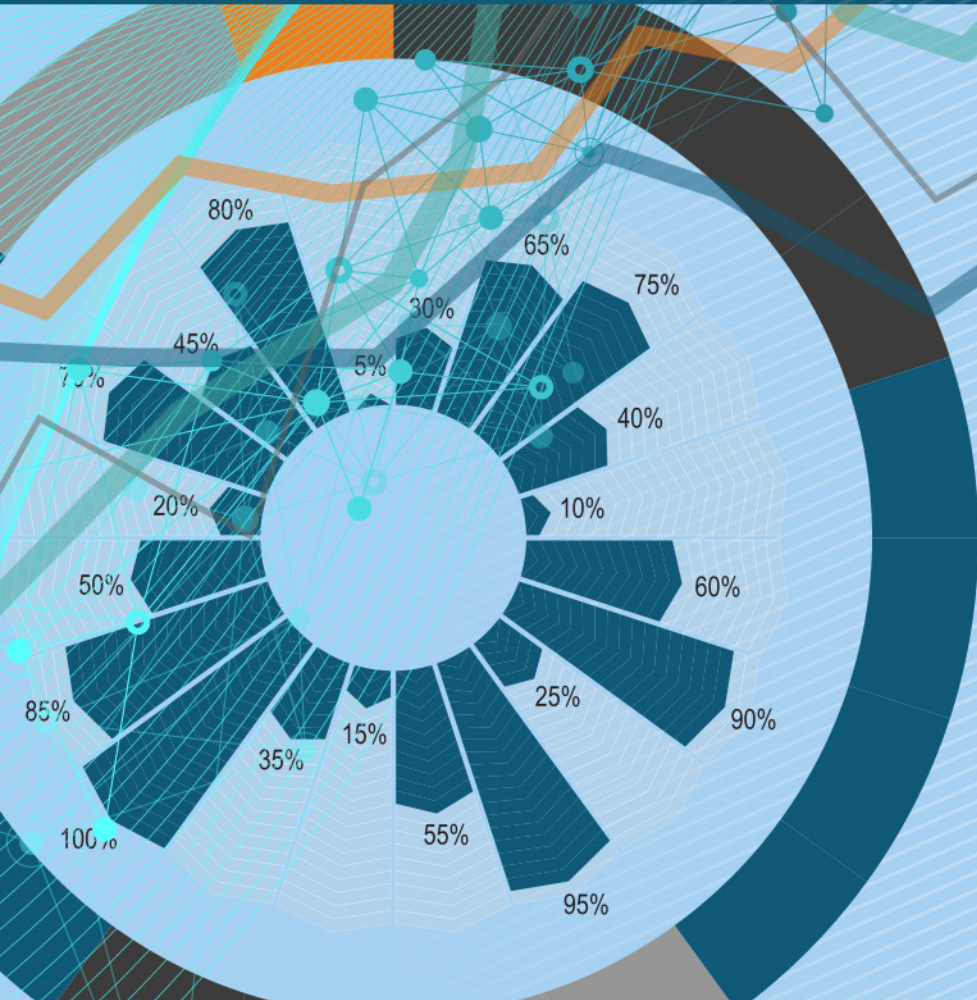


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# Competition versus money: the digital rouble and Gresham's law

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**Abstract.** The purpose of this study is to analyse the methodological aspect of the relationship between the fundamental economic categories of «competition» and «money» throughout the twentieth century. The author polemises with the position of Alfred Marshall and Friedrich von Hayek on Gresham's law as a specific form of monetary competition. The main results of the study include the positioning of the Russian Central Bank's digital rouble as a digital form of the state treasury bill, which allows, in the author's opinion, to correctly describe the specifics of competition in the field of digital currency. The digital rouble or digital treasury note is the highest but digital form of fiduciary money issued by the state, represented by the Central Bank. The digital rouble is not credit money but fiat money, although the paper banknote (cash) combined and still combines fiat and credit money. The digital rouble (Fiducia) on the Central Bank's IT platform is theoretically and technically capable of replacing both paper cash (Fiducia) and digital non-cash (Fiat), as it is a version of a form of national currency that combines the properties of cash and non-cash roubles and performs the functions of money as a measure of value, means of saving and means of payment. At the same time a Bitcoin is a return to commodity money, only in digital form. Bitcoin is highly competitive and capable to replace CBDC in all its versions.

**Keywords:** digital rouble, competition, money, theory of money, monetary symbol, bimetalism, private money, Central Bank Digital Currency, Bitcoin.

**JEL codes:** E42, E58

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## Introduction

Competition between producers and consumers, despite never was defined as a fundamental economic category permeating, according to the classics of political economy (sic !), the whole system of capitalism, is the life-giving medium or the force pushing humanity if not to happiness, then to well-being and progress. As known, competition "under capitalism is a struggle between capitalists for the highest profits" (Investor's Encyclopedia, 2022). Competition on the market is the ideal model of capitalism's ideal economy, a model of an effective mechanism for the spontaneous regulation of social reproduction, where everyone is equal, subordinated to a common goal and therefore happy.

Money is fundamental and debatable economic category; it is the same "mechanism of spontaneous regulation of social reproduction" (Titova, 2008), but in mainstream theory limited to the sphere of exchange (or rather, circulation). At the same time, money is often defined as a kind of "veil" over the system of relations, according to Alfred Marshall "money can certainly be compared to the oil used to ensure the smooth running of a machine" (Marshall, 1923). Thus money is one of the cornerstones of the economic infrastructure of modern civilisation.

## Main Part

We try to understand the connection, or rather the evolution of the connection between these two fundamental economic concepts. Obviously, both of these categories evolved. As for the definition of "competition" in general, we will not discuss it. Competition is expressed in some forms. We tend to describe the problem of competition from different points of view. In particular, between the actors and products on the market.

Economists tend the traditional rhetoric. Competition between private producers, i.e. the actual production of these very commodities, has been relevant since the days of Adam Smith and David Ricardo.

But the picture changes dramatically if we take the seemingly inextricable relationship of commodity and money, expressed in the famous metamorphosis product-money-product and competition [in the market (?)] of money according to Pierre le Pesant, Sieur de Boisguilbert (Bouagilbert, 1973) and Thomas Gresham (Burgon, 1839). Although they both are not mentioned in the seminal monograph "Competition and Currency", which is devoted to competition and money itself (White, 1989).

### **Alfred Marshall. Discussion**

We consider this neoclassic as a mainstream methodology. The subject/object of Alfred Marshall's major work "Principles of Economic Science" (Marshall, 1983) was the competition between the supply and demand of a good (not a commodity, but a good), so there is no analysis of money in it. The scientist divided the commodity-money relationship into a good and replaced the category "money" with "marginal utility". It is the famous principle of the classical dichotomy.

At the same time, Marshall's monograph "Money, Credit, and Commerce" (1923) contains a section on the actual competition of money – "Gresham's Law". The main idea of this law is "a weaker currency, if its quantity is not limited, will displace a stronger one" (Marshall, 1923). Two chapters of this paper named "Metallic Money" deal with bimetallism, one section deals directly with Gresham's Law. Marshall notes the experimental nature of this law, obviously supported by facts over many centuries: "The best [coins] will disappear [from circulation] first, then [disappear] the less valuable ones; the worst ones will remain. This is the essence of Gresham's law" (Marshall, 1923).

At the same time, he noted that "Gresham's Law has often been presented as a paradox" (Marshall, 1923). Competition, although not named by the scientist (quite deliberately), is working, but it is working in the wrong direction, in an unnecessary way.

The point is that market players benefited from the seizure of the metal coin, and counterfeiting it also benefited, otherwise both would not have happened on an industrial scale. The benefit is that the value of the material, the metal itself, is sometimes higher than the denomination indicated on the coin. But the denomination in monetary units is not set by the market, but by the issuer.

Thus, the Gresham's law is the contradiction between form (monetary sign) and content (exchange value), between the value of the material of commodity money and the denomination, which turns a piece of metal into a coin as a monetary sign. For some reason Marshall does not write about it. Also he do not mention that counterfeiting is the opposite process to Gresham's law, is closely related to it economically and is also a peculiar form of competition. How Marshall's allegory is put into practice that "when the sea level falls, the highest stones are the first to emerge from the water" (Marshall, 1923). However, the issuer by changing the content of the monetary metal lowered the value of the coin below its nominal value. Although private individuals, i.e. ordinary counterfeiters did this. This was provided by the technology of minting commodity money. This economical policy prevailed in the Middle Ages.

Furthermore, continuing the analysis of Gresham's Law, and in fact the analysis of the competition of currency, Marshall mentioned bimetallism. Throughout the 19th century there was a heated debate about the role and place of this phenomenon in economics, politics and social life, in which Marshall took an active part, but bimetallism in terms of Gresham's law was not paid great attention. This is the foundation of the statement that at first "gold would be the inferior metal" and then, when the exchange rate changes, "silver would appear as the inferior metal" (Marshall, 1923). It is worth noting that bimetallism is very interesting phenomenon.

It is not still clear the role of bimetallism in the field of competition. Although the very fact that the problem of bimetallism is mentioned in the context of an analysis of Gresham's law defines bimetallism as a form of competitiveness.

But examples made by Alfred Marshall on gold and silver are inappropriate, because they were at the time equivalent monetary metals, i.e. money. Therefore they could not force each other out of circulation,

only a change in the ratio or exchange rate between them was possible. Silver and gold were forced out of circulation not by Gresham's law, but because of the enormous development of production.

The problem of money competitiveness in the period of neoclassics is not solved. The neoclassical methodology has essentially been based on commodity money since Alfred Marshall's time and still is, although Marshall's work, published in 1923, was by then already morally obsolete, the principle was based on the gold standard (Irving Fisher, for example, is mentioned as the author of the index).

According to Gregory Mankew's "Principles of Econometrics" (Mankew, 1999), examples and simplifications refer to microeconomics or neoclassics built on commodity money and a macroeconomics built on fiat money. Marshall devoted two of the six chapters in his work "Money" to metal money. Marshall's analysis is largely limited to fluctuations of the supply and demand at the money market. But this is rather a problem of macroeconomics, i.e. economic policy than the economic theory.

Finally, noting that "Gresham's Law has been considered usually in relation to metal currencies", the scientist argues that for paper currencies the "opposite tendency prevails" (Marshall, 1923). Thus, according to Marshall, "with regard to banknotes issued by banks" (Marshall, 1923) competition works properly, i.e. paper money displacing.

There is important for understanding phrase: The opposite trend prevails for banknotes issued by banks. Without effective government control, any one of them is not legal tender and will lose [the public's] trust, which means going out of circulation". "Gresham's Law has been considered generally in relation to metallic currencies: it represents a tendency to take good coins out of the currency. The opposite tendency prevails in regard to notes issued by banks, without effective Government control: for any, that are not legal tender and fall into disrepute, cease to circulate" (Marshall, 1923).

For simplicity, consider that fiat money is represented by paper notes. Gresham's law reflects the specific competition of currency in metal having so-called "intrinsic value". There was a competition between coins and commodity money signs.

The banknote, as we know, is by definition a surrogate or a "token", a sign of a thing, its symbol, a simulacrum. The banknote appeared because for a long time it was just a bill of exchange, evidence that there was gold somewhere (as money, of course, not just as a commodity). The commodity money – gold and silver coins in circulation got a duplicate, at the time paper money. In a century paper money will have an electronic or digital duplicate.

The banknote as a paper token is not just an exchange instrument; it has a dual structure. On one hand there is fiat, i.e. bank money, and on the other hand there is fiducia, i.e. state money, for clarity, the Central Bank's money. These are different types/species of paper money, which have different economic nature.

Gold and silver in terms of economics and as currency have absolutely equal value. Whereas Fiat commercial bank money (capital in money form) and Feducia central bank money have a different economic nature. We consider the issue of competitiveness between them paying attention to the change in exchange value. We possess there is not only competition within one form of currency (Gresham's law), but also competition between different forms of exchange value. For example, Au versus Ag (commodity money), at the same time Fiat versus Feducia (paper money) and Bitcoin versus Ethereum (crypto money). These qualitatively different types of competitiveness are often not distinguished, i.e. confused.

So in Alfred Marshall's sacramental phrase there is a clear contradiction, which creates ambiguity, although for the late 19th century this is forgivable. The scientist speaks of a consistency of "banknotes issued by banks", i.e. there are many issuers and they are undoubtedly private individuals. However, in order to compete, banknotes from different banks must differ in some way. If there is an absence of difference by quality or quantity, there no the subject for assesment leading to the absence of competitiveness. At the same time, banknotes as money should be fully fungible (exchange and redemption), i.e. they should not differ in any way (economically) from each other (only different banknote numbers and denominations). The contradiction is that there is a unique bank document (content) and at the same time there is a universal monetary sign (a coin).

According to the first chapter of Marx's Capital (Marx & Engels, 1960), the idea that money is the result



of competition is implicit in under the title "Commodity". Marx introduced forms of value. Karl Marx's change in the form of exchange value is a logical development from commodity to money (product -> money). Karl Menger supported the same idea. But the founder of the Austrian economics school, Menger gives, only a historical description of the process. In fact, he gives a brief history of the evolution of money circulation, or rather, the evolution of the monetary sign (Menger, 2005). Thus, Menger did not say anything new in the theory of money, only described the facture of the process. Menger is credited with the introducing the term "saleableness" (Menger, 1892) of a commodity. Now we use the term "liquidity", although it is the same thing.

There is an issue of a presence of specific forms of competition (in the market) for modern money and the functioning of Gresham's [competition] law work for commodity money, but not for its paper counterparts. As we can note, in practice it is not the banknotes themselves which "win", i.e. the "best" or "strongest" banknotes remain in circulation, but the banks which issue them.

Marshall's considered fiat money, i.e. a stronger (stable) bank issues a stronger promissory note, i.e. a receipt for a real coin. It was important to get it before the bank went bankrupt. In this case Marshall is right. He is wrong in comparing private bank notes, surrogates, tokens with metal money or to the money metals themselves. These are qualitatively different elements of the monetary circulation system in the era of the gold standard.

It is also interesting that while the consumer uses money (M) as "just" money (in the commodity market), the producer uses capital (C) in monetary form M (in the capital market), and these are other regularities, although in both cases there are metamorphoses (transactions) money-product and product-money. Microeconomics textbooks describe simple commodity production, and their authors are economists of the late 19th century, while macroeconomics is closer to reality, it is already capitalism in the early and mid 20th century. This creates confusion in mainstream textbooks.

In contrast to the neoclassical positions, it is not money but monetary (including potential) signs that really compete. Having reached a high point (face value on a coin), competition within the gold standard took on localised forms for a long time by the Gresham's law.

Also there is an issue about the primordially of capital or money. Of course, money is primary. If debt is primary, in spite of the really significant role of the state and all the findings and transitive forms found by modern anthropology, we have to admit that capital is primary, and this is totally absurd. Although popular authors, like David Graeber (2016), do not understand this for some reason, manipulating the polysemy of the words.

### **Friedrich von Hayek. Discussion**

So, according to Marshall, competition in the market for metal money is wrong, and competition in the market for banknotes, i.e. paper money, is right. The same idea is highlighted by Friedrich von Hayek in his monograph "Private Money" (Hayek, 1976).

In our opinion, Hayek's work is an economic utopia, which cannot be called an academic work in the same way as Tommaso Campanella's "City of the Sun" or Thomas More's "Utopia."

Hayek's theory of private money (and the competition between them) is a utopia, unrealisable in practice, an economic fiction, based on the idea of a return to the gold standard, a return to "yesterday", to simple commodity production.

As ingenuously admitted in the preface to the publication of the work in Russia translators, and they are venerable and authoritative then (mid 90's) V.A. Naishul and G.G. Sapov, "its ideological basis is simple ... Currency should be considered a common commercial product and therefore produced by market way" (Hayek, 1996). This glaring methodological miscalculation turns the scientist's work into a utopia. The same utopia was the discipline of "scientific communism" taught in higher education institutions in the USSR.

The "money is just a commodity" thesis is understandable to the common man, which is why Hayek's work was so popular among the crypto-enthusiasts of the first wave, there is a lot of alleged evidence for it, i.e. seemingly convincing examples and analogies. For the expert, this thesis should seemed to shock, but Hayek's "theory" found a large following among academics, which is surprising. So, we can define it as utopia.

It was also proved in practice.

The chapter with the characteristic title "The confusion around Gresham's law" is largely devoted by Hayek not to competition of money, but to criticism of William Jevons, who declared: "there is nothing less suitable for competition than money" (Hayek, 1976). According to Hayek's version, "the eminent economist W.S. Jevons" misunderstood Gresham's law; he, "like many others, overlooked or considered it immaterial that Gresham's law applies only to different kinds of money, the firm exchange rate between which is set by law" (Hayek, 1976).

Hayek tries to prove that competition is always a good thing, even between incomprehensible "kinds" of money. It turns out that Gresham's "wrong" law is only a special case, an exception to Hayek's theory. All it takes is a change in legislation and life gets better. But it is inachiveable task.

You can use my monograph (Yakovlev, 2020); here I will only briefly list a number of fundamental flaws of Friedrich von Hayek.

1. Gresham's law does not apply to "various kinds of money" in general, but only to monetary units with a so-called "intrinsic value", i.e. it only applies to specific metal coins, in fact the law works piecemeal. The same kind of money may contain coins of the same denomination, but with different metal content.

2. The state, on the one hand, used the contradiction between the face value (form) of a coin and its content (weight of metal), but, on the other hand, if we talk about types of money, had to somehow regulate the contradiction, which constantly broke through the mass discontent and even revolts.

3. "Good competition" according to Hayek works like this: "...at floating exchange rates, money of worse quality will be valued less and people will try to get rid of it as quickly as possible, especially if there is a threat of a further drop in its value. The selection process will continue until people come up with the best kind of money among those produced by different agents" (Hayek, 1976). Hayek deliberately avoids to mention whether the money in question is metal or paper one. It can be assumed that this is indifferent, although Gresham's law does not work for paper money, and according to Marshall's version it works "the other way round". In fact, what is meant here is metal money.

4. In fact, Gresham's law implicitly incorporates Hayek's "floating exchange rate", or rather it guides it by making good coins out of circulation. It was technically impossible for the state to provide an official "floating rate" in practice at the time. Most importantly, it was often simply not profitable for the issuer. We consider, that, according to Hayek and his adherents, it is impossible to account a "floating rate" for the metal content of each particular coin.

5. "The selection process", i.e. the competition of private money according to Hayek, involves some kind of mechanism. At first the scientist claims "Now we have to investigate the selection process itself and the criteria according to which it will be made". But then he warns: "This is an issue on which we have very little empirical knowledge" (Hayek, 1976). The author does not further explain how this process should be carried out. But it is obviously that he suggests to set up several central banks instead of establishing a single central bank in one country.

6. Friedrich von Hayek does not mention the costs accompanying the issue of private money. If there is competition, its main mechanism is the balancing of revenues and costs, and one of the main methods of competition is cost reduction.

7. Regarding the originality of Hayek's idea ("to the best kind of money among those issued by different agents") it is worth noting that Dumas' novel "The Three Musketeers" mentions Paris at the beginning of the 17th century where Spanish doubloons (aka pistoles) were in circulation.

For example, the chapter "Limited Historical Experience with Parallel Currencies and Trade Coins" (Hayek, 1976) is devoted to the analysis of commodity currencies. But the next chapter of the scientist "The introduction of private banknotes" mentions the "private Swiss ducat" as a type of paper banknote (Hayek, 1976), for which Gresham's law does not really apply, except for the quality of the printing and the number of degrees of protection (eight or ten) of ducats and the reserve currencies for it.

Also Hayek mentions the senorage only once, when "the duty intended to cover the cost of minting coins proved to be a very attractive source of income...", (Hayek, 1976) or the income of the issuer is a necessary



incentive to issue banknotes and their substitutes, otherwise there is simply no point in doing this business. Hayek does not mention the most important interest for the capitalist – income.

Hayek's "Private Money" is a utopia where academics have been given essentially only one simple but a fundamental question: if a private issuer of currency, the Central Bank, is possible, why only one?

The foundations of modern monetary, banking and financial systems have shaped the banknote as a medium of circulation. It originated as a simple bill of exchange, i.e. a security and a financial instrument. The "new money" of capitalism did not emerge easily. They emerged as an active tool, if I may say so, in some of the most adventurous business projects of the time.

But just as gold defeated all other banknotes in a thousand-year competition, so the banknote, from an embryo of fiat money, a kind of hybrid of money – product (proto-money and proto-action together), moved by touch and finally, in a couple of centuries, became "universal means of payment", or into a legal tender, which Hayek tried to fight against, while finally getting rid of the rudiments of the security or the 17th-century bill of exchange (the possibility of exchanging it for gold) only in 1971.

Nevertheless, in today's monetary system gold is the last reserve and the Central Bank is the lender of last resort. Together they must save if necessary the national monetary system from default, i.e. collapse.

### **Competition versus money in the twenty-first century. Discussion**

Competition between cryptocurrency and banknotes is an endless stream of publications, most of them written by mainstream representatives who categorically do not recognise bitcoin as money even in future. We consider this issue in brief.

The first paper price tag is thought to have appeared in 1870. Symbolically, the timing of its emergence coincided with the "margin revolution". Those time theory was way ahead of practice. Now, on the contrary, money theory lagged the revolutionary practice of entrepreneurship, and is not really needed.

The monetary system, or rather the banknote system, has in practice made a technological breakthrough over the last couple of decades of the 21st century: from a paper standard to a digital one. There is important that the evolution of currency is taking place. It allows to define a spiral development, considering a version of the evolution of money as Gold (Aurum) – Paper (Fiat/Fiducia) – Digital & Crypto (Bit Gold).

At the beginning of the new century, the world learned what Bitcoin is, and electronic payment systems (EPS) became firmly embedded in our lives. There is an issue of competitiveness between the EPS. But we can not use Gresham's Law for its assessment. EPS are money delivery services, a practical but not theoretical instrument. But by the theory of money EPS is nothing more than a surrogate which cannot exist on its own. In the early days of digitalization, there were attempts to think of EPS as the "new money", a competitor to old ones (Kochergin, 2006) but time shows that it is only a transitional technological form, a precursor to a real breakthrough. We can make the analogue with the pager that was once a precursor, and even for a time was considered a competitor to modern mobile communications.

If we continue Friedrich von Hayek's reasoning, the production of money "as a commodity" operates today within the centralized two-tier model established at the beginning of the twentieth century. The money generator is the state enterprise "Central Bank" and a system of national commercial enterprises, i.e. private banks, strictly regulated by both legislation and market instruments. The Central Bank is the mega-regulator of a financially rigidly centralized system. The production of money as a commodity in practice involves capital, this business has an obvious beneficiary. In this case, the generator bears all the inherent benefits and risks of such a specific business. The consumers of the money supply as a commodity are individuals and legal entities (non-financial companies).

Because of its comprehensive development, the monetary system is now represented by a whole scale/line of monetary aggregates: M0, M1, M2, M3, etc. Money now includes both explicit money surrogates as product and money so as the explicit financial instruments – money and competitiveness. Cash itself, i.e. M0, and the various instruments of the banking/financial system form the incomprehensible money supply (actually it is capital in monetary and non-monetary form). Thus, we can note Hayek's and Thomas More's utopia slightly correct.

The conflict between theory and practice, established by Marxism and neoclassics, generated significant confusion, which led to a kind of revolution in terminology while the original concepts did not disappear. Also it led to wide use in economic theory of surrogates, literally "rubber" categories while the original concepts remained: benefit – instead of the category "goods", including money, liquidity instead of the category "money" and all its derivatives and substitutes, and again, benefit (but of the second order) instead of the category "capital". Models have replaced dialectics in science (another confirmation of Gresham's law), e.g. the concepts of "capital in money" and even "financial capital" have virtually disappeared from science

The immense range/spectrum of money theories from the Austrian school and Marxism to the current adherents of the Modern Monetary Theory by Ray Dalio (2019) is only a consequence of this confusion.

### **Conclusions**

The individual, the person with a smartphone in his hands today is in many ways a mini-bank, if you will. Many of the traditional bank functions are now performed by the user themselves, they do not need to go to an office to carry out a transaction or take out a loan, for example. This became technically possible when the financial system, or rather the single financial network, became so comprehensive and reliable that not only the B-to-B segment, but also the B-to-C (retail) segment, which could only be served by private banks in their offices, can now be served online. So, working with millions of individual users has become technically possible as part of a single national financial platform.

The long partnership between business and government in the frame of the two-tier monetary model-Fiat/Fiducia-has been called into question over the past few years. The Central Bank Digital Currency (CBDC) firstly was discussed in theory and now actively implemented in practice.

CBDC in its Russian version of the "digital rouble" (Bank of Russia, 2020) is the ultimate or digital form and the near future of the Russian monetary system. For half a century SWIFT organized in 1973 as a messaging/payment system between banks was developed as an instrument of non-cash settlements, the digital bank bill was developed and strengthened on the basis of advances in IT technology, today (in Russia from 2018) the same IT technology has enabled the Central Bank's national monetary system to be theoretically and practically launched.

There is a fundamental scientific, practical and even terminological issue of replacing (or "displacing" by Gresham) CBDC or its Russian version by the "digital rouble".

Obviously, the digital rouble, unlike Bitcoin, is not a form that creates a new "money market". At least directly, whereas the indirect effects are the subject of a separate discussion, although as yet they are hardly analysed. So there will be a substitution of existing money forms. "The intrigue is whether it is non-cash or cash" (Dostov, 2022). So, there is an issue of prevailing of cash (the M0 aggregate – a paper treasury note issued by the Ministry of Finance under the control of the Central Bank) over non-cash or replacing by the digital rouble. This analysis was prompted by Victor Dostov's article, in which the author states: "Gresham's law – 'the worst money crowds out the best' – still works (Dostov, 2022). The modern two-tiered monetary, or monetary, or banking system stands on two foundations – Fiat+Fiducia. The bank note and the state treasury note merged in a single paper banknote for many decades.

The digital bank bill has actually been around for decades, too. It appeared at the same time as on-line means of communication. It was a part of SWIFT system so as the digital treasury notes and other kinds of digital money.

But the digital rouble or digital treasury note is the highest but digital form of fiduciary money issued by the state, represented by the Central Bank. The digital rouble is not credit money but fiat money, although the paper banknote (cash) combined and still combines fiat and credit money

The digital rouble (Fiducia) on the Central Bank's IT platform is theoretically and technically capable of replacing both paper cash (Fiducia) and digital non-cash (Fiat), as it is a version of "a form of national currency" that "combines the properties of cash and non-cash roubles and performs the functions of money as a measure of value, means of saving and means of payment" (Rodina, 2021). The implementation of the project, its volume and terms depends on the balance of economic, political and even geopolitical interests of

the parties concerned.

Thus a Bitcoin (Bit gold) is a return to commodity money, only in digital form. Bitcoin is highly competitive and capable to replace CBDC in all its versions. That's quite interesting.

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# Competition and competitiveness as the instruments of the market regulation of the economy

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**Abstract.** The article examines the competition and competitiveness not only as economic categories, but also as proof of their inherent universality in all phenomena of life. During the 40 years of the development of market relations our country had all the advantages and disadvantages of this economic order. We consider the categories of competition and competitiveness themselves, their advantages. Also, we examine their logical connection with other general categories: form and content, quantity and quality, old and new, theoretical and factual, part and whole ones. The challenge is to achieve sustainable development, to improve its effectiveness. And competitiveness is improving of all parts of the enterprise. We designed a system for different departments of the enterprise. It contains all the stages of the product life-cycle from production target through execution, promotion, quality of productions, precision, execution, plan of supply, etc. This study of competition provides a scientific basis for conclusions on the competition: competition of complex objects (enterprises, regions, countries) cannot be expressed by a single indicator even if it is important (product quality, profit, high demand). It is always the complex indicator. The analysts of enterprises should search for economic, technical, organizational, and social reserves not only within the enterprise itself, but also in the external environment, including similar companies abroad. Business analysis should not only search for internal reserves of output growth, but broadly analyze the external environment of the enterprise.

**Keywords:** competition, competitive, enterprise, region, country, form and content, competitiveness.

**JEL codes:** A10, D04, M21, M31

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## Introduction

During almost 40 years of the market economy development in Russia, it experienced all the advantages and disadvantages of this social order. During this period there were two deep economic crises, in 1998 and 2008, which started in the East and affected the economic system of almost all developed countries. Also, there were smaller recessions in 1995, 2004, 2014. They were caused by internal problems and external adversity. At the current stage of accelerated economic development, ensuring its advantage over other countries, increasing the level of sustainability, efficiency, and independence of our country's development become the urgent task. The hostile policies of the major European countries, the USA, and the imposition of major sanctions intensified the processes of import substitution and increased economic and technological independence from Europe and the USA. By the presidential decree, all payments for gas, oil, oil products, and fertilizers exported to countries pursuing an unfriendly policy against us had to be made in rubles. It intensified the process of import substitution of foreign products, increased the sovereignty of our state, and strengthened the purchasing power of the ruble. A positive feature of the organization of the market economy in our country is the freedom of enterprises and organizations to develop through the formation

of a range of products and services, the selection of suppliers of raw materials, components, and consumers. We have the free pricing, so as free bank choosing for financial services and ways to attract investment for future renovation and development of fixed assets. However, this choice significantly increased the demand on the qualifications, knowledge and competences of the company's managers, and different departments. Market freedom caused the uncertainty, it become necessary to thoroughly assess the choice of the suppliers and consumers of products, banks, and investors. Also, there is a need to know the economic practices of the nearest competitors, analyze their activities, future market trends. Thus, external factors are the object of analysis. Nowadays, in order to answer the questions on the administration of their company, it is necessary to analyze the competitors' activity, including the analysis of demand, production, research, and development. The many companies now operate in a highly competitive environment, depending on the internal and external economy. It is imposing a special responsibility on management to make the best and most responsible decisions. The difficulties of market development in Russia are increased, particularly in the initial stage of the market relations, because of insufficiently competent and well-founded government policy. Indeed, our political economy focused on improving economic relations during the stage of building socialism and later communism. But it did not consider the ways of the transition from socialism to market relations, considering it impossible. It seems impossible to change the rigidly prescriptive planning into the market freedom. At first, there was the primitive copying of foreign experience. For instance, monopolies have destroyed many large enterprises, reduce funding of the military-industrial complex, which was the crucial part of several industries. In order to obtain loans from the World Bank and the IMF, many loss-making enterprises and mines were closed down. For example, in the Far East in the 1990s, when the most of the loss-making coal mines were shut down and the region was left without electricity because the power plants were fueled by coal. The rapid removal of the foreign trade monopoly without increasing of the level of competitiveness of domestic products and services led to the decline of whole industries producing consumer goods, foodstuffs, agriculture, food processing, textiles, clothing, footwear, refrigerators, etc. By 1995, the country's GDP fall to 52% of its 1990 level.

The revival of the economy began only in 2000 since 1992. The economic growth was particularly strong between 2000 and 2007, when it was close to its 1990 level in many key parameters. The one of the results of Russia's economic development between 1991 and 2007 there was integration into the global, mainly European, economic space. Russia became a convenient location for branches and subsidiaries of the automotive industry, the chemical industry, wholesale and retail trade, and many other industries, as it turns into a favorable market for products with sufficient purchasing power of the population and an above-average skilled labor force. Indeed, Russian economics oriented towards selling the raw materials and energy resources in the foreign markets. This export orientation and heavy reliance on energy allowed many European and American countries to pursue the unsustainable economic policies. The introduction of sanctions in 2013 and their intensification in 2014 at the first phase caused some crisis phenomena and slowed down the development. However, increased military strength, an independent foreign policy, and ties with Southeast and South Asian countries, which have intensified in recent years, have caused the economy growth by 2016. On the other hand, the power phenomena, and negative policies of the European countries and the USA contributed to the reorientation of a number of industries towards the domestic markets, giving a spur to agriculture, fishing and a number of light industry sectors, intensifying the scientific potential for improving production and replacing foreign products with the domestic products and services.

Nowadays the Russian government tends to increase the self-sufficiency in the areas of production, financial, and IT. The president's order to switch payments for natural gas and oil to Russian rubles was the most prominent decision. It strengthened the Russian ruble and the country's independence and allowed intensifying the import substitution process. Now the national objective is to achieve a decisive advantage over foreign partners in terms of product quality, comfort, and to adjust the producer-consumer paradigm. The government is significantly changing the paradigm of the international relations. The relations based on the competitiveness are replaced by ones based on partnership, where the needs and requirements of each other are clearly considered. Russia has those with China, India, many countries of the former Soviet Union,

Hungary, and Serbia on gas and other resources.

However, the total freedom of choice greatly increased the demands on all parts of the companies and organizations. Nowadays, they are in some uncertainty, because they should substantiate the choice of suppliers and customers, analyze their activities, and give at least a rough forecast of their future activities, in order to know, where they can stand in the short term. Many enterprises and organizations handle with it and continue to operate in a highly competitive environment due to the state of the economy, which imposes a particular responsibility on management to make the best possible decisions. Initially, until about 2000 a lot of them failed and went bankrupt. Especially, the small and medium-sized businesses, where up to a third of the disappeared and started up again annually. Some kind of stabilization appeared in the late 1990s, when a new generation of employers experienced the difficulties of a market economy, had a good knowledge of its laws and possibilities, and could foresee all the pitfalls of the market development, came to manage businesses and organizations.

The next decade of the country was a period of overcoming of a long crisis and regaining the previous business position is characterized by a relatively high growth rate in the economy. They were particularly strong between 2000 and 2007, when reached the 1990 level by many leading indicators. The development of The Russian Federation during 1991-2007 resulted in its integration into the global, and mainly European, market. A significant amount of food, consumer goods, and the household appliances came from the external market. Russia was a convenient location for branches and subsidiaries of the automotive industry, the chemical industry, wholesale, retail, etc. It became a convenient market for products with sufficient purchasing power and an above-average skilled labor force. This activity was oriented towards selling raw materials and energy resources on the foreign market. This export orientation and heavy reliance on energy allowed many European and American countries to pursue the unsustainable economic policies. When the Russian Federation began to maintain an independent foreign policy by the own laws, there were introduced the sanctions, which began in 2013, escalated in 2014, and are now greatly intensified. Under these conditions, the Russian government aims to achieve greater independence in the fields of production, finance, and information services, to strengthen the independence of the country, orient and raise the domestic market, to get rid of external pressures from unfriendly EU countries and the USA, which influence is quite negative.

Our study proposes a developed and tested the concept of a subjective approach to a comprehensive analysis of the competitiveness of enterprises and organizations, operating in a market economy. The nature of the approach is very simple and based on two principles: 1) in a market-based economy, demand for products and services dominates and strictly determines the quality and the quantity of production. Producers of products or services should to produce their goods only at that level of quality, and in that quantity, which will be bought on the market by the consumer in a certain period. 2) A market economy is always uncertain and variable. If, the needs of a consumer could not be satisfied, he or she will look for another partner at home or abroad. We propose the subject approach as the relevant one. By it, the activities of a company, its production, and financial services will be analyzed in terms of the perspective of the market players, who wants to cooperate or establish the economic relationships with the other players. This paper considers the competitiveness as a relative variable. When we state that an enterprise is competitive, it means that its products or services are in demand by consumers, who cooperate or want to establish the relations with it. But there is an issue of affiliation to competitiveness. An enterprise is at the same time a producer of products or services, a consumer of raw materials and supplies, a consumer of credit and investment, a borrower, a bearer of social benefits, a holder of securities, a recipient of investment, etc. Also, it can be the holder of different and even opposing types of competitiveness. There are periods, when products are demanded, but wages are low, banks are heavily indebted, etc. Unfortunately, this problem is understudied in the domestic scientific literature on the analysis of economic activity, as most literature focuses on the competition of products and services, and in financial relations considers the solvency of the enterprise. The significance of the study is provided by the systematization of research experience of enterprise competitiveness, a development of the fundamentally new approach, in which the authors tried to overcome the existing shortcomings. Also, the authors defined the basic methodology for analyzing the competitiveness of both the enterprise and its partners to make



effective managerial decisions.

We can distinguish three approaches to defining competitiveness in accordance with the existing literature. The first defines competitiveness as competition in the marketplace.

This approach is characteristic for Russian economic papers. An example is V. Gordeev's research on competition, which examines the essence and importance of competition in Russia's transition to a market economy. The second approach considers competition as an element of the market mechanism for the balancing of supply and demand. This approach is typical of both classical and neoclassical economic theory. Its adherents are A. Smith, J. Schumpeter, and F. Hayek. They regard competition as a factor that controls the market: a) as a manage force of the market, which is automatically optimizing it: i.e., the weakest partners have should leave the market; b) as a condition for the new discoveries and innovations; c) as an accelerator of the new knowledge; d) as a structural approach to competition, stimulating the rapid overcoming of negative moments and crises. By the third approach, the authors consider competition should be a criterion of defining the industrial markets. They classified them into the competitive ones, which require enormous financial and material resources that no company, even a very wealthy one, can match. (e.g. development and extraction of resources, construction of a main oil pipeline, etc.); the weakly competitive ones, when an industry is dominated by a few large companies that do not allow other players to enter (beverage industry); the competitive one, when it is possible for every company but in order to enter on the highly competitive markets, there should be free niches or the one of the participants should be replaced by the new market player.

Competition is defined in the Law of the Russian Federation. "On Competition and Restriction of Monopolistic Activities on Commodity Markets". By this Law, "Competition is an adversarial relationship between business entities when their individual actions effectively limit the ability of each of them to affect unilaterally the general conditions of the circulation of goods on the relevant commodity market" (Magomedov, 2005).

In our work, we will consider competition not only as a market category, but as a general fundamental concept that expresses the essential universal properties and relations of reality and cognition, formed because of the generalization of their development. Therefore, the definition of a category should contain the properties and relations of objects and phenomena of reality, include dialectical contradictions that contribute to its development. In accordance with these ideas, we propose the following definition. By competition we mean the social relations between its individual market entities, having related development goals to create and use advantages and obtain high results. They can be material, financial, moral benefits, social, military, scientific leadership. Here we will try to examine each item of this definition.

The economic relations in a competitive environment are sometimes based on the conflicting objectives and interests of each entity. Based on the contradiction between producer and consumer, seller and buyer. Each participant of this contradiction wants to get more value through the price value. The contradiction is resolved through the establishment of an acceptable price. The contradiction between manufacturers producing the same or similar types of products or services provided by their goods and services quality, service culture, the availability of additional discounts, benefits, etc. The dialectical contradiction between territories and countries is expressed through a comparison of living standards, comfort, safety of residence, provision of the benefits of life and recreation, the attitude of the leadership to the people, and to the vulnerable populations.

Having freedom of choice, each of the participants in the market tries to realize their interests, have more benefits, win in the competition for the buyer or voter, etc. Every manager or owner of the company tries to keep highly qualified employees, avoid the departure of his main employees.

Here are a few more definitions of competition, which are the most common: competition in the market in the absence of monopoly; competitive relationship between two or more economic entities, manifested as the desire of each of them to obtain the better results; a particular kind of fair economic struggle that tends to gain the upper position through the entrepreneurial skills and abilities of the struggle entities. Also, there is a competition between the market players for better conditions.

In this study, we considered in detail the other common economic category, "competitiveness", as a

derivative of competition. It represents the external form of the competition. We can define the competitiveness as possessing and being able to take advantage in the marketplace for the greater benefits. Competition, as a phenomenon, remains stable, but its forms can be very diverse, and change under the influence of various factors.

In dynamics, it is influenced by the external environment and can change from the lowest level to the highest one, when a complex object has many advantages in a wide range of activities. We consider competition, often expressed by a single indicator.

In terms of the balance between the competitiveness of products and services and their quality. This issue is relevant one, because of the many studies define these two categories as synonymous, and, if the quality of the product or service is high, the object under study is considered as competitive one. However, they are different. In accordance with the definition of competitiveness as the presence and use of advantages, it can be logically assumed that the higher the quality of a product or service, the more competitive it is. But the high quality usually accompanies a high price. If the manufacturer's price is too high, the advantage of high product quality is lost. Competitiveness as a market characteristic depends not only on the quality of the product, but also on its price, which can be decisive. Price, as a market category, is influenced by many internal and external factors that are not always within the control of the enterprise. There can also be the reverse process, where objects that are not of the highest quality at a low price become competitive. It is particularly common during crises or in emergencies. For example, the products of the Yaroslavl company "Lakokraska" were behind English, German, and Finnish analogues in terms of product quality. But, when the dollar exchange rate went up from \$6 to \$18 in 1998, many customers abandoned foreign partners and started buying "Lakokraska" products because they had the best price-quality ratio. The quality of products and services is an intra-productive and inherently relative characteristic in nature, as it depends on the object, we compare its characteristics. High quality in an enterprise can become low, when compared to the national average, and even lower, when compared to the international standards. Therefore, many innovative businesses focus on international quality standards, such as ISO 9000, etc.

For the competitive products, the main characteristic is high market demand; only this can accurately determine their level. Therefore, if lower quality products have a high market demand, they are more competitive. The demand for product quality was replaced by the price factor. It is often occurring, when the technical characteristics of products meet the lowest level of regulatory requirements. And its prices are quite low. For example, the construction of a brick house has the highest demands on the exterior bricks because of their strict geometric shapes. The interior space of such house is filled with quarry-faced, which are not subject to the strict requirements. Therefore, this good is bought more and it becomes more competitive. Competitiveness often depends not only on quality, but also on the price of the product, which is sometimes decisive. The other factor, influencing competitiveness as a market characteristic, as opposed to product quality, is the state of the economy, which largely determines the demand for products. When there is a decline in production, a crisis leads to higher unemployment, lower wages, lower bonuses, and other negative factors, so consumption patterns change, especially for consumer goods. The competitiveness of expensive, high-quality goods is declining and that of inexpensive goods and services is rising. It shows that the multifactorial impact on competitiveness as a category largely dependent on the state of the market economy.

Competitiveness has been and continues to be the subject of discussion and debate by many authors. There are many approaches to both defining this category and methodologies for analyzing it. While at the product level, the essence, the influencing factors, and the method of analysis have already been developed in depth in relation to products, at the enterprise, regional and national levels many points of contention remain. Some of them contain many shortcomings: inaccessibility of the information base for analysis; availability of the theoretical indicators that cannot be formalized and objectively measured, which reduces the accuracy of the estimates; lack of indicators, characterizing innovation development, etc. Increased competition between enterprises made it possible by the liberalization of the Russian economy, the level of freedom of production, and the choice of consumers, suppliers, and banks. The company management is a key factor in the viability, development, and success of a company on the market.

The subject of our research is the competitiveness of the enterprise and the influence of the general philosophical categories on it: form and content, quantity and quality, old and new, theoretical and practical, whole and part. The competitiveness of a company depends to a large extent on the precise and coordinated work of all its production and management units, starting with procurement, parts, and assemblies to the export of its products. To provide the right level of competitiveness, all products and production systems should be analyzed in terms of competitiveness. This aspect of analysis depends on the theoretical and the practical interests of economic activity.

We provide a general outline of the concept of competitiveness. Competitiveness – as comparative competitiveness – as the ability of an object on the macro-meso-micro economic category, as the best ability to satisfy the needs on the market.

The competitiveness of an enterprise as an advantage of individual activities: 1) the ability to provide better quality products; 2) the higher efficiency and activity; 3) the ability to maximize income; 4) a higher level of wages; 5) a high financial stability; 6) a high level of social protection for its employees.

We consider the use of enterprise competitiveness in the process of implementing a subjective approach. They are as follows: 1) the clear definition of the specific objects of assessment, competitiveness of the different types of enterprise activities, since the approaches to the analysis and the system of indicators differ; 2) the orientation on temporal, object, and methodological compatibility, as a basis for correct comparison. 3) observance and consideration of the basic semantic components: multivariate, universality, multidimensionality, specificity, relativity, comprehensiveness.

Authors included the different types of components in the assessment of enterprise competitiveness are: M. Porter (2003) assess the company strategy, its intellectual resource; E. Golubkov (2003) – 16 factors of enterprise performance, including R&D base; V. Taran (2005) – economic, production and sales potential, financial position, management level, labor resources, scientific research work, annual costs on R&D and number of recently received patents, firm reputation, its market strategy; L. Baumgarten (2005) – product quality and characteristics, production capacities, financial resources, customer service, dealer network and distribution capacity, reputation (image). Innovation capability; H. Fashiev (2003) – qualified personnel, well established business processes, good contacts with suppliers, untwisted brand, ability to secure stable financing, contacts with governmental structures, R&D, unique technologies, ability to create competitive products, innovativeness; I. Zulkarnaev (2001) – objectives of the organization, resources and ability to use them productively, intellectual resources, external environment factors, innovation, implementation of new technologies in processes, materials, products; M. Marakulin (2005) – the ability to manage trade-offs through the firm's intellectual potential; I. Rezinkina (2008) – the ability of an enterprise to invest development and adaptability in all areas (production, financial, human resource management activities, innovation policy development, predicting the behavior of competitors; G. Hamel & K. Prahalad (2002) – intellectual leadership, skillful use of basic product functions (managers' potential, development of 'Key Competences' (people's knowledge and skills), development of H&R through training, expenditure growth, investment in employees' potential, quality base for fundamental knowledge, higher level of investment in education, development of talent incentive systems; V. Abramov (2004) – natural, informational, material, energy, time, labor, intellectual resources as information and knowledge ones. This overview includes only some of the approaches that are part of the benefits. In the reality, they are different for each enterprise.

A summary of the available views and an approach to the definition and composition of competitiveness factors shows that almost every one of them emphasizes the availability of intellectual potential and the introduction of innovation in enterprises to achieve improved performance in the long term. However, they are not the activities, establishing the specific final product, but the special media, including the creativity and innovations. It could be a 'creative corporation' in which human resources, their knowledge and information would determine the competitive potential of the enterprise. The transition to a market economy changed this financial category definition from a static, comparative, national advantage, to the use of price-fixing techniques, the growth of winning the competition to increase the material base to increase innovation potential.



Based on the review on the definition of competitiveness, we consider the principles of forming the subject approach during its analysis: 1) a clear definition of the specific objects of competitiveness assessment in the different activities of the enterprise, since the approaches to their analysis and the system of indicators differ; 2) orientation towards temporal, objective and methodological comparability, as the basis for a correct comparison of the category "competitiveness". The indicators should be calculated for the same time intervals (the leap year is taken as an ordinary one). 3) The same objects should be calculated in terms of the same methodology, they should be quantified (without it the process will be subjective; 4) the main semantic components of competitiveness should be observed and taken into account: multivariance, universality, multidimensionality, specificity, relativity, complexity; 5) the definitions should be formulated based on the practical significance of competition categories to be able to use them further to solve practical tasks. To comply with the first principle, we defined that we would consider the activities of the enterprise as the object of competitiveness assessment. Regarding the second principle, it is no coincidence that the basis of competitiveness is comparability, because the origins of the conceptual components originate from the essence of competition as the presence of comparative advantage. I. Bogomolova remarks that the concept of competition forms the basis of a market economy as the main force behind the relationships of entities operating in each environment. The most successful participant in such a competition is those, who can withstand the competition both in the domestic and foreign markets. Competitiveness literally means "being able to compete" (Bogomolova & Khokhlov, 2005).

### **Main part**

The development of a new approach to analyzing enterprise competitiveness starts with a consideration of the essence of its basic category – competition. M. Porter established it as a decisive factor and basis for the analysis of the market environment (Porter, 2003). However, the category has not been sufficiently explored in terms of philosophy and classical economic theory, which is the foundation of all economic sciences. In terms of philosophy, the category is "a general concept, defining the most essential connections and relations of real reality and cognition" (Illustrated Encyclopedic Dictionary, 1995). In our opinion, competition is a general scientific category, not only an economic one, as it is often interpreted. The Illustrated Encyclopaedical Dictionary defines it as follows: "Competition (collision), rivalry, competition of people, groups, organizations to achieve similar goals, better results in a certain public sphere. Competition is an essential feature of various activities in which interests collide (politics, economics, science, sports, etc.) Competition becomes widespread after hereditary, class privileges and centuries-old regulations are abolished, and the principles of democracy and market economy are established, where competition norms and rules are elaborated. The encyclopedia interprets it as a competition, a clash, a rivalry between humans, but we know that it also exists between animals, when young males fight with the leader of the pack for supremacy (wolves, elks, deer, etc.). Even among plants, there is a struggle for survival and the strongest specimen wins, and the weakest shrinks. Athletes compete for top performances, actors, and actresses – for leading roles. Scientists, through their work, become PhDs, etc. Thus, we can conclude, that the desire for better, superiority is embedded in the behavioral paradigm not only of humans, but also of animals and plants. Competition also existed in the system of state administration, although it was limited to those objectives that were most beneficial to the country's leadership and served the prosperity of the existing system. As a competition between workers of one branch of industry, it had a national character (miners, weavers, machine operators, etc.) and was of great importance for the development of the country's economy and its successes in the foreign and domestic market. Only with the transition to market relations, when market freedom of enterprises and organizations in determining the ways of development, choosing consumers, suppliers, setting prices for products and services emerged, competition embraced all spheres of activity and became the main tool for increasing production efficiency, which could be used by enterprise management for its development.

In our work, we will consider competition not only as a market category, but as a general fundamental concept that expresses the essential universal properties and relations of reality and cognition, formed as a result of the generalization of their development. Therefore, the definition of a category must contain

the properties and relations of objects and phenomena of reality and include the dialectical contradictions contributing its development. Based on described above, we can suggest our own definition of competition: "Competition is the relationship between individual actors with related development objectives to create and exploit advantages in order to get ahead of the results." Economic relations should consider the interests and needs of different entities, often connected by opposing objectives. Also, there is a contradiction between the seller and the buyer. The seller wants to make more profit through selling as many goods and services as possible. The buyer is better able to satisfy his product needs with less spendings. This refers to the people as well as to the companies. By accepting or agreeing to a certain price, they are resolving this contradiction. In our definition we operate with the term 'single objects', which makes it possible to considerably expand the concept of competition to include not only people or animals, but also enterprises, individual regions, and even countries. Enterprises compete to obtain a larger market share for their products and get the highest possible profit, to attract investment, the cheaper loans, create a more comfortable environment for their employees in the social sphere. It includes the decent wages, a comfortable team climate, opportunities for creative growth, childcare and schooling, etc. The regions compete to establish the favorable climate for investment by increasing the income level of their citizens, comfortable living conditions, relatively low prices for consumer products and services, increasing their working life and many other conditions. The countries try to achieve greater economic development, stable national security, a higher level of income for their citizens, higher levels of education, health care, more social benefits, and high protection for certain sections of the population, i.e., everything that defines a "highly developed state", so that competition becomes a universal category in terms of the range of subjects it covers.

However, to confirm this, it is necessary to know the dialectics of its development and establish the connections and dependencies with other universal categories. The main of them are content and form, quantity and quality. The definition of competition refers to the creation and exploitation of advantages. Their presence and quantitative level determine the essence of competition in a market environment. It is very relevant quality for any enterprise in terms of its products and services, a more stable financial situation, a high level of social development of its employees through higher wages, opportunities for creative growth, leisure, health, and everything else that includes the favorable production environment and its success in the market. However, the content of the phenomenon appears in some form. The definition contains some of them, which are inherent in these activities: rivalry, comparison, confrontation, competition. The competitiveness is such a form in a market economy of production. We consider it as the availability and widespread use of market advantages to obtain greater benefits and income for the successful development of the enterprise. The dialectical contradiction between the content and form concerns with the content changes, which follows by the form changing, as the new content cannot remain within the old framework. Although competition, as the basis of essence, always remains the same, even when a business has no advantages, it can itself become an advantage, as it becomes attractive for its cheap purchase and there may even be buyer competition for its purchase. Since competitiveness is a form of economic competition, it can fluctuate quite widely: from the lowest to very high, if the enterprise has a large set of advantages in different activities. Competitiveness is dynamically influenced by various factors, depending on the state of the external and internal environment and management's response to their changes. It often depends both on their number and level. If there is only one main advantage, it becomes a single-order advantage. For example, the ratio high quality product / very high price makes the competitiveness lower; but a relatively low price makes the competitiveness higher. When multiple benefits are present, the competitiveness becomes multi-ordered, although benefit ratios can vary considerably: high for one benefit, medium for another, and low for a third. For example, G. Azoev (2001) consider it as competitiveness of product market, i.e., the ability of goods sellers to compete with their rivals, who supply similar goods to the markets. This view is correct one but has a lot to do with the type of market and the position of the producer in that market: free competition, oligopoly, competing monopoly. Also, each view requires a different tactic, and it may be successful and unsuccessful. F. Karayeva (2008) under competition means the ability to maximize profits. However, making a steady profit is a prerequisite for the success. The author's view is purely mercantile. It is still relevant how to make a profit: whether by producing

high quality products or services, or by increasing prices, then the result can be temporary and lead to a reduction in demand or intervention by the regulatory authorities. Approximately the same is expressed by E. Bely (2006), who points out that in almost all publications the authors, many without explicitly stating it, notes that competition is an object, which can ensure profit and thus increase competitiveness. There is also a need to make a distinction in the context of the relationship between competitiveness and business performance or consider the characteristics of the concept of efficiency itself, depending on the evaluating subject: profitability, high profitability, a large assortment, or other indicators. I. Ulanova (2008) regards competition in terms of the quality of a product or service provided to the market to satisfy consumers. Competitiveness is a specific measure of an enterprise's performance in the market, reflecting the real embodiment of its potential. But in our opinion, it mostly concerns with the product competition than with enterprise one. An enterprise always has issues concerning with the cost of production, the workers' wages, the social climate, etc. Thus, authors include in the category of competitiveness a key characteristic that they consider as the prior ones. There is also a need to highlight the disadvantages, which is reflected in the limitation of the approaches considered and the reduction of the multidimensional category of competition. By defining competition, many authors do not study the essence of the category, but rather the forms of its manifestation. We also can consider such forms of competition as rivalry and clashing. But there is an issue of competition in socialistic society. Firstly, competition is the base of a market economy; it is intrinsic to its entities: businesses, regions, and countries, according to a complex system of indicators. Whereas competition is the most often for people of the same profession in terms of quantity and quality of production. Or sporting competition in strength, agility, and speed. They all perform on an equal level, but there is an inherent rivalry in boxing, wrestling, etc. The physical strength, age, training, and skill of the person are important in this case.

The base of our research is enterprise – as a multifunctional, complex category that cannot be measured by a single indicator. Therefore, it becomes rather difficult to formulate an overall assessment of the competitiveness of a complex object: a company, a region, a country. For example, a region may be high in industrial development, high in wages, medium in productivity and low in health services. The competition, although interpreted differently, is always defined as a rivalry between actors. We reviewed the most typical definitions of competitiveness: a non-monopoly market competition; an adversarial, competitive relationship between several economic agents, manifested by a desire to obtain better performance. A special kind of fair economic competition in which the more skillful, enterprising, and capable side prevails, competition between market participants for better conditions of production and sales (Magomedov, 2005). The correctness of the comparability process is in the fact that comparisons should be made between quality homogeneous economic entities, i.e., enterprises similar in scale, activity, availability of resources, and possibility of prospective development. The need to quantify assessment led to the development of the category level of competition. This concept reflects the degree to which one entity is superior to another and allows a quantitative comparison of a large set of economic competitors. It follows by the appearance of the second most important universal category of quantity and quality. These categories are intrinsic to all phenomena of nature, society and human activity. In the management of businesses, regions, and the state, there is always a process of establishing and developing advantage in order to level up and, if possible, to get ahead of the competition. There is an issue of the quality benchmark. For many products there are specific GOSTs, specifying the structure and quantitative composition of products. When inspected by the specialized authorities, a company may indicate this on packaging or use them in advertising. Many other products have their own GOSTs or technical specifications, which companies develop themselves, guaranteeing a certain amount of them. In a market condition, the quality of a competitor's product can be a quality benchmark, especially if its market share is the leading one. If an enterprise has reached the same level in any parameter, it can safely mention it in its price lists. If it even exceeded that level, it can, point that out in advertising without comparative analogy. If the goods have better parameters than the foreign sample of a well-known company, the company can point this out, referring the buyer to the Internet, or publicly available indicators of the company, without naming the foreign company. This information can be found in the company's summaries on the world's leading exchanges. For some types of activities (financial, remuneration, environmental protection) information can be taken from statistical



digests, which usually demonstrate average results for the relevant industry. They can be a quantitative benchmark for product quality. For some financial indicators there are special standards, although they are mostly advisory in nature, but the achievement or exceeding them may already indicate the presence of advantages. The most important aspect is that the enterprises, the territories, and the leadership of the country should set and solve the problems of gradual increase of advantages, which lead to increased competitiveness and improve the lives of the population of any territorial formations. It can allow them to rise to a new level of quality. The implementation of the principle of quantitative comparability will allow to maintain the main semantic characteristics of competitiveness: multivariance, universality, multidimensionality, concreteness, relativity, and criterial nature. We will consider them more thoroughly. Multivariance determines that the authors' approaches depend on many factors: personal interests, the chosen priority characteristic, existing reality, the chosen object of evaluation, etc. The summary index of competition should be constructed so that it could serve as a universal parameter of the market condition of any objects to all market participants, the role of which can be played by sellers, buyers, competitors, investors, (present and potential), heads of public authorities, representatives of labor collectives, etc. Multidimensionality is the category of competition arises since it deals with specialists of different directions: marketers, commodity specialists, managers, quality management specialists, etc. The assessment of the level of competition of any objects can pursue a variety of goals: from studying the position of a particular product on the market to the study of the investment attractiveness of entire enterprises, industries, regions, and countries. Therefore, this diverse concept should be defined in different aspects, depending on the tasks to be performed. This requires its systematization, the use of methods of analysis and synthesis, which will ensure the specificity of the category. Relativity of competitiveness is based on a comparison on the key parameters of the evaluated object when choosing an adequate basis of comparison. In defining the conditions of competitiveness, an enterprise can be considered as an entity interested in achieving the best advantages in the characteristics of its activities, depending on the goals pursued. For the evaluation of the competitiveness of an enterprise, we examine the interests of the main participants in the process.

1. The buyers of products and services assess the competitiveness of the enterprise in terms of the competitiveness of the goods. They assess the most suitable for them in terms of quality and price, after-sales service and strict compliance with the delivery schedule: in time, batch sizes, nomenclature, quantity, cost of spare parts and components, guaranteed life and others compared with the products of other similar companies in the industry. Profitability and compliance of supply discipline is the primary goal of the seller-buyer relationship. Therefore, the customer's quantitative assessment comprises the quality of products and strict adherence to the delivery plan. In the conditions of the high competition among enterprises-suppliers, became successful those companies, who can quickly adapt to the increasing diversity of demand for products. Therefore, the factors for assessing competitiveness should include readiness and ability to update the assortment. In addition, in competition, those enterprises will have preferences that are clear, and provide the maximum of information to the consumer in an accessible form. The second very relevant factor of product competitiveness is the price. It should be most consistent with the quality of the product and have an optimal quality-price ratio. For example, sometimes it is useful to calculate corresponding of increase in quality to the increase in price. And, if the increase in price is significantly in compare with the increase in quality, it is better to eliminate such a product. The important for the consumer is the availability of discounts, incentives for high batch sizes, or repeat orders after a period. He or she become a regular customer and already claim for a discount. A system of discounts, benefits when paying for products, and a friendly relationship are very important.

Many authors regard a highly competitive product as a competitive enterprise, i.e. they consider these two as synonymous definitions. M. Dolinskaya (1999) analyse the concept of competitiveness of an enterprise in comparison with the category of product quality; P. Zavyalov (2001) assesses the competitiveness of a given product through its market share; O. Kaplina & D. Zaichenko (2005) assesse it through quality and price establish the competitiveness of an enterprise; G. Azgaldov (1982) compares the costs of the buyer and the result of using the product. M. Akulich (2003) indicates the level of product quality as a fundamental

factor in interfacing with customers. A. Voronov points out the necessity of a competent marketing policy in managing product competitiveness (2003); Sh. Magomedov (2005) considers the prestige of goods in the system of their competitiveness evaluation; G. Sabetskaya (2006) proposes to analyse competitiveness based on the construction of its market model. It includes product quality, which is determined not only by consumer properties but also by after-sales service as well as by precise fulfilment of contracts on quality, volume, range, delivery time, and the ability of supplier to innovational development. It seems to us that the level of product quality, its performance ahead of competitors, plays an important role, but it is too narrow a focus for the company. It has other sides of the business that should be considered. In particular, the quality of service, the availability of benefits, discounts, etc.

2. Suppliers of raw materials, fuel, components, and semi-finished goods.

If we want to achieve a finished product of high quality and be highly competitive, the first thing we should do is to establish incoming inspection of incoming materials, raw materials, and components. In a market economy, businesses can choose their own suppliers, and this poses the challenge of choosing from those that match their quality and price best. The quality of the raw materials should play a decisive role. It is important for it to have a high image and the quality of its raw materials, its products, and the completeness of its products to be fully in keeping with the quality of its products. Many companies make a special file on suppliers, in which the note all the shortcomings of the raw materials and components they receive. And once a month, the supply department provides this information to management. The important factor in this case is the stability of supply, i.e., the conclusion of a contract for a long period. It allows the supplier to plan its production for a long period and ensure its stability and sustainability in time, which is an important factor for the sustainable operation of the Russian economy. However, the supplier should consider the manufacturer's requirements and try to meet them. This is especially concerned with the convenience of packaging, batch sizes, and delivery time. Market relations involve not only competition, but also commonwealth, where each partner should proceed the cooperation, understand each other, and improve their relationship.

3. Banks and other lenders. First of all, they interested in the level of the enterprise's credibility as a borrower of funds, its solvency, i.e. its ability to pay the loan granted. The bank determines the level of its financial independence, stability, which determines its level of solvency. In establishing the terms of credit, the lender must determine the level of risk that it assumes. It is important to examine the credit rating of the company. Also, it is reasonable to assess its ability to generate a sufficient level of profit for its repayment, learn in detail the main financial indicators of its work, analyze their dynamics and plans. The lenders consider the use of credit funds, whether they are appropriate for the purpose of obtaining the loan. The set of factors and indicators must distinguish whether the loan is for current purposes. For the quantitative assessment can be used indicators of the efficiency of the innovation process, if the loan is long-term, and the efficiency of current production, if it is short-term one. Some banks, especially for long-term loans, insist on opening a special account at their bank and can control the expenditure of funds. Also, they can require a collection order to withdraw funds from another bank if the borrower cannot repay the loan on time. The general characteristics of the enterprise, the degree of its competitiveness is very important for banks. Also, the banks pay attention to the guarantees of the loan returns. The number of advantages and their level compared to competitors are also important.

4. The investors assess the feasibility and risk of investing in the activities of the company and the probability of obtaining income. Indeed, the investment attractiveness is provided by many factors: the effectiveness of the project, its technical and economic novelty at the stage of laboratory tests. It is important to assess the effectiveness of the project through increased labor productivity, savings of material resources, time of production of any part of a product. In the large projects requiring significant funds, the investment attractiveness is provided by the financial characteristics: stability, solvency, profitability of main products, the efficiency of fixed capital, low risk of bankruptcy, etc. Moreover, the investor assesses the total level of investment activity of the enterprise: how many applications for inventions were submitted, how many licenses were received in recent years, what is the intensity of the chief designer department, whether there is a department of inventors and innovators, what is its intensity, what is the return of fixed assets, their service

life, and many other issues related to the technical level of the enterprise. The success of the investment depends not only on the efficiency of its activities, but also on the rationality of the financing of the company development.

Investors are interested in the level of the company financial independence, the ability to increase the rate of sustainable growth of equity, ensure the contributions of the founders by exceeding the amount of net assets over the authorized capital. The quantitative assessment of the level of enterprise competitiveness for investors define the financial stability, solvency, profitability, probability of insolvency (bankruptcy), and assessment of the effectiveness of investment activities, its rationality, etc. There is a certain specificity of investment of enterprises by the foreign investors. In this case, the production indicators became primary ones for the foreign investors, because they believe most of the financial indicators can be artificially elevated. For instance: an enterprise has a high long-term, outstanding debt, but at the end of the year it borrowed a large new loan from another bank and completely repaid it. The financial condition of the enterprise based on financial indicators has improved dramatically: from a long-term debtor, it immediately became a debtor with a short-term debt. The company's profits and payroll volume are interdependable. The profit reduction causes the salary increasing and vice versa. Therefore, the indicators of profitability, solvency can be used as tools of manipulation, depending on the policies pursued by the company's management. Understanding this, the foreign investors pay more attention to production indicators and the main of them is "orders portfolio", i.e., applications for the products, their volume, and the term the company is provided with orders. The following indicators are very important, too: dynamics and intensity of equipment renewal, personnel qualification level, implementation of the latest technologies, etc. In our opinion, this position is the most correct. Since the indicators of the state of production guarantee the development of investments and income. The second factor is the qualification of personnel, their level of education, knowledge of modern methods, licenses and patents, rationalization proposals submitted and received by engineers during their service at the company.

5. Employees of the company, both those directly employed by it and those who would like to work there. Firstly, they are interested in high level of wages and the system of premiums, by comparing it with the level of the cost of living: the higher the gap, the more attractive it is from a material point of view. In addition, the level of social security is relevant for the employees. The level can be assessed by the share of funds allocated to the social development of staff. The financial considerations play a crucial role in the choice of employment, but they do not limit the individual requirements. New mothers are primarily interested in whether the company has a daycare center. Young professionals are interested in the opportunity for career growth, professional development, and self-development. The opportunities for young workers increase the probability of the career development, higher qualifications, and special skills. The qualitative composition of employees can be assessed by the number of persons with the higher education. But workers: by the share of specialists of the 4th, 5th, and 6th grades. The psychological climate of the company is important for the employees, too. It should be noted that stability in terms of wages and place of work is especially important in times of crisis. Also, an important factor is the stability of the enterprise on the market, its high image. However, it should be considered that each employee intuitively determines the state of the organization and feel the crisis moments. The management of an enterprise should cultivate a sense of patriotism among employees toward their enterprise. For instance, pay a part of the wages and then compensate the total. We can consider the experience of Japan, where during the recession the employers did not pay dividends to their workers, but, when it was over, they thanked every employee for not selling their shares and for remaining faithful to the company and paid the lost profits to the employees.

Indeed, the social security is in the first place for our enterprises, and especially for: fitters, adjusters of equipment, electronic workers, drivers, electricians, etc. For the accountants, economists, labor, secretaries, and others not only material and social incentives are important. The psychological climate in the team, the attitude of management is very relevant, too. Also, the important for them factors are career development, creative work, the opportunity to improve their skills, which determines the advantages and competitiveness.

6. Competitors of the enterprise. The competitors of the enterprise assess the benefits of a wide range of activities. They are interested in an enterprise's ability to increase its market share and the prospects of the



enterprise. They assess it by calculating the average annual growth rate, the increase of sales and the market dynamics. Because one area of the competition between competitors is cost savings, an important factor is the assessment of the cost of competing products by cost items, which are analyzed very carefully. There is an issue about the lower costs of the competitors and the higher quality of their products. In contrast to the cost of production, the costs of enterprise development are also subjected to serious assessing: renewal of fixed assets, introduction of new products and services, innovations in production technology, modern methods of organizing management, the introduction of mathematical methods and models, etc. The characteristics of financial condition through calculations of solvency, financial stability, and probability of bankruptcy are important and available for calculation. In the modern competition, the company with innovative development prevails. The intensity of this development can be assessed by the spendings on R&D, how quickly the company is out of the crisis, etc. Therefore, the assessment of competitiveness can be expressed through a comparison of such economic categories as product quality, solvency, efficiency, profitability, sustainability, attractiveness of investment, the level of social security in different combinations. If we define competitiveness as a general form of enterprise competition, it is necessary to identify another general dialectical contradiction, which is basis of its development. We believe, there is the contradiction between the old and new in general. The advantage of the old one is that it is quite stable, carries proven reliability, stability, low risk due to the high level of certainty. The development of new benefits is usually focused on the future, cutting edge, creating an advantage in a competitive market to occupy a higher-level niche and generate an additional income. At first, however, it can increase volatility, probabilism, and risk. That is why managers in a system of controversies must clearly substantiate the correct, calculated approach, to find the optimal solution, in which the benefits of increased advantages would be more significant than the stability, sustainability of the old business. The solution to this contradiction largely depends on the position of the enterprise or company on the market. On the one hand, a monopolist with a significant market share, strong distribution channels, stable orders, is not always inclined to change and increase competitiveness, especially if it leads to increased riskiness. However, this stability can't last for a long time. Companies and industries are always changing, introducing new technologies, advanced products, and if these processes are ignored, then any, even the most advanced enterprise begins to lose its position. There are many examples in the history of the world economy. For instance, in the 30's of the twentieth century, the Swedish electrical industry was the best in the world, had excellent product sales, as all electrical equipment of ships: electric motors and all other electrical appliances, were the most reliable, had the high efficiency. But in the 60's in the twentieth century, the industry began to decline in product quality to its American analogues and lose its advantages in the marketplace. The General Electric Corporation came to the forefront, and its products became the best in the world. The companies from Germany and Japan demonstrated an enormous success in this industry. Their products were as good as the products of their Swedish counterparts in terms of quality characteristics. The same had happened to the Japanese automobile industry, the mass cars production took the leading positions in the world in terms of quality characteristics, displacing the American and German automobile manufacturers. The cause of the leap was a sharp increase in product quality due to the action of two potentially new components: 1) strengthening quality control of raw materials, components, when the priority in their consumption became not the price, but high-quality products and accurate fulfillment of delivery dates; 2) abandonment of the constant speed introduced by G. Ford, the assembly line, in which each worker could stop the conveyor and restart it only when his operations were complete. It will improve the quality.

On the other hand, in a highly competitive market small and medium-sized enterprises try to find the vacant niches and therefore more likely can obtain the competitive advantages.

It provides their survival and sustainability on the market. Therefore, finding, exploiting, and creating the competitive advantage is benefit from the competition by finding reserves for growth in the production of goods and services, reducing the price.

The company's management is also responsible for the development and implementation of new management techniques and methods.

The special feature of competitiveness as a philosophical category is that its achievement is a rather

continuous process. It begins with an in-depth analysis of all the weaknesses of the company itself and ends with an examination of its external environment and the economic position with which it interacts on the market. In our opinion, there is a need to make a fundamental, significant change of economic analysis as a science: implement the analysis not only for the internal reserves, but to the active study of external partners. It allows us to analyze in more detail the related external domestic and foreign enterprises. We should study the advanced technology, labor organization, management methods, used raw materials, financial condition, solvency, the introduction of automatic and mathematical methods of production, to reduce accounts receivable and payable. We should study the competitors carefully, study their higher quality products, the lower cost of the same products, innovative technologies used in the enterprise, management organizing and many other issues. Suppliers of raw materials and components should report on delivery times, quality, and completeness, and this should be prioritized over the prices; make a clear payment schedule (to reduce payables). Companies should clearly know the requirements and benefits of the banks serving them. The company should be well aware of the wage levels of its competitors and the benefits and training opportunities they offer to their employees; participate in the activities of public and regional organizations to raise their profile in the market.

Based on the review of interested objects in the study of enterprise competitiveness, we can conclude that the main criterion for their separation is the desire to cover as much as possible different aspects of the enterprise, to give them a qualitative or quantitative assessment in terms of competitiveness. However, we can make a few remarks: 1) The desire to develop a universal set of factors leads to attributes, which are purely theoretical and cannot be objectively measured and quantified. The qualitative approaches are possible for implementations through point assessments or rating structures. The results may be subjective. These characteristics include the image of the company, the level of customer service, the quality of top managers, and the interests of customers. When formulating the list of factors, we should try to minimize these indicators. 2) The vast majority of subjects are external users who do not always have access to internal information. Therefore, for external users it is necessary the information from the official sources was available: financial and statistical reporting. 3) Individual subjects are interested in a certain priority subject of competitiveness and are not very important in its overall assessment. The set of factors should vary according to the subject of the assessment. For example, banks, suppliers of raw materials and materials are concerned with the solvency of the company and the timing of loan repayments. Consumers of the products are not concerned with the level of pay, etc.

Proposed set of competitiveness factors by entity (see Table 1).

**Table 1** – Set of competitiveness factors by entity

Factors	Entity
Product buyers	Technical: reliability, transportability, safety, ergonomics. Economic: price, delivery costs, storage times, the availability of benefits and privileges. Organizational: strict compliance with the terms of delivery in terms of timing, quality, assortment. Innovative: company image, brand prestige, the ability to offer new types of products.
Suppliers of the materials: raw materials, spare parts	Solvency, stability, company image
Lenders	Image, reputation, credit history, financial situation, the degree of liquidity, independence, ability to produce competitive products, profitability, large orders portfolio, the purpose of using the credit

Factors	Entity
Investors	Financial situation, efficiency of investment activities, management qualification
The company's staff	Level of remuneration and social security, financial state of the company, the psychological climate in the team, the present and future sustainability of the company, etc.
Competitors	Ability to increase market share, cost of key subsystems, management efficiency, solvency, financial sustainability, intensity of innovation, a rapid way out of the crisis.

*Source: composed by authors*

We have highlighted only the main factors of competitiveness and selected them according to the individual enterprise stakeholders. All these factors have a vested interest in its success and should therefore be considered in the external analysis. It will be the key to its success, both now and in the future.

The formation of a methodology for analyzing a company's competitiveness begins with the level of its competitiveness, i.e., with the development of a methodology for quantifying its level of competitiveness. We identify the requirements that the methodology should meet to be an objective and universal assessment tool in the current, market environment. It should be suitable for the modern era as it contains objective data on the level of competitiveness of any company. An object is a set of quality indicators, in changing which quantitative changes occur to it. It claims the generality of the philosophical categories of quality and quantity.

The list of requirements for an enterprise competitiveness methodology has been developed by the famous qualimetry specialist G. Azgaldov (1982) and supplemented by H. Fashiev (2003).

Requirements for competition analysis methodology:

1. Suitability – to measure exactly the quality of the object's competitiveness.
2. Sufficiency – the measured parameter, no need the other calculations.
3. Uniqueness – the instrument is the one of a kind.
4. Reliability – errors are minimal, failures are undesirable.
5. Qualifications – quantitative indicators are meaningful and understandable.
6. Integrity – the different parameters are combined into the one.
7. Individuality – the assessment is independent of other objects.
8. Flexibility – the method allows the assessment of all stages of the life cycle.
9. Low labour intensity – the method is not labour-intensive or costly.
10. Responsiveness – ability to get a quick assessment.
11. Improveability – the ability to improve the method.
12. Quantification – the method allows a quantitative assessment.
13. Uniformity – the method is the same for different objects and situations.
14. Globality – the method concerns with the development of society.
15. Singularity – the assessment criteria are singular.
16. Comparability – the valuations of similar objects are the same.
17. Reproducibility – the results obtained on the same object by different scientists are the same.
18. Comprehensiveness – all the main features of the product have the importance for the consumer and stakeholders.
19. Sensitivity – the assessment is sensitive to changes of the parameters.
20. Monotonicity – as the parameters improve, the score improves.
21. Accuracy – the margin of error of the estimate is comparable to the accuracy of the usual technical calculations.
22. Dynamism – the assessment concerns with the dynamics of the indicators.
23. Targeting – the management of the condition and development of object.
24. Manageability – the method provides modelling capabilities of the competitiveness.



25. Cost-effectiveness – the economic result exceeds the costs on the realization of the project.

The following overview of the competitiveness analysis methodology is not exhaustive. It excludes the requirements for an information base for analysis, the content and quality of which largely determines the success of the process. Some conditions directly linked to the information base of the analysis logically follow from the proposed requirements. Since the main part of the available information is operational, accounting, or statistical reporting, it is necessary to comply with the requirements for the information contained in them: reliability, materiality, integrity and consistency, comparability, neutrality, objectivity, indication of the reporting period, the correctness of registration, which is discussed in detail in the regulatory accounting documents.

Summarizing the requirements described above and considering the corrections, we have formed our own requirements for the enterprise competitiveness assessment methodology:

The methodology should be based on the application of simple calculations using documented (i.e., reportable) numerical data, which should be accessible to the subjects of the assessment and requirements for their quality:

- all the indicators used to determine the level of competitiveness of an enterprise should have a strictly economically defined calculation procedure. Also, they should be combined into a single indicator by constructing an integral multiplier;

- the methodology should be designed in such a way that, if necessary, indicator-characteristics can be added, deleted, changed, or replaced in the integral indicator of competitiveness without changing its essence;

- the calculated indicator of the level of competitiveness of a particular enterprise should consider all relevant aspects of the activity, independent of other entities and unmatched by other indicators;

- the application of the methodology should be the same for different objects at all stages of the life cycle and for all market actors;

- the implementation of the methodology should not require significant labor, material, and time costs, but should give a real economic effect in the form of a comprehensive analysis of enterprise competitiveness in order to manage its level, to model its state, and to achieve success.

And here we can see the emerging of another paired dialectical categories: the theoretical (formal, ideal) and the real. H. Hegel (2007) regarded the categories of "ideal" and "reality" as independent two definitions in opposition to one another. He believed that ideality is not something that exists outside and alongside reality, and that the notion of reality is clearly that it is the truth of reality.

The ideal and the real reflect the abstract, the formal and the real, which expresses the opposition between them as different but interrelated categories. The first stage studying and multifaceted analysis of a company allows us to assess its existing competitiveness, and the level of its advantages and disadvantages. Here we can know the best practices of domestic and foreign companies, identifying what we can learn from them. In general, it is a plan for future work, and the goals we want to achieve. Therefore, we establish the theoretical foundations and ways of solving the problem. We assess the amount of work to be done, the approximate timescale, and future possible outcomes. By studying external entities, ways to achieve competitive advantages for them, the requirements they impose on our enterprise, we assess possible or impossible ways to achieve the set requirements. If the requirements are not achievable, we are free under the conditions of a market economy, to change the bank or suppliers of raw materials, components. The abstract begins to assume the features of the real through a clear definition of whether it is possible to achieve a certain level of benefits for different subjects. For example, for banks – our ability to achieve the required level of liquidity, independence, sustainability, etc. For the consumer – the measures to improve the quality of products, and strict adherence to delivery schedules and deadlines. For the supplier – the quality of raw materials and components, clear delivery deadlines, and payment deadlines. It is a kind of the reality, which is fully revealed with the implementation of the plans for improved production and social development.

The proposed system of indicators for individual and stakeholders includes both the current state of the enterprise, and indicators of its development in the short term, it allows its partners to make plans for their development, increases the stability of economic partnerships. The category of theoretical to real is the way

from the idea to its implementation, the shorter it is, the more successful the development is, we become more and more competitive

In conclusion, there is another philosophical category, which is close to the dialectic of the categories of "singular and the universal". When considering the categories of part and whole, Hegel wrote in: "The direct relation is the relation of the whole and the parts. The parts are distinct and separate. But they are only parts in identity with each other, or in other words, if they are taken together to form a whole. But this 'together' is the opposite and negation of the part" (Hegel, 2007). Considering competitiveness as a general combination of the whole and not using the contradictions of its parts, we reduce their dialectical confrontation, although it operates in its entirety. First, the combination of advantages completely determines the quality of overall competitiveness: complete or incomplete. Complete it can be only when in all activities and departments of the enterprise, it has an advantage over its competitors, takes a leading position, although to achieve this is difficult. If these indicators are low on at least one advantage, a company cannot be highly competitive. The benefit ratio can have a wide variety of variations: the high advantage for the indicators, medium, and low advantage for the others. For example: high quality in terms of products, average in terms of financial condition, and low average in terms of wages. There is an issue of competitiveness of such enterprise. The question is rhetorical and can only be answered positively by the consumer of its products, while an employee of the company would say that the company has a low competitiveness. It is the dialectic of competition and a factor of its development. But there is an issue of the benchmarking base. For example, a product has a high-quality advantage in Russia, but is not competitive for foreign buyers (a situation is characteristic for Russia). Thus, we need to achieve the world-class quality standards. Proceeding from this, we divided all the advantages into three types, determining the overall minimum competitiveness for each group: by products, financial condition, and the social policy. On the products – its quality, payment terms, and price. Financial condition – strict compliance with standards of liquidity, stability, independence. In terms of social development – the level of wages, growth of the opportunities, a favorable psychological climate, a developed system of incentives, etc. It is the consolidated state of competitiveness of each group that determines the overall competitiveness of an enterprise, at least by Russian standards. This approach is very widely used abroad, through the SWOT-analysis, calculation of the Boston matrix, which gives a list of strengths and weaknesses of the level of enterprise development, without quantitative estimates.

### **Conclusions**

We have considered the content of the category "competition" and one of its external forms – competitiveness, trying to prove that they are general scientific categories, acting in many other areas of life, only in other forms: competition, competition rivalry, collision. The disclosure of the dialectics of these most important, general scientific characteristics of the enterprise is important, because it helps to identify the external and internal factors of their development affecting on it. Competition became a powerful force for development in our country only when we converted to market relations and enterprises became free in their decisions in the domestic and foreign markets, this was the most important condition for its emergence and prosperity. We have tried to demonstrate that it is subordinated to all major general scientific philosophical categories: form and content, quantity and quality, old and new, theoretical and real, part and whole, moreover, all major general scientific categories are present in competition in quantitative expression. This study of competition provides a scientific basis for conclusions on the competition. We tried to demonstrate two important points: 1) competition of complex objects (enterprises, regions, countries) cannot be expressed by a single indicator even if it is important (product quality, profit, high demand). It is always the complex indicator. The analysts of enterprises should search for economic, technical, organizational, and social reserves not only within the enterprise itself, but also in the external environment, including similar companies abroad. 2) Business analysis should not only search for internal reserves of output growth, but broadly analyze the external environment of the enterprise. It is provided by the current practice of import substitution, when we have taken a course to produce domestic parts and assemblies to gain greater independence from the hostile policy of the European Union and the United States.

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# Requirements for improving the public procurement system of the EAEU countries, caused by the challenge of import substitution

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**Abstract.** The article considers the problem of import substitution as a topical issue in the recent history of both Russia and other EAEU countries. The authors investigate dynamics of the average import ratios of EAEU exports in the period of the economic crises of 2008-2009 and 2020-2021. The implementation of a new approach to government and municipal procurement in the EAEU countries, caused by the potential of a common market space, would solve many important market problems, including the urgent practical problem of import substitution, exacerbated by Western sanctions. It allows formulate the conceptual proposals for solving the problem of import substitution in the field of information and communication technologies. The results of identifying the needs for improving the domestic public procurement system due to the urgent practical problem of import substitution allow to propose: scientific development of ICT tools on a competitive basis (procurement of scientific and technical products simultaneously from several suppliers, including enterprises of EAEU); science-based decision-making regarding the best ICT development option; production of ICT by several producers simultaneously (including enterprises of EAEU) with a possible rotation of producers.

**Keywords:** improvement needs, public procurement system, EAEU countries, import substitution problems.

**JEL codes:** C12, C10, O17

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## Introduction

Keeping the USSR, and later Russia and many other post-Soviet countries, in the state of technological backwardness always was the one of the most important trends of the West's hybrid warfare against our country (Tebekin & Anisimov, 2020).

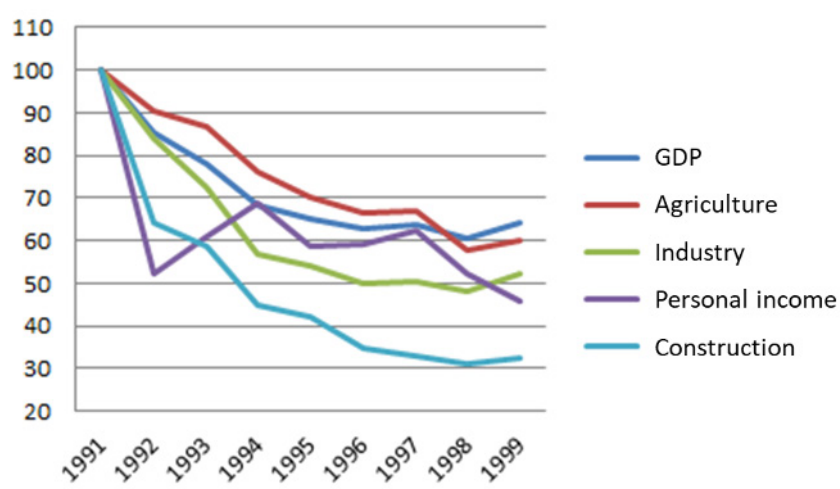
The results of "market reforms" of the 1990s (led by Western consultants), based on Rosstat data, are shown in Figure 1. According to them, the one of their primary objectives was the destruction of Russian domestic machine-building, including the manufacturing means. It leads to the country's automatically depending on imports.

We should note the successfully achieving of this objective by the "reformers". For example, in 1987 there were 10 union ministries of mechanical engineering, and there were several dozen union ministries of industry in the USSR. But nowadays in Russia there is still no single proper ministry of industry. The federal ministry in charge of industry is permanently a hybrid complex, merging alternately with energy and commerce.

When the sanctions pressure on Russia intensified, especially in 2014 and later in 2022, the problem of import substitution became even more acute.

This is particularly evident in the procedure of public procurement, where along with the traditional

problem of corrupt collusion, the absence of real domestic competition is clear, as domestic industry declined for a long period of time. There are a lot of quasi-monopolies in many industry segments; in some segments there are no domestic manufacturers.



**Figure 1.** Dynamics of the Russian Federation economic development in 1991-1999 (% to the 1991 level)

Source: composed by authors

In this respect, we would like to consider inviting businesses from EAEU member states to participate in public procurement tenders in order to increase competition among manufacturers and ultimately stimulate import substitution processes.

Thus, the purpose of this study is to improve the public procurement system of the EAEU countries, caused by the import substitution problems on a competitive basis, accompanied by an increase in the range, quality and price of the products produced.

### Methods

The study of the requirements for improving the system of public procurement of the EAEU countries due to the need to solve urgent practical problems of import substitution we study the scientific developments in this field, which are reflected in the works of Volkodavova & Zhabin (2016a; 2016b), Ershov (2015), Levchegov (2015), Mensa (2016), Moiseev, Nitsevich & Petrovichev (2015), Novikov & Somov (2016), Polovinkin & Fomichev (2019), Serikova (2015), Cherkasova (2015), Shuvalov (2015), Shcherbina (2016), etc.

The methodological basis of the research was also formed by the author’s achievements on the topic of research reflected in the works (Tebekin, 2015; 2017; 2022).

### Results

Import substitution is a crucial issue in the recent history of both Russia and other EAEU countries.

It is demonstrated by the export and import characteristics of the EAEU countries; the dynamics is presented in Table 1-5 and Figure 1-5 (TrendEconomy, 2022).

**Table 1** – The export-to-import ratio in the foreign trade turnover of the Republic of Armenia in 2009-2020 (bn, USD)

Year	Import	Export	The export-to-import ratio
2009	3.17	0.68	4.66
2010	3.78	1.01	3.74
2011	4.10	1.32	3.11
2012	4.26	1.42	3.00
2013	4.25	1.46	2.91
2014	4.15	1.49	2.78

Year	Import	Export	The export-to-import ratio
2015	3.25	1.48	2.19
2016	3.21	1.80	1.78
2017	3.89	2.14	1.81
2018	4.84	2.38	2.03
2019	5.07	2.62	1.93
2020	4.56	2.51	1.81

Source: TrendEconomy, 2022

**Table 2** – The export-to-import ratio in the foreign trade turnover of the Republic of Belarus in 2009-2020 (bn, USD)

Year	Import	Export	The export-to-import ratio
2009	28.56	21.30	1.340845
2010	34.88	25.28	1.379747
2011	45.75	41.41	1.104806
2012	46.40	46.05	1.0076
2013	43.02	37.20	1.156452
2014	40.50	36.08	1.122506
2015	30.29	26.66	1.136159
2016	27.60	23.53	1.172971
2017	34.23	29.23	1.171057
2018	38.40	33.72	1.13879
2019	39.47	32.95	1.197876
2020	32.76	29.17	1.123072

Source: TrendEconomy, 2022

**Table 3** – The export-to-import ratio in the foreign trade turnover of the Republic of Kazakhstan in 2009-2020 (bn, USD)

Year	Import	Export	The export-to-import ratio
2009	28.40	43.19	0.65756
2010	24.02	57.24	0.419637
2011	38.01	88.10	0.431442
2012	44.53	92.28	0.482553
2013	48.80	84.69	0.576219
2014	41.29	79.45	0.519698
2015	30.56	45.95	0.665071
2016	25.17	36.77	0.684525
2017	29.59	48.50	0.610103
2018	33.65	61.10	0.550736
2019	38.35	57.72	0.664414
2020	38.08	46.94	0.811248

Source: TrendEconomy, 2022

**Table 4** – The export-to-import ratio in the foreign trade turnover of the Republic of Kyrgyzstan in 2009-2020 (bn, USD)

Year	Import	Export	The export-to-import ratio
2009	2.97	1.17	2.538462
2010	3.22	1.48	2.175676
2011	4.26	1.97	2.162437
2012	5.37	1.68	3.196429
2013	5.98	1.77	3.378531
2014	5.73	1.88	3.047872
2015	4.06	1.44	2.819444
2016	3.84	1.42	2.704225
2017	4.48	1.75	2.56
2018	5.29	1.83	2.89071
2019	4.98	1.98	2.515152
2020	3.38	1.86	1.817204

Source: TrendEconomy, 2022

**Table 5** – The export-to-import ratio in the foreign trade turnover of the Russian Federation in 2009-2020 (bn, USD)

Year	Import	Export	The export-to-import ratio
2009	170.82	301.79	0.566023
2010	228.91	397.06	0.576512
2011	306.09	516.99	0.592062
2012	316.19	524.76	0.602542
2013	314.94	527.26	0.597314
2014	286.64	497.83	0.575779
2015	182.78	343.90	0.531492
2016	207.44	301.78	0.687388
2017	259.96	379.20	0.685549
2018	240.22	451.49	0.532061
2019	247.16	426.72	0.579209
2020	231.66	337.10	0.687214

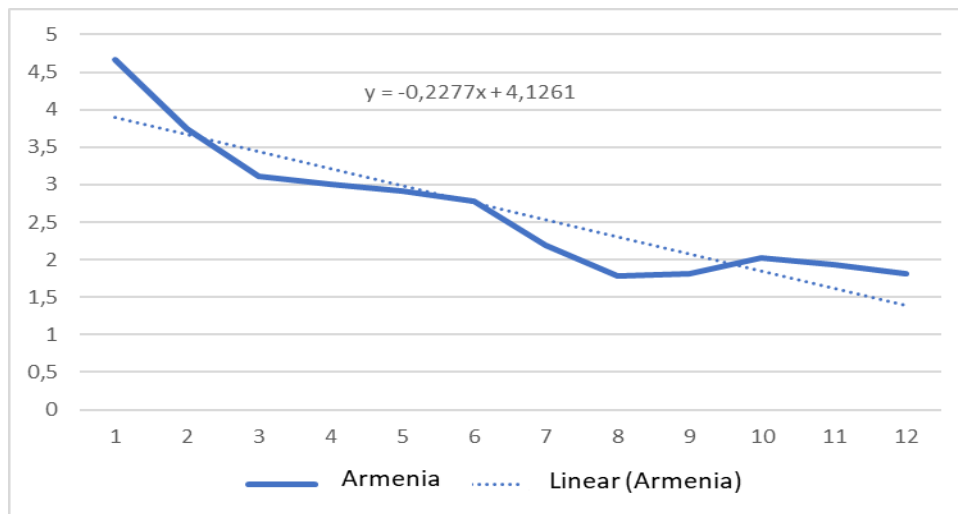
Source: TrendEconomy, 2022

According to Tables 1-5 and Figures 1-5, the average import ratio of EAEU member countries (except Armenia) remained almost constant, varying by around 2% per year in the period between the economic crises of 2008-2009 and 2020-2021.

The implementation of a new approach to government and municipal procurement in the EAEU countries, caused by the potential of a common market space, would solve many important market problems, including the urgent practical problem of import substitution, exacerbated by Western sanctions.

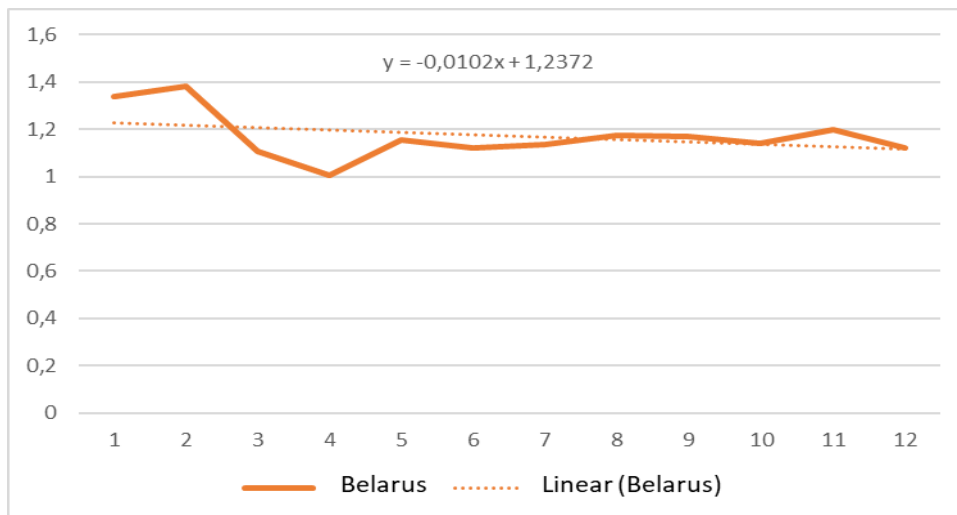
For example, there is the import substitution problem for the EAEU countries in the field of information and communication technologies (ICT), which recognised as one of the key development areas in recent human history.





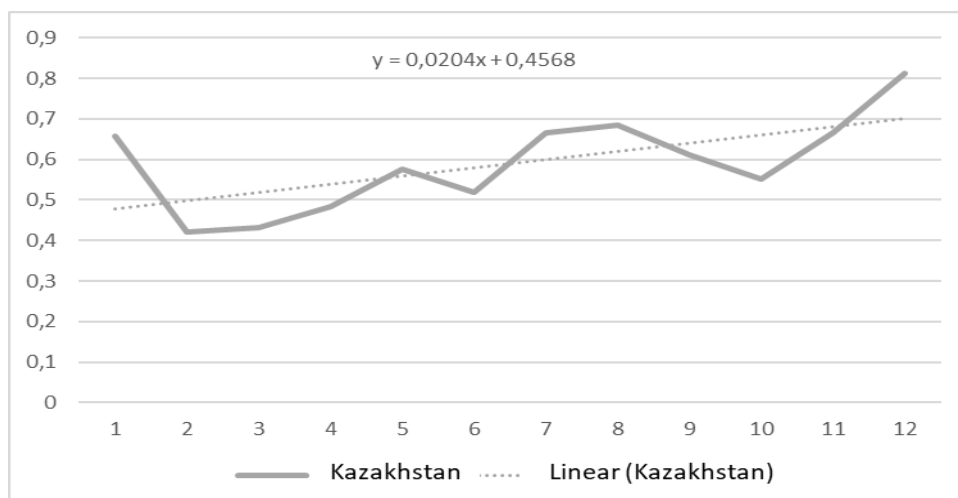
**Figure 2.** The export-to-import ratio dynamics in the foreign trade turnover of the Republic of Armenia in 2009-2020

Source: composed by authors



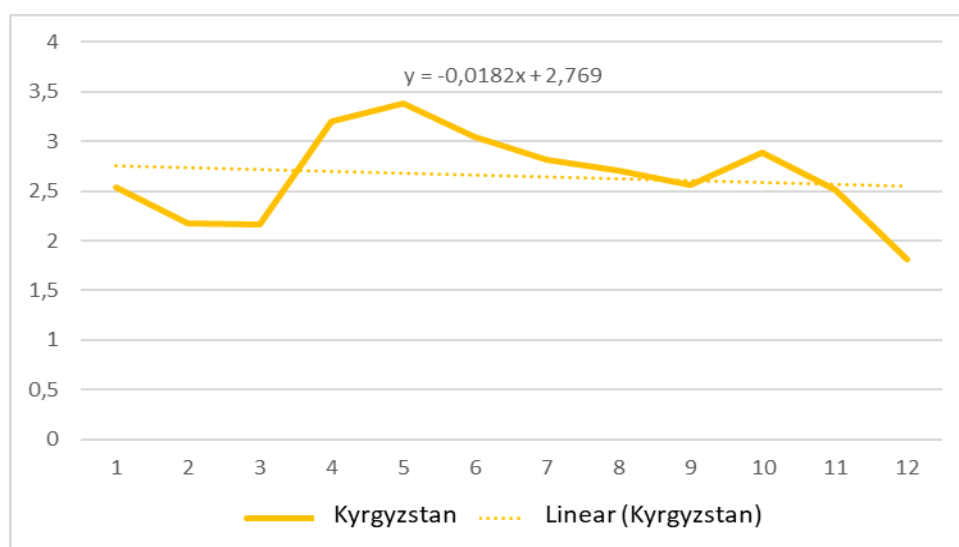
**Figure 3.** The export-to-import ratio dynamics in the foreign trade turnover of the Republic of Belarus in 2009-2020

Source: composed by authors



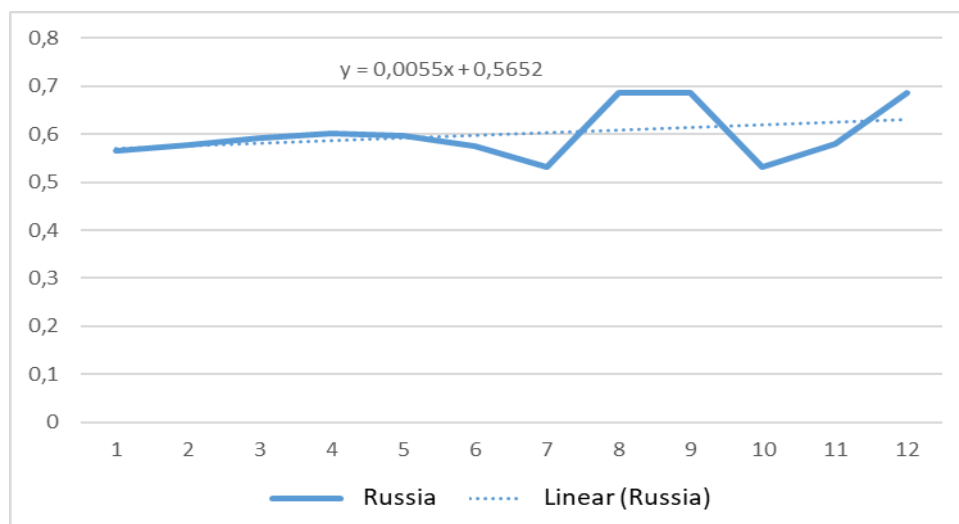
**Figure 4.** The export-to-import ratio dynamics in the foreign trade turnover of the Republic of Kazakhstan in 2009-2020

Source: composed by authors



**Figure 5.** The export-to-import ratio dynamics in the foreign trade turnover of the Republic of Kyrgyzstan in 2009-2020

Source: composed by authors



**Figure 6.** The export-to-import ratio dynamics in the foreign trade turnover of the Russian Federation in 2009-2020

Source: composed by authors

We consider this problem on the example of the Russian Federation as the largest economic participant of the EAEU.

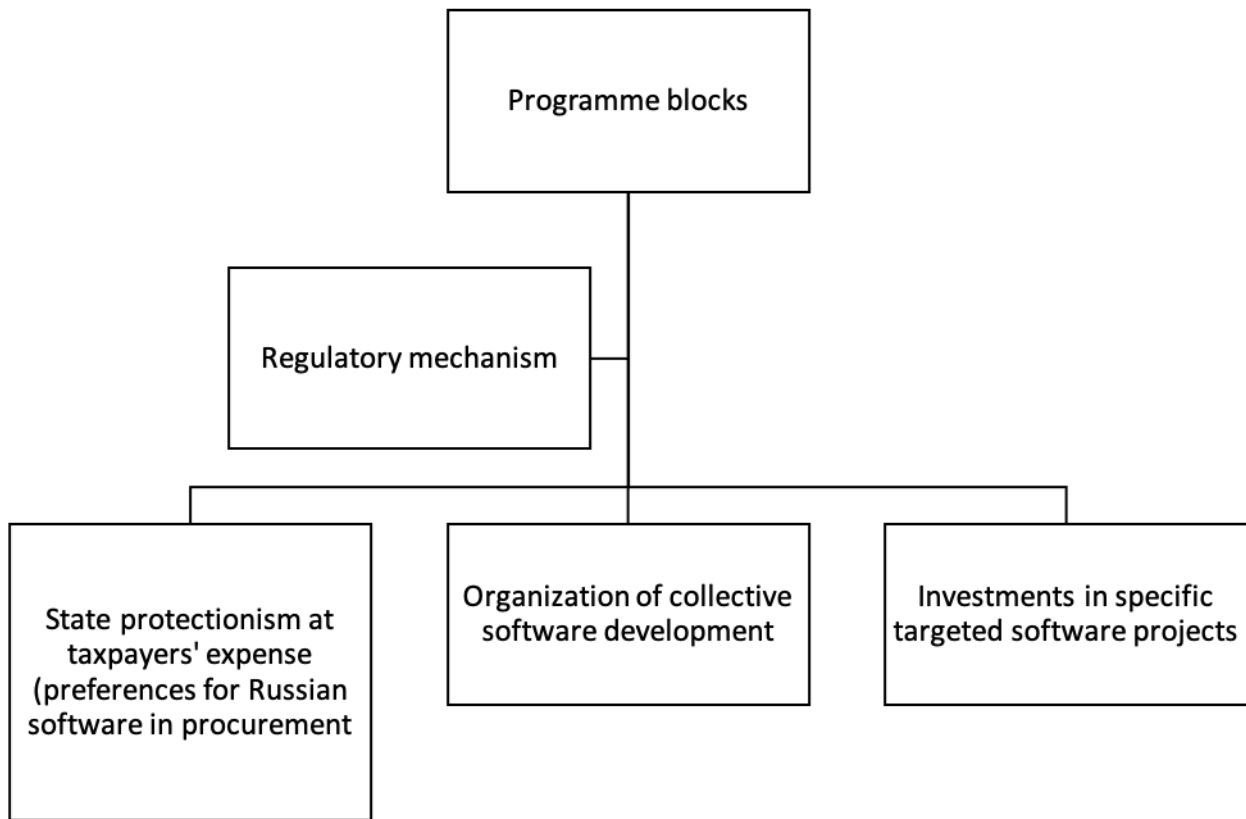
The share of imported equipment in strategic for the Russian Federation ICT sector reached 90% in the 1990s. Nowadays this dangerous for national security level unfortunately remains.

Obviously, the basis of import substitution for any state is the establishment of a strong domestic industry capable of saturating the national market with high-tech products of domestic production with high added value.

Since the mid-2010s the Ministry of Communications and Mass Media and the Ministry of Industry and Trade of the Russian Federation have been working on this task by implementation an import substitution plan for the radioelectronic industry.

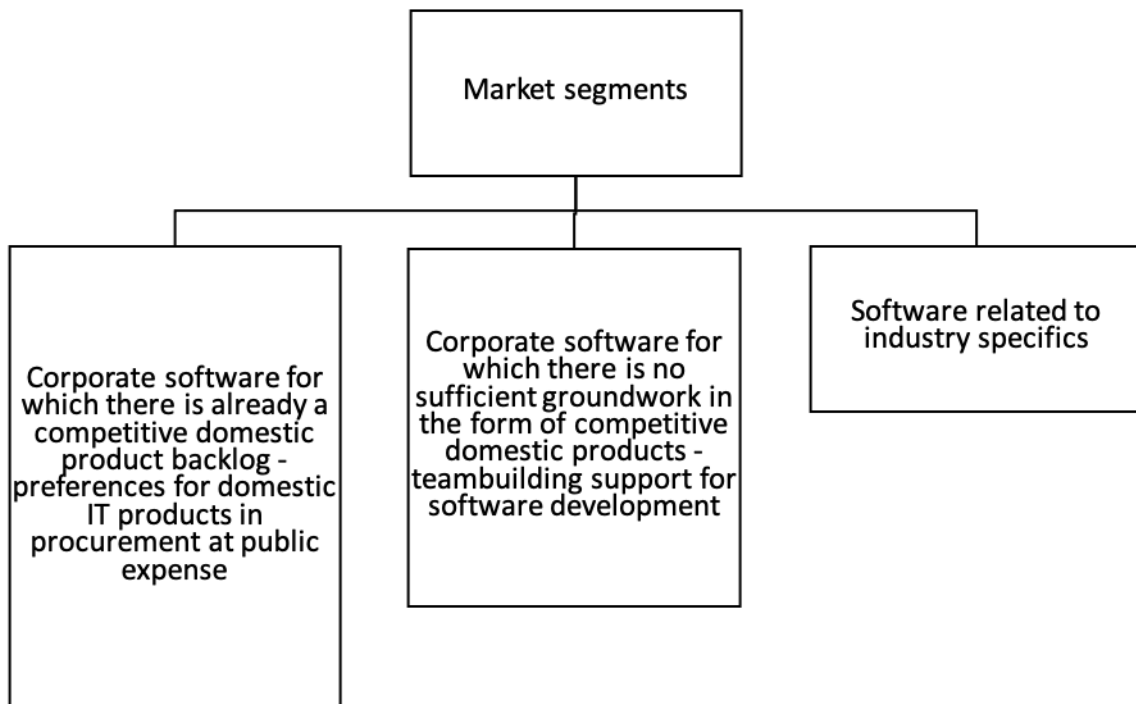
The software import substitution programme supervised by the Ministry of Communications is divided into three regulatory blocks (Figure 6).

The software import substitution plan of the Ministry of Communications and Mass Media of the Russian Federation approved by Order No. 96 on 01.04.2015 included three blocks (Figure 7).



**Figure 7.** Blocks of the software import substitution programme overseen by the Ministry of Communications, separated by regulatory mechanism

Source: composed by authors

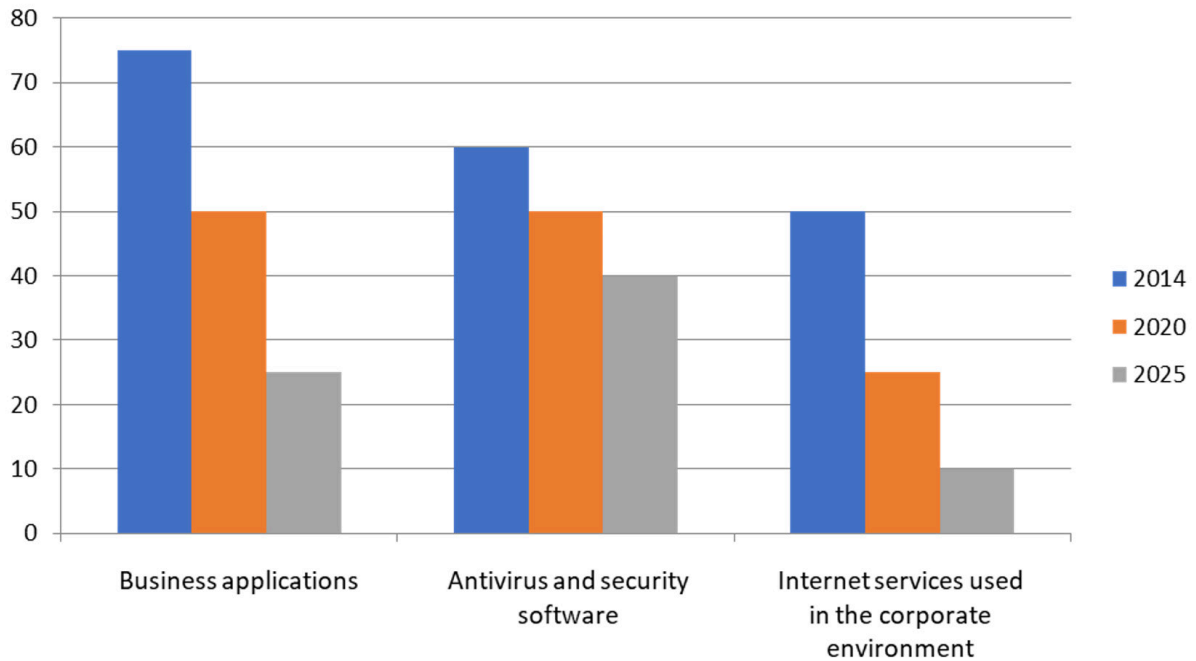


**Figure 8.** Software Import Substitution Plan Blocks, approved by Order of The Ministry of Communications and Mass Media of the Russian Federation No. 96 on 01.04.2015

Source: composed by authors

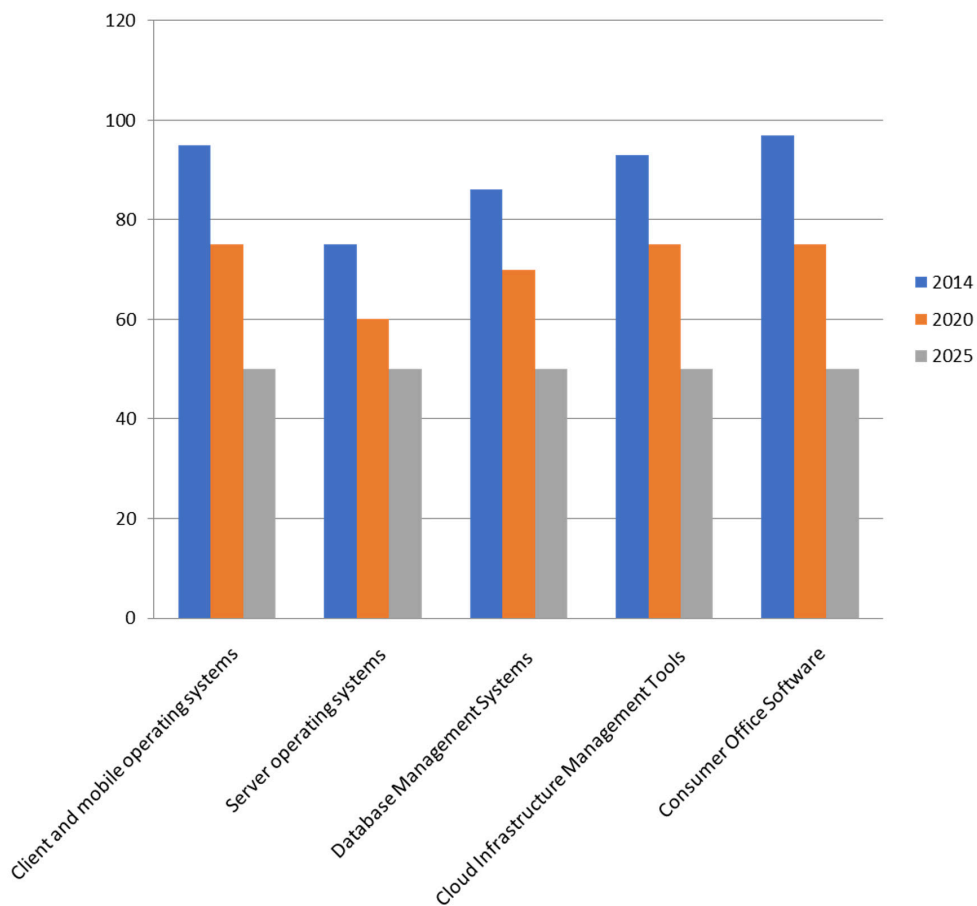
Figure 8 shows the planned dynamics of import reduction in the segments of the corporate software market for which there was a margin of competitive domestic products in 2014 – the preference of domestic

ICT products when procuring at public expense for the period until 2025.



**Figure 9.** Planned dynamics of import reduction in the segments of the corporate software market for which in 2014 there was a margin of competitive domestic products for the period until 2025

Source: composed by authors



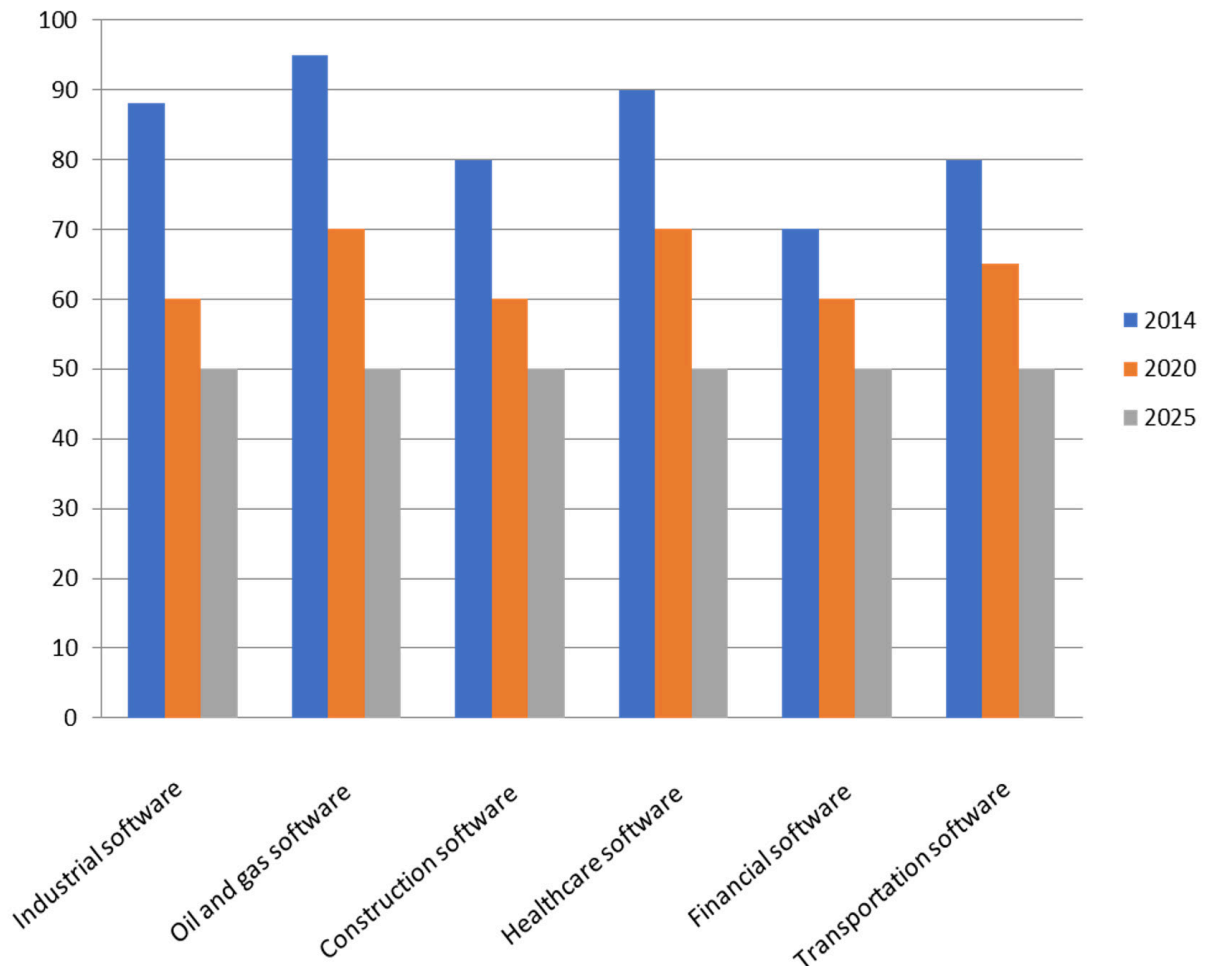
**Figure 10.** Planned dynamics of import reduction in the segments of the corporate software market for which in 2014 there was not a margin of competitive domestic products for the period until 2025

Source: composed by authors



Figure 9 shows the planned dynamics of import reduction in the segments of the corporate software market for which in 2014 there was not a margin of competitive domestic products – support for collaborative software development for the period until 2025.

Figure 10 shows the projected decline of imports volume in the industry-specific segments of the software market in the period 2014-2025.



**Figure 11.** The projected decline of imports volume in the industry-specific segments of the software market in the period 2014-2025

Source: composed by authors

When commenting on this problem, that time the Head of the Russian government Dmitry Medvedev said that import substitution "is not a situational short-term event, but... a strategic direction of work for the coming years outside the context of all kinds of sanctions" (RIA News, 2015).

It should be mentioned that this statement was made seven years before the West imposed anti-Russian sanctions in 2022.

According to Dmitry Medvedev, to 2015 year a rather diverse ("although not comprehensive") set of instruments of state support for import substitution had been formed: subsidies, co-financing of research, grants, preferences in public procurement.

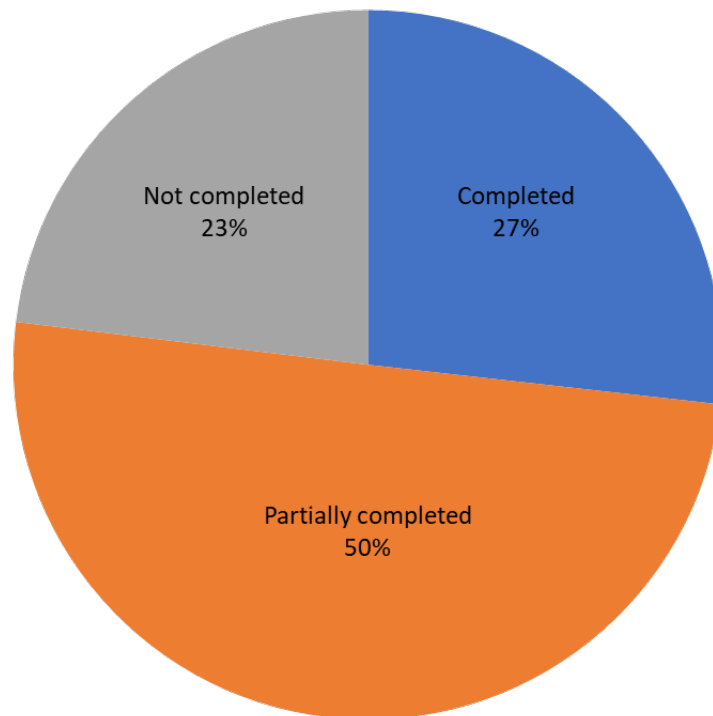
At a meeting of the Russian Government on 3 April 2015 on the issue of ensuring the implementation of sectoral import substitution programmes, Medvedev also noted that: "The import substitution course must take into account both our interests above all and our international obligations. And, of course, to take into account the co-operative links we have developed with our partners who have already invested in our industry, agriculture and used modern technology".

Import substitution programmes for industry, energy, agriculture and software were adopted in 2015 in accordance with point 41 of the 2015 "crisis bailout plan" of the Russian Government.

According to paragraph 41 of the "crisis bailout plan", aimed at approving and ensuring the implementation of sectoral import substitution programmes (plans), the expected result was "the formation of favourable conditions for the development of production of Russian competitive products in priority sectors".

Unfortunately, the phrasing of the expected outcome of the "crisis bailout plan" item on import substitution (as well as the other items of the plan) was extremely imprecise.

An assessment of the implementation of the 2015 crisis bailout plan made by representatives of the Court of Audit clearly showed (Figure 12) (Tebekin & Zhigulin, 2016) the poor implementation of this plan that not much more than a quarter of the plan was fully implemented.



**Figure 12.** An assessment of the implementation of the 2015 crisis bailout plan made by representatives of the Court of Audit (on 1 January 2016)

Source: composed by authors

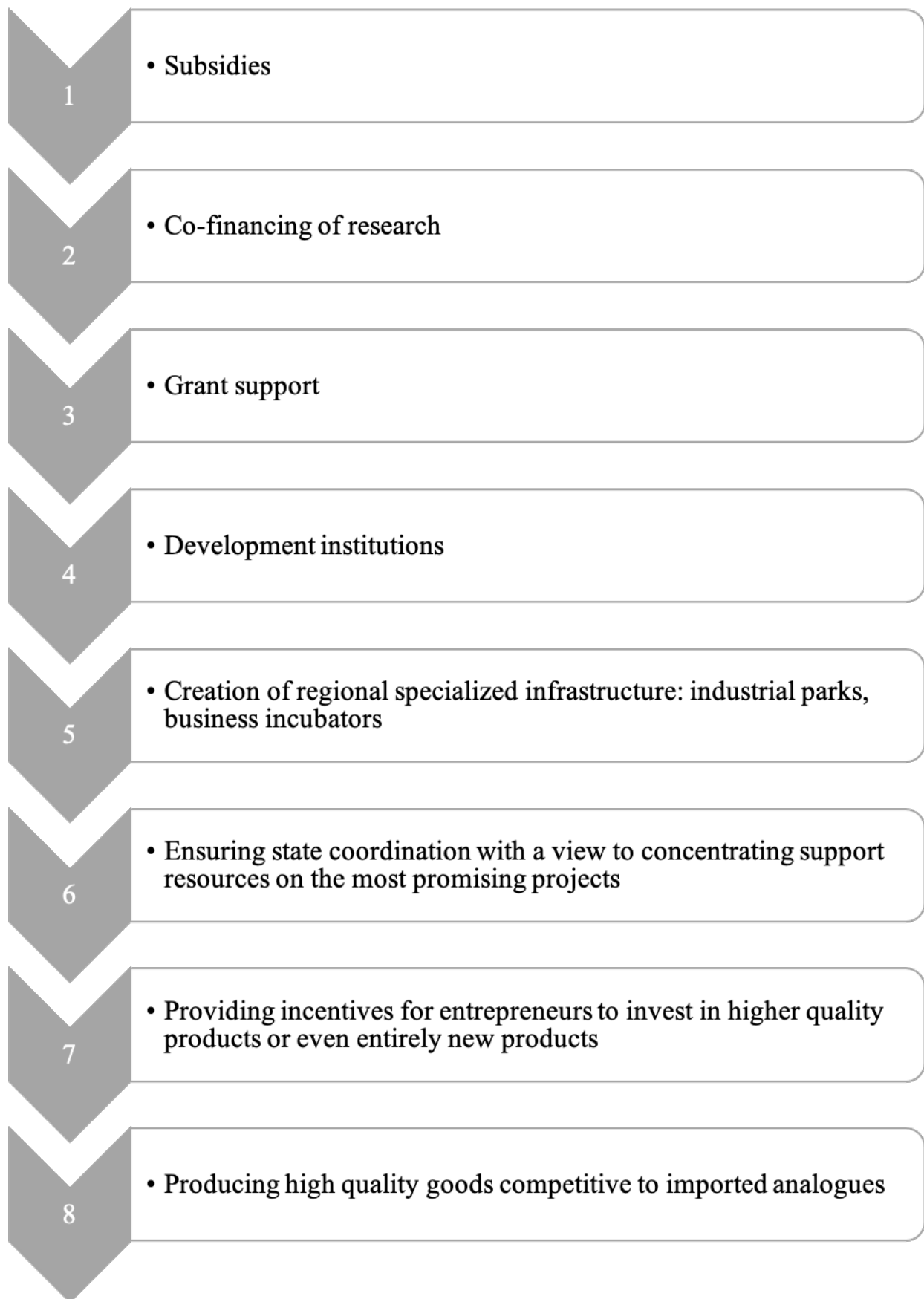
Of course, such a result of the implementation of the Priority Action Plan for Sustainable Economic Development and Social Stability in 2015 could not provide the solving of import substitution problem.

On the other hand, if we try to compare the Russian government's views on the problem of import substitution in the 2010s with those of the 1990s under the conventional motto "let's pour all the problems by petrodollars", they have clearly been progressive, primarily in their assumptions. The course towards filling market with Russian goods become completely correspond to the national interest of the Russian Federation.

The Russian government's import substitution policy of the 2010s is undoubtedly constructive from a goal-setting point of view. This refers to the tasks:

- reducing the economy's dependence on raw materials,
- increasing the volume of higher value-added products (increasing the share of higher value-added products),
- approving a state programme of import substitution for the industrial and agricultural sectors.

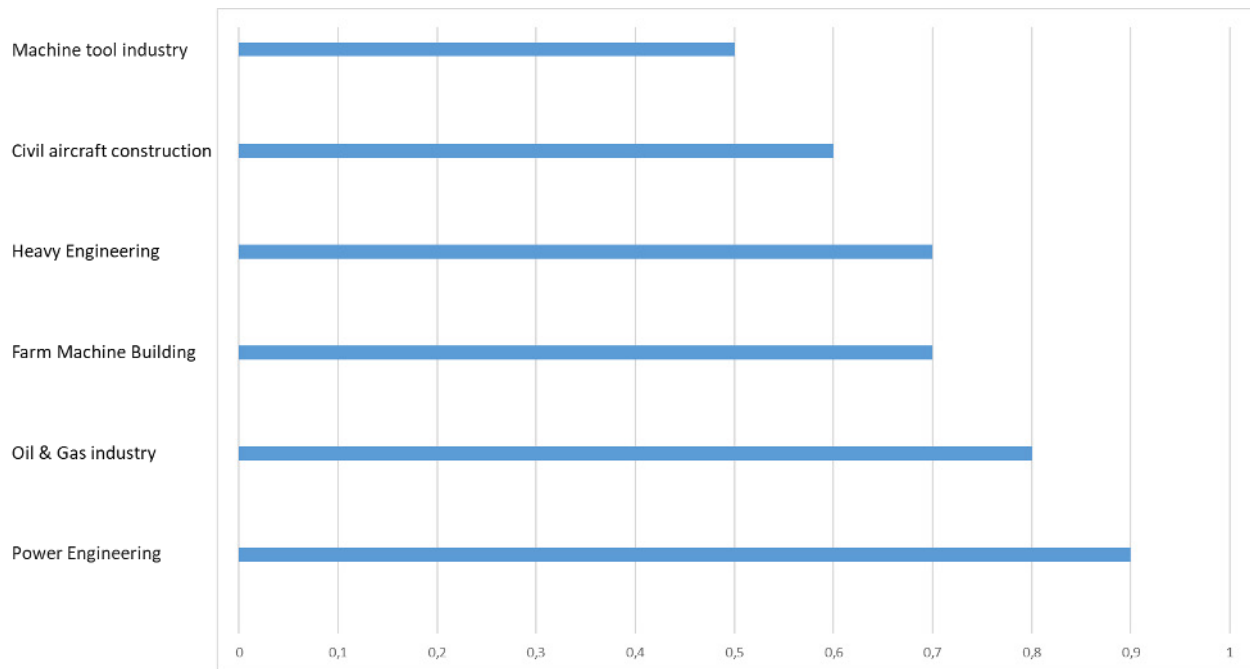
Despite the fact that by 2015 the Russian Government believed that "a sufficiently diverse (although not comprehensive) set of instruments of state support for import substitution had been formed" (Figure 13). In practice, the mechanisms of their use have not worked properly. The modern situation clearly shows that the improvement of the public and municipal procurement systems of the EAEU countries can be considered as a valid mechanism.



**Figure 13.** A set of instruments of state support for import substitution processes

Source: composed by authors

However, imports continue to dominate many key sectors of the Russian economy (Figure 14).



**Figure 14.** Share of imports in key sectors of the Russian economy in 2022

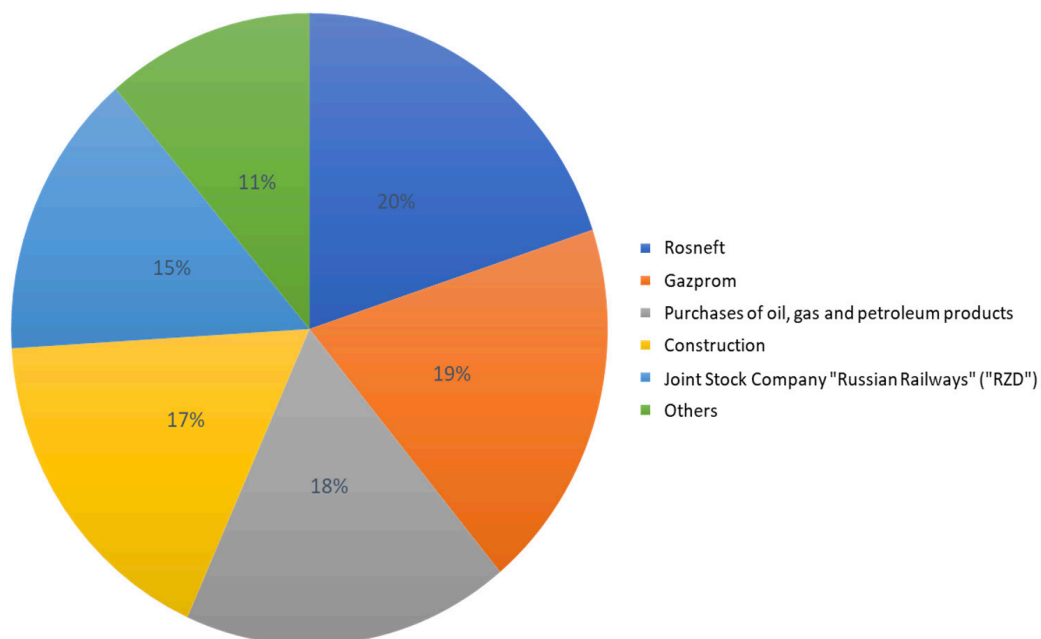
Source: composed by authors

In this regard, on the one hand, we can note a conscious choice of decisions regarding import substitution made by Russia, including

delegating of some responsibilities to the EAEU supranational level on trade policy, customs and tariffs, and technical regulation of import substitution.

On the other hand, there are imperfect conditions for the market development of free competition of domestic companies dealing with the problem of import substitution.

For example, by the Ministry of Economic Development estimates, the state companies purchased goods and services worth RUB 23.1 trillion in 2015 under 223-FZ. However, the five largest players, led by Rosneft and Gazprom, consumed 70% of this amount (Figure 15).



**Figure 15.** Example of distribution of 223-FZ procurement by customer in 2015

Source: composed by authors



However, the volume of Rosneft's procurements under 223-FZ alone (RUB 4.6 trillion) is comparable to the total volume of state purchases made in 2015 under 44-FZ.

But there are no progress in the distribution of 223-FZ procurement across customers in terms of unequal volumes over the last seven years (2015 to 2021).

Thus, the volume of purchases made under FZ-223 by the Renovation Fund (Moscow) according to the initial guaranteed maximal price (GMP) in 2021 (5.6 trillion rubles) exceeded the total volume of purchases by nine other participants, which were included in the TOP-10 by this indicator (Table 6) (Analysis of the Russian procurement market, 2021).

**Table 6** – Top 10 customers by total amount of GMP under 223-FZ in the Russian Federation in 2021

Customer	Customers INN	Customers KPP	Volume of purchases made under FZ-223
Renovation Fund, Moscow	7703434808	771001001	5 590 255 422 255,12
JSC Russian Railways, Moscow	7708503727	770801001	1 130 332 628 182,73
JSC Centralnaya PPK, Moscow	7705705370	770501001	504 737 281 311,47
OOO Gazprom komplektatsiya, St. Petersburg	7740000044	781001001	407 513 584 724,17
PJSC Aeroflot, Moscow State Unitary Enterprise Ecotehprom, Moscow	7712040126	770401001	247 133 880 589,69
PJSC Aeroflot, Moscow	7706043312	770601001	231 286 716 640,08
FSUE Atomflot, Murmansk Region	5192110268	519001001	205 334 612 917,04
PJSC FSK UES, Moscow	4716016979	772801001	182 308 139 324,53
PJSC Kuzbassenergo, Kemerovo Region	4200000333	420501001	124 460 862 542,05
JSC MosInzhproekt, Moscow	7701885820	770101001	117 268 231946,59

Source: Analysis of the Russian procurement market, 2021

According to the Ministry of Economic Development, 95% of procurements in the Russian Federation are non-competitive; the half of them were placed by a single supplier only.

The Ministry of Economic Development of Russia in its assessments also concerns about:

- 1) contractual nature of deals,
- 2) unreliable character of the customers information,
- 3) small businesses reduced interest in supplying goods and services to state-owned companies.

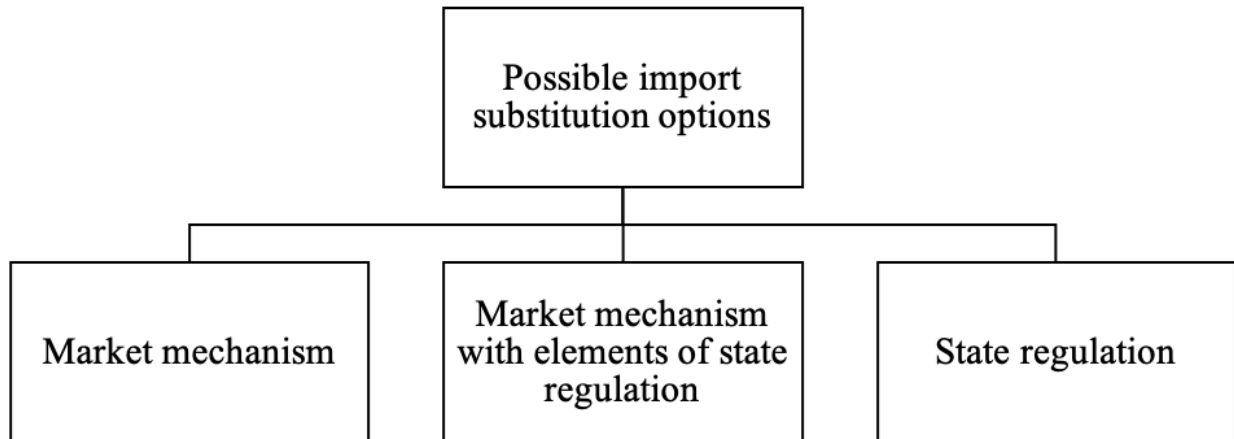
Similar problems in ensuring proper competition in public procurement are experienced by other EAEU countries (Amelchenya, 2020): Republic of Armenia, Republic of Belarus, Republic of Kazakhstan, Republic of Kyrgyzstan (Moskalievich, 2019; Khamitov & Junusbekova, 2021; Abdugarimova, 2020).

This also highlight the need to improve the system of public and municipal procurement of the EAEU countries in the single market space.

Figure 16 shows the possible solutions to the import substitution problem.

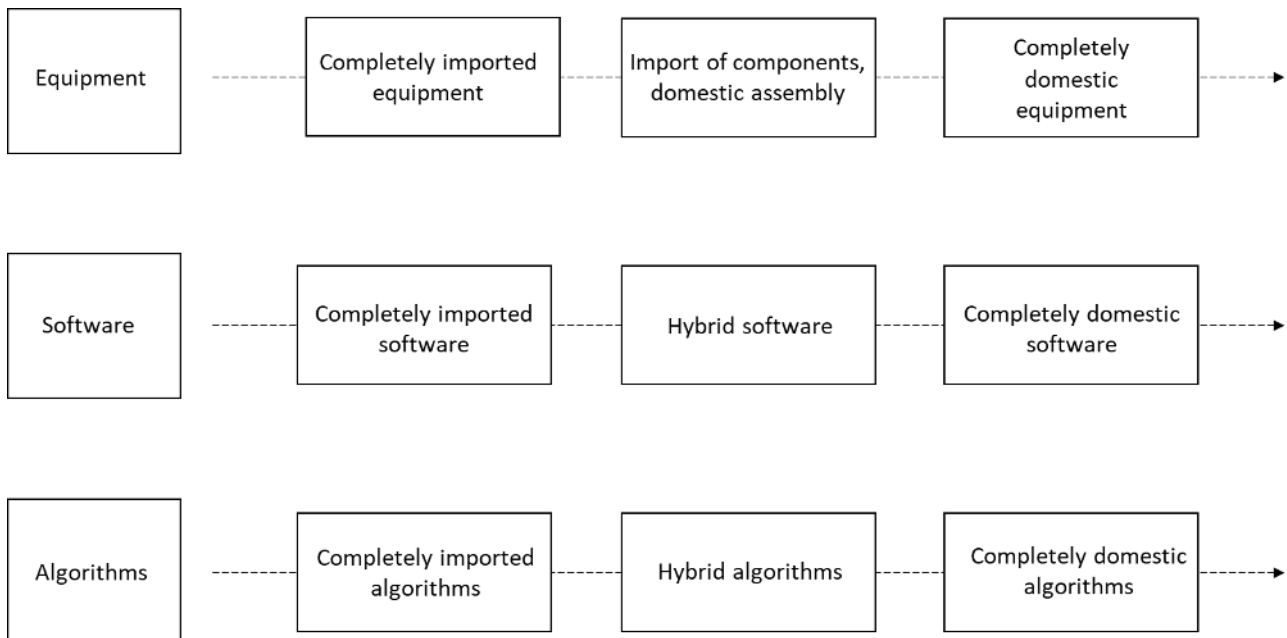
The intermediate option "state regulation + free market", which is the most common in world practice, is the most preferable of those presented in Figure 16. By it, developed countries have tended to reduce government regulation while increasing the share of the free market. This is a rather radical step for the existing domestic system of state capitalism and other EAEU countries. However, the "critical mass" (share) of state regulation of all developed countries is limited in order to maintain control over the market situation and avoid the negative effects of a free market on national security.

The dynamics of import substitution levels requiring implementation of the strategic development perspective of the national economy. Figure 17 shows it in the IT field.



**Figure 16.** The possible solutions to the import substitution problem

Source: composed by authors



**Figure 17.** An example of a model of the dynamics of import substitution levels requiring implementation in the IT field in the strategic perspective of the national economy

Source: composed by authors

To achieve the required level of import substitution, it seems appropriate to implement the following measures of state support for the development of domestic information and communication technologies in the public procurement system as a strategic direction of national economic development (Figure 18).

The problems of import substitution in the IT include the registration of business abroad by many well-known companies of Russia.

This is clearly indicate the absence of a business-friendly environment for IT.

What are the possible solutions to the problem of import substitution in the IT field?

Three vectors could be defined.

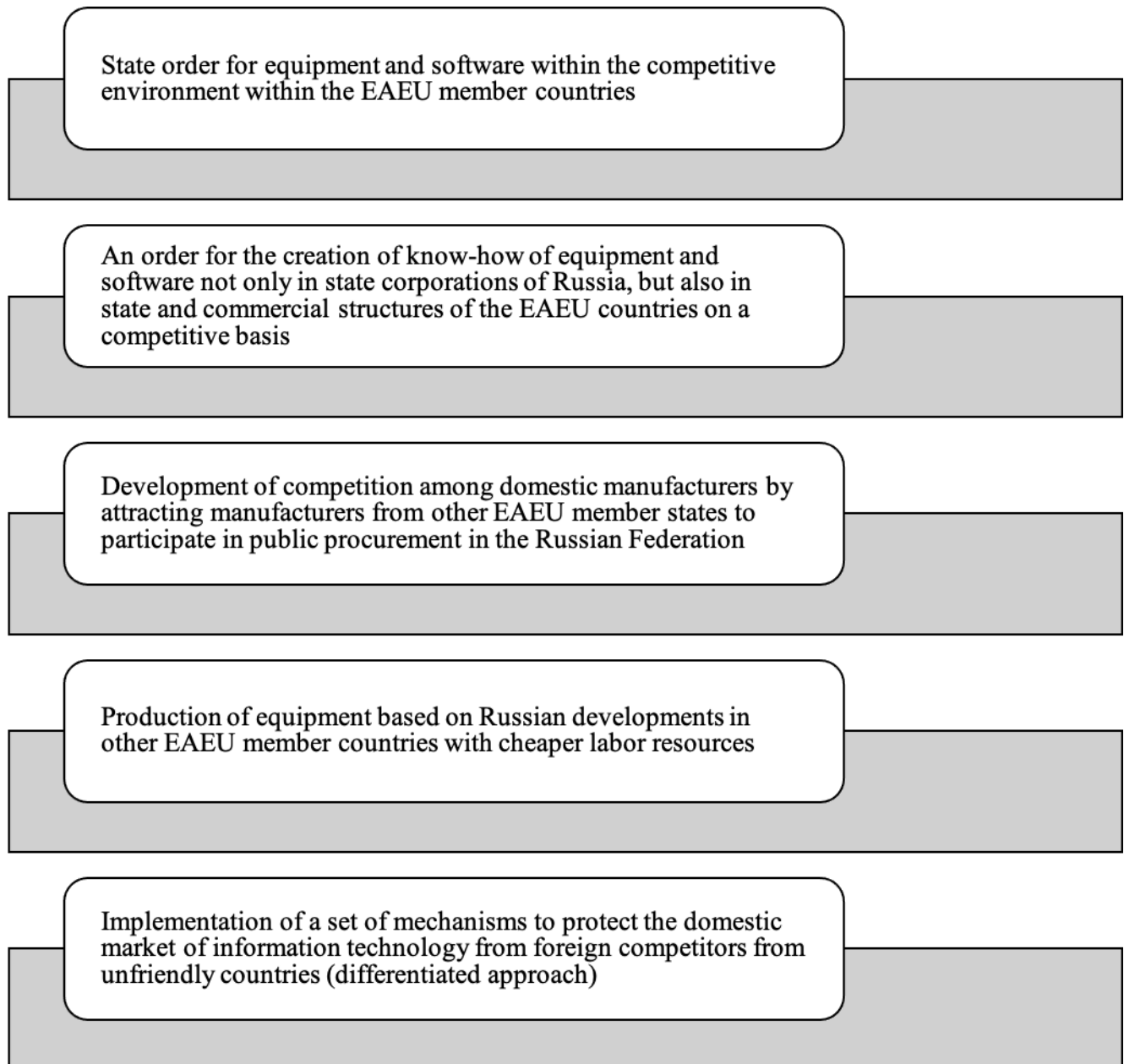
The first vector is related to I. Ansoff’s identification of the company’s strategic business areas (SBAs) in terms of strategic management (Figure 19) (Ansoff, 1989).

Nowadays IT field is SBA for any modern company and the national economy as a whole.

The second vector relates to the designation of special (free) economic zones (SFEZs). In particular, these are functional FEZs, in which incentives are granted for specific activities.

The third vector relates to the expansion of the public procurement zone into the EAEU states in the

interest of increasing competition for businesses.



**Figure 18.** Appropriate measures of state support for the development of domestic IT field in the public procurement system as a strategic direction of national economic development by extending the public procurement system for the EAEU countries

Source: composed by authors

### Discussion

According to the identified analogies, we propose the following ways to solve the problem of import substitution in the IT field.

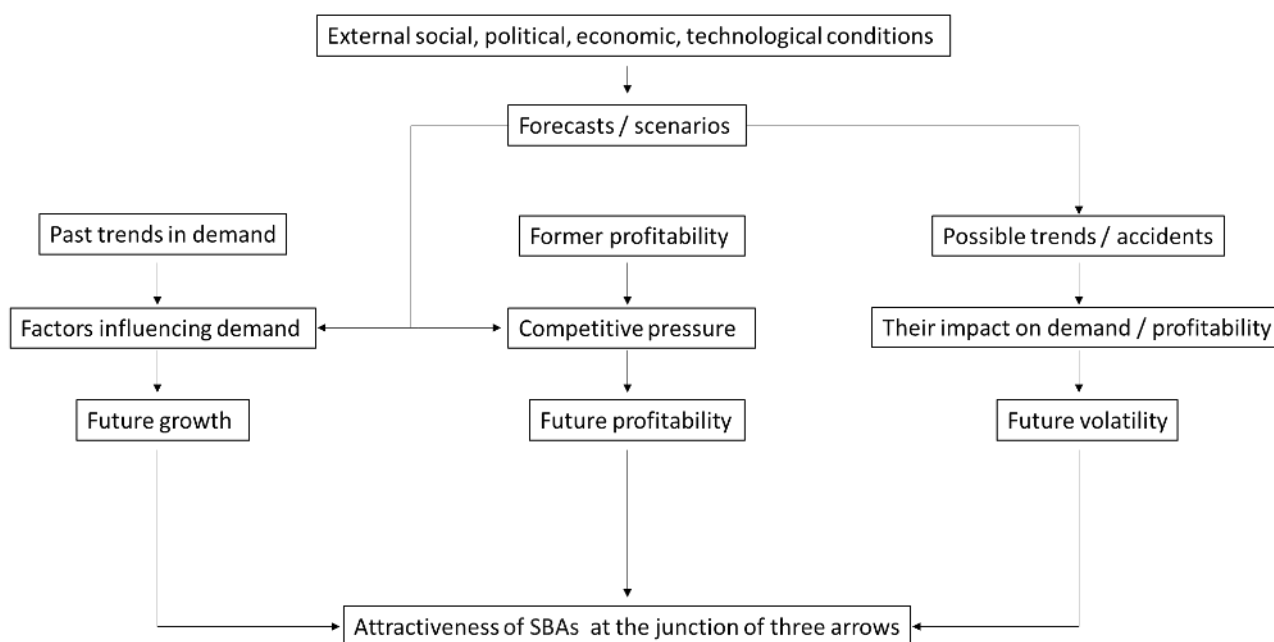
Firstly, the identification of IT field as an area of strategic management (SBA).

Secondly, the provision of tax incentives and preferences to domestic manufacturers in IT field within special economic zones (SFEZs) of the technology-innovative and industrial-production type.

Thirdly, domestic developments and productions (including public procurement) should be implemented in a competitive environment within the EAEU common economic space, taking into account the life cycle stages of various types of information and communication technology products.

According to Gordon Moore's law, the production technology is updated every 18 months for

telecommunications and a number of other technologies (pharmaceutical, chemical, electronic, aerospace, computer, biotechnology, etc.).



**Figure 19.** The basis for the formation of SBAs

Source: Ansoff, 1989

But the necessity to procure updated technologies, taking into account the stages of their life cycles in the common economic space of the EAEU does not only concern IT field, but refers to the need to improve the entire domestic system of public procurement, due to the urgent practical problem of import substitution (Table 7).

**Table 7 –** Relating public procurement to product lifecycle types, demonstrating the realisation of the needs for improving the domestic public procurement system

Type of cycle	Working titles of the cycle	Cycle time	Main features	Reasonable public procurement
G. Moore's cycles	Renewal cycle of promising technologies	0.75-1.5 years	Qualitative (multiple) changes in a particular technology	Procurement of high-tech products (e.g. in IT field)
J. Kitchin's business cycles	Business cycles, short-term cycles	2-4 years	Inventory levels, GNP fluctuations, inflation, employment, business cycles	Procurement of necessary products generated by projects corresponding to short-term business cycles
Small cycles of economic activity by C. Juglar	Business (industrial) cycles	7-12 years	The investment cycle, GNP fluctuations, inflation and employment	Procurement of necessary products generated by projects and programmes by business cycles
Average cycles of economic activity by S. Kuznets	Investment (construction) cycles	16-25 years	Income - immigration - housing - aggregate demand - income	Procurement of necessary products and infrastructure built under programmes by investment cycles



Type of cycle	Working titles of the cycle	Cycle time	Main features	Reasonable public procurement
Great cycles of economic activity by N.D. Kondratiev	Long technological (opportunistic) cycles	40-60 years	Technical progress, structural change	Procurement of technologies, determining the development prospects of the current (future) technological stage
Century waves of F. Brodel	Material civilisation	100-150 years	Trends of material civilisation structures	Procurement of technology, determining the trends of the material development structures of society within the existing civilisation
J. Forrester's resource cycles	Civilisation cycles	200 years	Energy and materials	Procurement of technology, determining the long-term prospects for solving energy and resource conservation problems
E. Toffler's cycles	Cycles-epochs	1000-2000 years	Development of civilisations	Agricultural, industrial and post-industrial civilisations

Source: composed by authors

Considering the life cycle of any product (Table 8), including those created on the basis of IT, we should note the mainly involvement of domestic companies in implementing stages 1-5 (more often 1-3) and 10-12 (more often 11-12) of the product life cycle.

**Table 8** – Stages in the life cycle of the developed product

Name	Content
The emergence of an idea	Techno-economic assessment of the feasibility and effectiveness of an idea (business planning)
Search of the resources to implement the idea	The search for the necessary raw materials, real estate, technology and equipment to implement them, skilled labour and, ultimately, finance
Layout design	Implementation of the R&D phase with mathematical and physical modelling of new products
Prototype development	The implementation of the development phase with the manufacture of a trial batch of products, the tests of which result in the formation of standard documentation (design, technological), which will be used in series production
Production of a trial batch	The start of series production, accompanied by the testing of production technology, the study of consumer reactions to the products offered and the corresponding adjustments to the regulatory documentation
Start of series production,	Serial production, accompanied by an increase in production volumes and the emergence of profits from their sale
Reaching the payback point	Rapid growth of production and sales volumes, generating a profit sufficient to cover all previous costs
Continuation of growth	Continuing growth of production volumes and expansion of the market for the sale of products

Growth retardation	Growth retardation of production and sales volume caused by the moral ageing of products, increased competition and saturation" of the market with the products offered
Growth stop	The market saturation of the products, corresponding to an equality of supply and constant demand. The results of the functional-cost analysis, however, continue to show an increase of sales profit
Decline	Demand for ageing products is falling. All investment in improving these products stops as the need for new products becomes evident. At the same time it solves the problem of replacing production with newer products and the gradual dismantling and sale to less demanding markets of production rights and related equipment for ageing products
End of life cycle	Discontinuation of ageing products once production volumes and profits from the sale of these products have reached minimum thresholds

Source: Tebekin, 2020

Russian companies and specialists are most active at stages 1 and 3 of the product life cycle (Table 8), as evidenced by the demand for Russian intellectual product specialists around the world, which is reflected in the continuing outflow of scientific personnel. Attempts of domestic industry to reproduce the most popular products in the world (stage 10) lead to its development it already becomes ageing during the time and corresponds to the stage 11 of the life cycle.

In addition, the problem of import substitution in IT field is compounded by the procurement problems outlined above. In addition, the duration of procurement procedures is increasingly approaching the length of the shrinking life cycle of products by Moore's Law.

### Conclusions

Thus, as conceptual proposals for solving the problem of import substitution in the ICT field it seems appropriate to propose:

- scientific development of ICT tools on a competitive basis (procurement of scientific and technical products simultaneously from several suppliers, including enterprises of EAEU);
- science-based decision-making regarding the best ICT development option;
- production of ICT by several producers simultaneously (including enterprises of EAEU) with a possible rotation of producers.

Overall, the results of identifying the needs for improving the domestic public procurement system due to the urgent practical problem of import substitution allow to provide a more detailed analysis of global experience and economic implications in the creation of economic alliances in public procurement.

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# Progress in implementation of sustainable development goals: a comparison of Russia, developed and developing countries

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**Abstract.** Since the adoption of the United Nation's 2030 Agenda and its Sustainable Development Goals (SDGs) in 2015, attempts to monitor their status of achievement are increasing by governments, the academic community, and non-governmental actors. Implementation of the SDG is of particular interest both in international context and according to the agenda of socio-economic development of the Russian Federation, thus the task of identifying medium-term sustainable development priorities of Russia acquires great importance. The paper is based on comparative analysis of priorities of the Presidential Order "On National Goals and Strategic Objectives of the Russian Federation through to 2024" (the May-2018 Executive Order), active state programs and the SDG targets. The purpose of the paper is to determine the correlation between the SDG targets and Russia's medium- and long-term national strategic goals. Particular focus is thereby put on constructing composite indices that allow benchmarking of countries according to their level of SDG achievement. The author argues that the existing SDG indices should be complemented with a longitudinal perspective to assess development over time towards or away from the 2030 Agenda's objectives.

**Keywords:** Sustainable development goals, Sustainability indicators, Composite index, Measuring progress, European Union Ranking, Developed countries, Developing countries.

**JEL codes:** O10, Q01

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## Introduction

The Report of the World Commission on Environment and Development designated the term "sustainable development" as representing "not a steady condition of harmony, but a process of change in which the scale of operation of resources, the direction of capital investment, orientation of technical development, and institutional changes will be coordinated with present and future requirements" (Degai et al., 2021). A majority of scientists consider the sustainable development principles as entailing an understanding of the movement of society in the future based on reasonable compromises in the relationship of society, nature, and individuals. A more precise definition of the term "sustainable development" underlines that "it is the economic growth that provides satisfaction of material and spiritual needs of current and future generations when maintaining the balance of historically developed ecosystems" (Hák, Janoušková & Moldan, 2016). The experts of the World Bank identify sustainable development as "a process whereby future generations receive as much capital per capita as – or more than – the current generation has available. Traditionally, this has included natural capital, physical or produced capital, and human capital. Together they constitute the wealth of nations and form the basis of economic development and growth" (Gootaert, 1998; Serageldin, 1996).

Russia actively implements SDG, accepted by the UN General Assembly in 2015. In particular, the country cooperates with the international organizations of the UN system, works on projects of ensuring food security, modernization of infrastructure, and the solution of economic problems of developing states (Russian Federation Voluntary National Review, 2020). The following article will examine the progress made in achieving the SGDs in the Russian Federation including the measures of the realisation of these goals in the country relative to other areas of the globe.

## Main Part

The status of and progress made in the achievement of the Sustainable Development Goals in the Russian Federation

Russia is a social state and its policies are aimed at the creation of conditions for decent life and free development of a person. Due to Russia's socially oriented policy, considerable achievements have been made in the implementation of the basic principle of the 2030 Agenda: "leaving no one behind". This is the underlying principle of the national policy for ensuring access to socioeconomic, political and other spheres of life for everyone (Russian Federation Voluntary National Review, 2020). The acceptance of the Paris Agreement by the Russian Federation in 2019 became a major event in the global efforts to combat climate change. Russia's full participation in the Paris Agreement, in addition to already effective international mechanisms including those at the level of the Intergovernmental Panel on Climate Change (IPCC), United Nations Framework Convention on Climate Change (UNFCCC), United Nations Development Program (UNDP), World Meteorological Organization (WMO)), may become an additional driver for reducing carbon intensity and improving energy efficiency of the national economy, thus contributing to the achievement of the Sustainable Development Goals at the global level (Russian Federation Voluntary National Review, 2020). In 2020, the Russian Federation adopted the Kigali Amendment to the Montreal Protocol, which will facilitate the performance of climate obligations through a considerable reduction of extra greenhouse gases consumption.

### *Measures for the realization of the SDGs in Russia*

In March 2016, the Federal Council of the Federal Assembly of the Russian Federation promulgated proposals for the parliamentary hearings on the post-2015 UN agenda whose recommendations focused on issues related to international development assistance and national efforts on adaptation to climate change (Degai et al., 2021). The document also included important recommendations on the spread of information concerning Russia's activity as a global donor.

The coordination of efforts among various governmental bodies concerning the SDGs is formally conducted by the interagency taskforce for the Executive Office of the President of the Russian Federation on issues related to climate change and sustainable development. In 2016 the taskforce examined the conformity of the tasks and goals laid out in Russia's executive orders issued in 2006-2016 with the SDGs, in close cooperation with federal executive bodies. The taskforce inspected the status of statistical data necessary for monitoring implementation of the SDGs in Russia and established a new expert group on info-statistical support for the monitoring of SDG implementation, composed of officials from federal executive bodies.

Despite the fact that three years have passed since the adoption of the SDGs, Russia has not laid out a national approach to their implementation and has not formulated an adapted national strategy of sustainable development. However, the Russian Statistical Service (Rosstat) has started to prepare a set of indicators to monitor SDG implementation and in September 2017 the Federal Plan for Statistical Efforts was complemented with indicators of SDG implementation in Russia (Kolmar & Sakharov, 2019). Ninety indicators were incorporated with the majority focusing on such aspects as poverty and welfare, decent jobs and economic growth, healthcare and education. Russia also actively participates in the UN Conference of European Statisticians on issues related to SDG statistics.

The official representatives of Russia responsible for the country's activities toward the implementation of the SDGs on national and international levels have announced several times Russia's intention to introduce national and subnational SDG indicators, and to establish an accounting platform for delivering information to the UN and preparing national reports containing Russia's achievements in SDG implementation on a regular basis (Degai et al., 2021). Recently, steps were taken toward establishing a national system of indicators for measuring the progress achieved in this sphere. Concluding and presenting Russia's voluntary report to the UN High-Level Political Forum on Sustainable Development could be a great impetus for these efforts. Despite the fact that 162 countries (46 in 2018) including several Eurasian Economic Union countries – Belarus (2017), Armenia (2018), Kazakhstan (2019) – and two BRICS members – China (2016) and India (2017) –

have already presented their achievements, Russia has not yet completed its report to the UN High-Level Political Forum (Kolmar & Sakharov, 2019). The outcomes of the evaluation of SDG implementation in Russia conducted by the Analytical Center generally match the SDG Index demonstrating countries' achievements in the implementation of the SDGs arranged by the Sustainable Development Solutions Network.

Russian and foreign experts have noted that since the 2000s Russia has achieved the most significant results in combating hunger (SDG 2) and poverty (SDG 1), and has demonstrated moderate accomplishments in providing quality education (SDG 4), promoting modern and clean sources of energy (SDG 7), employment policy (SDG 8), building sustainable cities and communities (SDG 11) and mitigating the effects of climate change (SDG 13) (Kolmar & Sakharov, 2019). There is more to be done concerning gender equality (SDG 5), clean water and sanitation (SDG 6), sustainable infrastructure (SDG 9), sustainable consumption and production (SDG 12), building partnerships between governments, civil society organizations and the private sector (SDG 17), as well as preservation of life on surface and water ecosystems (SDGs 14 and 15).

The most challenging SDGs for Russia are good health and well-being (SDG 3), peace, justice and strong institutions (SDG 16) and inequalities (SDG 10). Economic development based on a raw-export model increases the environmental impacts that cripple people's health and well-being.

Likewise, the study found that in recent years, Russia has demonstrated positive results in each SDG, most successful of them being SDG 1 "No poverty", SDG 4 "Quality education", SDG 8 "Decent work and economic growth" (Baimakova & Rytikova, 2020). However, the achievement of some targets still requires activation of joint efforts of the government, private sector, and society. The study also found that the main challenge for Russia is implementing SDG 5 (Achieving Gender Equality and Empowering All Women and Girls where it is established that gender issues are generally lacking in the country's programme and strategic documents. Notably, in 2017 Russia ranked 53rd out of 189 according to the UN Gender Inequality Index (Kolmar & Sakharov, 2019). Additionally, Russia lags behind the Organisation for Economic Co-operation and Development (OECD) countries in terms of deaths per 1000 births and teenage pregnancy. The most challenging issue is women's involvement in political processes measured according to the share of parliament mandates held by women – in these terms, Russia falls behind not only developed, but also the majority of developing countries, including the former Soviet Union (UNDP, 2021).

According to the abovementioned report on sustainable development goals as well as Russian researchers' studies (Bobylev & Grigoryev, 2020), strategic documents of Russia, including those adopted in 2017 – the Strategy on Economic Security (On the Strategy, 2017) and the Strategy on Ecological Security (Environmental Security Strategy 2017) – do not correlate with the sustainability principles and thus extra measures for the implementation of the SDGs into Russia's agenda are required.

The key medium-term strategic document of Russia is the "Action Plan of the Government of the Russian Federation Through 2024" (Action Plan of the Government, 2018) adopted in 2018. The Russian Federation has not yet adopted a document on the implementation of the SDGs in line with the General Assembly resolution adopted in 2015. The majority of SDG targets are realized by means of national socio-economic development policy including subprogrammes and specialpurpose programmes.

Applicability of the implementation of the SDGs in Russia was fixed in the Presidential Address to the Federal Assembly in 2018 (Presidential Address to the Federal Assembly, 2018) and the May 2018 Executive Order (On National Goals and Strategic Objectives, 2018). The tasks formulated in these documents touch upon various issues – healthcare, education, demography, commodities and urban areas, international cooperation and export, labour productivity, SMEs and promotion of private entrepreneurship, safe and quality infrastructure, ecology and digital economy – all of which correlate with the SDGs and thus should be incorporated into strategic plans.

The May 2018 Executive Order is a programme document that establishes the goal of achieving a scientific and socio-economic breakthrough. The milestones of this breakthrough are the achievement of: Russia as one of the top-five economies of the world; population growth; increased life expectancy (from 72 to 78 years and up to 80 by 2030); growth of disposable income of the population and double-time decrease of poverty; annual improvement of living conditions for five million households; and a healthy environment



for self-realization and creativity of every individual.

The milestones listed above are to be achieved by 2024 by means of national policies in 13 spheres of strategic development (National projects of the Russian Federation, 2022), among them: demography; healthcare system development (SDG 3); education (SDG 4); housing and urban areas (SDG 11); ecology (SDGs 13, 14 and 15); safe and quality automobile roads (SDG 9); improving labour efficiency and employment (SDGs 8 and 9); culture (SDGs 4, 8 and 9); promotion of SMEs and private entrepreneurship (SDGs 2, 3, 8 and 9); international cooperation and export (Baimakova & Rytikova, 2020). Some of the projects are based on programmes launched in 2016 in such spheres as healthcare, education and housing; in other cases, a programme was put in place (Digital economy in the Russian Federation, 2022).

A new national project management system was introduced in order to implement the policies. Project authorities are formed on basis of the government and the federal executive bodies. Some bottlenecks may arise related to the nuances of coordinating the projects discussed above with existing programmes that had been a cornerstone of budgeting before 2018 (Baimakova & Rytikova, 2020). Preparation of national and federal projects should take into account their contribution to the implementation of the May 2018 Executive Order's goals and correlate with existing state policies.

#### *Comparison of developing countries' implementation of the SDGs to Russia*

Developing countries have faced some challenges in implementing their SDGs. In particular, key challenges that different communities face when adopting sustainable development is the confusion of metric devising. In developing nations, some terms might be unfamiliar to the local communities due to the lack of awareness towards the topic of sustainability, but the communication and collection of information are also challenging due to the fragmentation or even lack of data (Sarvajayakesavalu, 2015). Most developing countries suffer from low statistical abilities and cannot respond to the SDGs' growing demand for data. For example, in the Middle East, there is a regional deficit in data related to the performance of the human resources department when it comes to the recruiting, retaining, and promoting processes, making it difficult to track the region's performance in achieving SDG number 5, which is gender equality (Allen, Metternicht & Wiedmann, 2018). This contrasts from Russia which has adopted a successful multilateral cooperation in the field of statistical capacity development for SDG monitoring by implementing a joint programme of Russia and the World Bank to support statistical capacity building in Eastern Europe and Central Asia, which is aimed at improving expertise, systems of official statistics, data processing and distribution, and the creation of a system of professional training and professional development.

Another challenge that many developing countries face when attempting to implement sustainable development is the absence of reliable infrastructure and even lack of policies that have to do with infrastructure. These nations are thus unable to accomplish the SDGs since they lack the developed infrastructure needed to support the use of internet, networking, computing, as well as the database management system (Allen, Metternicht & Wiedmann, 2018). In fact, the listed elements are highly important and much needed in scientific research, nature control, successful planning, as well as decision making. Furthermore, receiving mapping data to manage and monitor disasters is also challenging third world nations due to their high cost, absence of methods to observe the ground, or even natural reasons like the struggling to access mountainous regions. For example, in the Philippines, unreliable infrastructure is considered to be a major limitation to the nation's goal of expanding its economy and reducing poverty, SDGs number 8 and 1 respectively. Even though it has enough control of water and electricity, the country struggles from a poor business environment as well as poor planning and cooperating capabilities.

In contrast, most of Sustainable Development Goals and targets of 2030 Agenda have already been integrated, in a varying degree, in the basic strategic and policy documents of the Russian Federation. Currently, Russia has 12 National Projects and the Comprehensive Plan for the Modernization and Expansion of Main Infrastructure, which are implemented to achieve the national development goals and strategic objectives of the Russian Federation up to 2024 and actually aimed at SDG achievement (Koroleva et al., 2019). National Projects were launched in such areas as demography, healthcare, education, housing and urban environment,

environment, safe and quality roads, workforce productivity and employment support, science, digital economy, culture, small- and medium-sized enterprise and support for individual entrepreneurial initiative, international cooperation and export (Koroleva et al., 2019). National Projects and the Comprehensive Plan for the Modernization and Expansion of main Infrastructure cover, directly or indirectly, 107 of 169 SDG targets.

Another issue most developing countries face is the lack of access to enhanced cooking energy technologies, which has to do with each nation's socio-economic and technical limitations. These barriers are restricting the improvement of the communities' quality of life and creating a vicious circle of poor economic development, causing low access to reliable energy services. This circle could be broken by creating energy policies related to income generation from efficient energy activities. If not, SDG number 7 (providing Affordable and Clean Energy) might never be achieved, leaving many communities across the world dependent on standard biomass energy. That is the case for the majority of the people living in Sub-Saharan Africa, where women spend up to four hours a day collecting firewood instead of investing their time in education or other economic activities (SDGs number 4 and 5, Quality Education and Gender Equality respectively) (Jiménez-Aceituno et al., 2020). In contrast, to ensure universal access to sustainable and modern energy sources, Russia has been implementing the package of national policy measures, including the Energy Security Doctrine of the Russian Federation and the State Programme "Energy Development" to attain SDG 7 (Koroleva et al., 2019). The energy saving and energy efficiency management system continues to be improved through inclusion of relevant targets in industry strategic planning documents at all levels.

#### *Implementation of the SDGs in developed countries*

The UN Statistical Commission and Eurostat Statistical offices have developed official SDG indicator sets whereas researchers and non-governmental organizations have created SDG indices and dashboards to rank countries according to their level of achieving the 2030 Agenda's goals and target (UN Sustainable Development...; Gökmen & Lyhagen, 2022; Tóthová, 2022). Throughout these rankings, European Union (EU) Member States and other OECD countries tend to come out on the top (Hametner & Kostetckaia, 2020). Within the EU, the highest levels of SDG achievement are usually found in the Scandinavian countries, while southern and eastern Member States appear at the bottom of the spectrum (Guijarro & Poyatos, 2018; Campagnolo et al., 2018; Muff et al., 2017). This distribution of countries in terms of SDG achievement confirms country rankings of earlier SD-related studies, such as on achieving the Europe 2020 strategy on smart, sustainable and inclusive growth (Çolak & Ege, 2013; Fura & Wang, 2017).

Despite their different methods and data sources, the results of the studies are quite homogenous: within the EU, the Nordic countries – Denmark, Finland and Sweden – together with the Netherlands and Austria are usually on top of SD-related country rankings. Southern and eastern European countries, in particular Bulgaria, Greece and Romania, are usually found at the bottom of these rankings.

Overall, most countries are making progress towards the SDGs, though progress is slowest on some of the environmental goals. Whereas many high-income countries have almost completely eradicated extreme poverty or hunger they obtain their lowest scores on goals like "responsible consumption and production", "climate action" or "life below water".

According to Kostetckaia & Hametner (2022) Europe faces its greatest SDG challenges in the areas of sustainable diets and agriculture, climate and biodiversity (SDG2, 12-15), in strengthening the convergence of living standards across its countries and regions and needs to accelerate progress on many goals. Finland tops the 2021 SDG Index for European countries (and worldwide), as it was less affected by the COVID-19 pandemic than most other EU countries. It is followed by two countries also from Northern Europe – Sweden and Denmark. Yet, like the rest of Europe, these countries face significant challenges in achieving SDG targets in the areas of sustainable diets and agriculture, climate and biodiversity, partly due to international spillovers – such as deforestation – embodied into trade (Kostetckaia & Hametner, 2022). The pace of progress on many goals is generally too slow to achieve the SDGs by 2030 and the Paris Climate Agreement targets by 2050. Candidate countries perform well below the EU average, although they were making progress before the

pandemic hit. Thus, both Russia and the well ranked developed countries alike have to out in effort to have a general holistic progress in all areas of the SDGs particularly on the climate change aspect and in lessening their carbon footprints.

### Conclusions

To sum up, the study has examined the progress made in achieving the SDGs in the Russian federation including the measures of the realisation of these goals in the country relative to developing countries and the developed countries of Europe. The study has established that sustainable development leaders appear to not have progressed any further towards all the SDGs, and have partly even moved away from the 2030 Agenda's goals. This indicates that the leading countries may have reached a level of SDG implementation – although this level does not necessarily mean fulfilment of the agenda 2030's ambition – that makes it increasingly difficult for them to take further advantage of win-win situations. Instead, they appear to face more and more trade-offs between different SD objectives, where further progress in one area takes place at the expense of progress in other areas. The review highlights that while progress has been made in some initial planning stages, key gaps remain in terms of the assessment of interlinkages, trade-offs and synergies between targets. Gaps are also clearly evident in the adoption of systems thinking and integrated analytical approaches and models. Thus, effective implementation and the transformative potential of the SDGs will necessitate a strong commitment from national governments toward localizing the implementation of their development plans for developing countries and setting up of SD governance mechanisms across EU Member States, including political leadership for the 2030 Agenda to influences countries' progress towards the SDGs.

The majority of UN SDGs are fully or almost completely incorporated into Russia's 2024 development agenda. However, it should be noted that Russia's approach to implementing the SDGs requires more consistency. One aspect of the SDGs that is not fully incorporated into Russia's strategic documents is social justice and the promotion of human rights including gender inequality, development and representation of local communities, and building just, peaceful and inclusive societies.

In the absence of political will for adoption and realization of a special implementation strategy, potential solutions could encompass different solutions such as: paying special attention to the SDGs while drafting policies and ensuring division of responsibilities among federal and regional executive bodies; specification of indicators for monitoring; regular monitoring based on specified indicators; involvement of social stakeholders in the realization, monitoring and evaluation; and heavy coverage of achieved results.

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# Study of states eurasian economic integration through the prism of production value chains

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**Abstract.** This article examines the genesis of global value chains as a result of action of the law of international division of labour on the modern world economy. During the globalisation, we prefer to assess the integration of national economies in terms of the main value added indicators developed by international institutions. Value-added indicators make it possible to identify advantages and disadvantages of the economic development of different types of countries. The study found: national institutions in the extractive industries of developing countries receiving foreign exchange earnings from raw material exports, then spend more foreign exchange for imports of manufactured goods from developed countries that process raw materials from developing countries; foreign corporations in developed countries, receiving raw materials from developing countries, develop the processing sectors of the national economy and create new jobs by increasing the wages of employees; foreign corporations are expanding the scale of production, the rate of capital accumulation, and recouping the costs of technological upgrading of production and modernising machinery through an increase in depreciation fund and profits; corporations in developing countries need to process raw materials (oil, gas, iron ore, non-ferrous metals, etc.) deeply, produce final goods and export them to world markets on their own; based on new technologies, produce innovative final goods and create high-tech jobs, increase the wages of workers and expand the domestic market.

**Keywords:** global value chains, factors of production, capital, labour, innovative product, final and intermediate goods.

**JEL codes:** A10, F14, F17

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## Introduction

Recently, domestic scientific economic literature was interested in the problem of so-called global value chains (Kondratyev, 2019; Lukyanov & Drapkin, 2017; Sidorova, 2018; Chetverikova, 2018). The global value chain has as its origin a production feature, i.e. it is defined as the complete set of stages of the production process to produce a good (product and service) starting with a scientific and technical idea through to its creation and final consumption. If the individual stages of the technological process of producing a commodity are implemented by different organisations, this basis also forms the trade chain for the transfer (sale) of intermediate goods and services from one economic entity to another until the final good producing.

These economic interrelationships between different market economy actors are based on the law of division and specialisation of labour. Initially, production and trade chains expanded within the national economies of the industrialised countries, but as capital accumulated and large corporations emerged, they began to expand internationally. The major national monopolies of the leading countries are evolving into transnational corporations with the opening of their subsidiaries. In addition, multinational companies are increasing production and trade cooperation with each other along the entire technology chain. In this way, the value chains of multinational corporations are becoming global.

As we know, net value added is part of the value of any commodity. If the simplest cost formula for a good (without indirect taxes) includes material costs ( $c'$ ), depreciation ( $c''$ ), labour costs ( $v$ ) and profit ( $m$ ) respectively, then net value added consists of labour costs (wages and salaries) and profit ( $v + m$ ). Many global value chains are based on inter-country factor price differences or in labour ( $v$ ) and capital costs ( $c$ ), which are continuously changing.

In terms of both the perspective of economic theory and the development of international trade practices, global value chains, or more precisely value added, have emerged from various international trade theories as a result of analysis of empirical and statistical evidence on the cost and value of products in world trade. For a long time the classical theory of the Swedish economists Elie Heckscher and Bertil Olin, based on the principles of the relation of factors of production (surplus and shortage of capital and labour), dominated economic theory and practice of capitalist economy and international trade. The essence of this theory is that countries export those goods for which there are surplus factors of production (labour and capital), while importing, on the contrary, those goods for the production of which there is a shortage, a shortage of factors of production (Ohlin, 1967; Heckscher, 2006).

However, Heckscher-Ohlin's theoretical approach was challenged by economist Vasily Leontief in his study of US foreign trade structure. V. Leontief calculated the ratio of the cost of capital ( $c$ ) to labour ( $v$ ) of the same quantity of exports and imports (of \$1 mn, USD). The results showed that US imports were 30% more capital-intensive than exports, despite the fact that the economy has a surplus of capital. So, US exports were labour-intensive ( $v$ ) and imports were capital-intensive ( $c$ ). The reason is the national economic development, the proportion of labour costs in the cost of goods produced in the USA exceeded the proportion of material or capital costs, as the skilled labour used was highly remunerated. This effect is known as "Leontief's paradox" (Leontiev, 2006a; Leontiev, 2006b). "Leontief's paradox" was later explained scientifically and theoretically. Due to the fact that developed countries have entered the next stage of the scientific and technological revolution or innovation development. As we know, the cost structure and production price of an innovative good differs from ordinary goods by a high proportion of labour costs ( $v$ ), entrepreneurial income (profit) ( $m$ ), depreciation charges ( $c$ ) and, finally, net value added ( $v + m$ ).

These innovative processes in the global economy, further deepening of the international division of labour, increased competition between transnational corporations and other reasons led to the widespread spread of global value chains (hereinafter GVCs) – a characteristic feature of the current stage of both national and global economic development. The participation of national economies in global value chains ( $v + m$ ) of final goods reflects the degree of development of each country's economy, its role in the international division of labour and trade, and its competitiveness in world markets. In 2015 an official UN document, enshrined the concept of the "global value chain" as a form of international division of labour with the location of individual stages of end-use production in different countries, was issued.

GVCS (global value chains) are currently the focus of leading research centres and international organisations and integration alliances. The two main international databases used to assess the participation in GVCs: World Input – Output Data (hereafter WIOD) and Trade in Value – Added (hereafter TiVA). TiVA is a collective product of the Organisation for Economic Co-operation and Development (hereinafter OECD) and the World Trade Organisation (hereinafter WTO). The latest version of TiVA contains data on 66 economies, reflecting both traditional indicators of foreign economic activity and new indicators describing a country's participation in the GVC.

### **Main part**

The subject of our study was a general analysis of the participation of different types of countries, in particular post-industrialised and industrialised countries (USA, China, Russia) and peripheral countries of the Organisation of Islamic Cooperation (hereafter OIC) in global value chains. The OIC currently involved 57 permanent members and 5 observer countries, including the Russian Federation. We do not claim perform the comprehensive analysis of this problem, but consider one of the many topical issues relating to trade value added analysis of the economies of Malaysia, Saudi Arabia (Islamic countries), Turkey, Indonesia (Muslim countries) Kazakhstan and Russia (former republics of the Soviet Union).

The object of the study (countries mentioned above) was chosen as the target because they are the only ones among the 66 countries for which the main value added trade indicators for 2018 were calculated. For assessing the participation of the above countries in GVCs based on the TiVA international database we considered: gross output, value added, gross exports, gross imports, trade balance, share of value added in

gross output, gross export of final goods, gross export of intermediate goods, gross import of final goods, gross import of intermediate goods, domestic value added content in gross exports, domestic value added content in gross imports, backward participation in GVCs (share of foreign value added in gross exports) and prospective participation in GSC (share of domestic foreign export value added in gross exports).

An analysis of OECD and WTO statistics for the eight countries and the 15 main value added indicators listed above for 2018 shows the following. The average ranking of the above countries in the first 13 indicators among the 66 countries surveyed is: China – 6th place, USA – 8th place, Russia – 9th place, Saudi Arabia – 21st place, Indonesia – 22nd place, Turkey – 27th place, Malaysia – 30th place and Kazakhstan – 36th place. However, for the fourteenth integrated indicator on Backward Participation, the rankings are as follows: Turkey – 4th place, Malaysia – 16th, China – 50th, Indonesia – 55th, Kazakhstan – 62nd, USA – 63rd, Russia – 64th and Saudi Arabia – 65th. In contrast, in terms of 'forward-looking participation' in global value chains, the most optimistic countries are: Kazakhstan – 2nd, Saudi Arabia – 3rd, Russia – 5th, the US – 10th, Indonesia – 12th, Malaysia – 30th, China – 34th and Turkey – 37th (OECD, 2022; TiVA, 2021).

**Table 1** – Rankings of Islamic and non-Islamic countries in output, exports, imports, value added and its share in goods output among 66 countries in 2018

country	gross output	added value	gross exports	gross imports	trade balance	share of value added in gross output
The USA	1	1	2	1	66	10 (56,2)
China	2	2	1	2	4	63 (38,5)
The Russian Federation	12	12	12	15	2	22 (53,4)
Indonesia	15	16	28	26	56	23 (53,4)
Saudi Arabia	20	18	22	29	5	1 (67,4)
Turkey	17	19	30	27	53	40 (49,8)
Malaysia	25	31	29	31	15	61 (40,2)
Kazakhstan	45	46	47	51	14	3 (58,9)

Source: composed by author

**Table 2** – Rankings of Islamic and non-Islamic countries in gross exports and imports of final and intermediate goods among 66 countries in 2018

country	gross exports of final goods	gross exports of intermediate goods	gross imports of final goods	gross imports of intermediate goods	domestic value added content of gross exports
The USA	2	1	1	2	1
China	1	2	2	1	2
The Russian Federation	20	8	12	21	9
Indonesia	28	26	25	24	25
Saudi Arabia	43	13	16	37	15
Turkey	21	31	27	25	26
Malaysia	26	28	32	26	29
Kazakhstan	58	41	50	52	44

Source: composed by author

However, for the fourteenth integrated indicator on Backward Participation, the rankings are as follows:



Turkey in 4th place, Malaysia in 16th, China in 50th, Indonesia in 55th, Kazakhstan in 62nd, USA in 63rd, Russia in 64th and Saudi Arabia in 65th. In contrast, in terms of 'forward-looking participation' in global value chains, the most optimistic countries are: Kazakhstan – 2nd, Saudi Arabia – 3rd, Russia – 5th, the US – 10th, Indonesia – 12th, Malaysia – 30th, China – 34th and Turkey – 37th (Table 3).

**Table 3** – Rankings of Islamic and non-Islamic countries in backward and forward participation among 66 countries in 2018

country	domestic direct value added content of gross exports	domestic value added content of gross import	backward participation in GVCs: share of foreign value added in gross exports	prospective participation in GSC: share of domestic value added in gross exports
The USA	1	1	63	10
China	2	2	50	34
The Russian Federation	7	12	64	5
Indonesia	25	20	55	12
Saudi Arabia	10	29	65	3
Turkey	27	33	4	37
Malaysia	32	31	16	30
Kazakhstan	38	49	62	2

Source: composed by author

There is an issue of Russia, Indonesia, Saudi Arabia, Turkey, Malaysia and Kazakhstan rank lower in terms of value added. In our opinion, the answer to this question is the extent to which the peripheral economies of the Eurasian continent make use of the factor of mutually beneficial economic cooperation. We firstly consider Russia's trade relations with Eurasian countries. So, we examined statistical data from the Russian Federal Customs Service on 24 countries belonging to the Organisation of Islamic Cooperation and to the Eurasian region. The countries with which Russia has close trade and economic ties has been divided into the Islamic far-abroad countries (Bahrain, Brunei, Jordan, Malaysia, Oman, Qatar, the United Arab Emirates, Pakistan, Saudi Arabia), the former Soviet republics – the Turkish-speaking countries (Azerbaijan, Turkmenistan, Tajikistan, Kyrgyzstan, Uzbekistan and Kazakhstan) and Muslim countries (Turkey, Egypt, Iran and Indonesia).

According to the Russian Federal Customs Service, the above 24 countries accounted for Russia's foreign trade turnover with the countries of the Organisation of Islamic Cooperation, which has steadily increased in recent years (with the exception of the two pandemic years 2020 and 2021) (Federal Customs Service of the Russian Federation, 2022). The Islamic non-CIS countries (Malaysia, UAE and Saudi Arabia) accounted for the largest volume and share of Russia's foreign trade turnover in 2017 – 6.58%, in 2018 – 7.3%, in 2019 – 8.3%, in 2020 – 10.58% and in 2021 – 10.3% (Table 4).

**Table 4** – Foreign trade turnover and balance of the Russian Federation with 10 Islamic countries (USD, thousands) The USA

Years	2017		2018		2019		2020		2021	
	Goods turnover	Balance of trade	Goods turnover	Balance of trade	Goods turnover оборот	Balance of trade trade balance	Goods turnover	Balance of trade	Goods turnover Jan-Nov	Balance of trade Jan-Nov
Bahrain	10390	- 44	100753	86595	46346	24306	21129	-2801	4721	-1037
Brunei	0	0	0	0	0	0	0	0	0	0

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Years	2017		2018		2019		2020		2021	
Name of country	Goods turnover	Balance of trade	Goods turnover	Balance of trade	Goods turnover оборот	Balance of trade trade balance	Goods turnover	Balance of trade	Goods turnover Jan-Nov	Balance of trade Jan-Nov
Jordan	156941	110993	602518	573876	390126	340086	300841	134819	93288	71210
Qatar	73318	26252	78774	5884	82447	9415	100622	27292	14999	-4309
Kuwait	708221	707617	644661	644469	554372	550750	748284	746420	173831	173821
Malaysia	2147407	-944387	2713191	-539997	2904921	-605231	2627261	-531657	609782	-134760
Oman	115367	108799	156828	151450	239929	231939	211038	207202	69288	68622
United Arab Emirates	1630242	1287646	1689081	1277425	1834549	1364117	3256509	2564751	1149928	1046240
Pakistan	541064	-19026	732541	105123	541569	-203649	789830	203974	272943	19843
Saudi Arabia	915202	626164	1054863	470598	1667174	1138710	1677985	1240637	297687	186541
Total lines	6298152	1904014	7773207	2775423	8261433	2850443	9733499	4590637	2686467	1426171

Source: composed by author

According to above list of countries, the share of Russia's foreign trade turnover of former Soviet republics – the Turkish-speaking countries (Azerbaijan, Turkmenistan, Tajikistan, Kyrgyzstan, Uzbekistan and Kazakhstan) was 37.1% in 2017, 38.1% in 2018, 41.36% in 2019, 43.92% in 2020 and 39.28% in 2021, respectively. While Islamic countries (Turkey, Egypt, Iran and Indonesia) reached 47.3% in 2017, 50.3% in 2018, 47.3% in 2019, 41.3% in 2020 and 46.67% in 202, respectively (Table 5).

**Table 5** – Foreign trade turnover and balance of the Russian Federation and the former Soviet republics and Islamic countries (USD, thousands) The USA

Years	2017		2018		2019		2020		2021	
Name of country	Goods turnover	Balance of trade	Goods turnover	Balance of trade	Goods turnover оборот	Balance of trade trade balance	Goods turnover	Balance of trade	Goods turnover Jan-Nov	Balance of trade Jan-Nov
Turkey	22085783	15309831	25544680	17081918	26127756	16171262	20410746	10187498	6588559	3798279
Egypt	6723034	5621798	7668863	6615379	6250010	6287064	4534844	3503414	1127970	713648
Sudan	330564	328990	509141	-508865	278300	276680	379489	377631	118963	118783
Libya	135183	135183	227107	227075	157323	157311	121248	121248	91735	91 735
Iran	1707116	922688	1745043	666423	1588858	806212	2220320	626730	904359	324145
Indonesia	3271610	-1696518	2583396	-847220	2452300	-912504	2352499	-1223829	702343	-380333
Afghanistan	208172	202364	122653	114669	126134	115792	310260	-3548	24805	22815
Palestine	3045	2295	5056	4844	4783	3513	4769	4183	1546	1428
Azerbaijan	2627328	1242266	2486852	939854	3169937	1455077	2888483	1260789	649939	399417
Turkmenistan	428245	259309	411649	166013	694848	391772	970176	328776	117821	48323
Tajikistan	717580	667088	893908	805270	989999	916139	838070	752952	233233	207315
Kyrgyzstan	1606847	1185675	1889456	1386514	1881587	1237723	1697024	1216722	486722	345170
Uzbekistan	3651714	1598438	4381324	2254366	5087331	2728665	5881407	3437865	1225359	617347
Kazakhstan	17441156	7438068	18390093	7692245	19997073	8576815	19106285	8996649	5132887	2294901
Total: lines	65038460	37408558	66859221	36598485	68670239	37347521	61715620	29587080	17289006	8710208

Source: composed by author

The participation of corporations (natural monopolies) in global value chains is very important for national peripheral economies. With a predominantly commodity orientation, domestic corporations

in developing countries are heavily involved in the initial stages of value creation. Developing country corporations tend to locate low value-added production (e.g.:  $5v + 75m$ ) in the domestic economy, whereas high value-added production (e.g.:  $70v + 35m$ ) are usually located in developed countries.

This decentralization of the stages of commodity value chains differs from the practices of developed innovation countries, where high value-added production is most often concentrated within their own economies, while the upstream parts of the value chain are transferred to developing countries. Therefore, the EAEU and CIS states need to create an independent international research system for Eurasian integration based on the application of value chains for the benefit of friendly states. The study of trade and production chains can serve as a starting point for a return to basic interstate planning for a joint economy.

We consider the conventional example of a peripheral economy participating in a value-added chain with post-industrialised countries in a production-trade relationship.

The commodity value chain - crude oil to petroleum products – between upstream and downstream countries would be as follows. The producing country produces and supplies crude oil with the following value (USD):

$$15c' + 5c'' + 5v + 75m = 100w,$$

where:  $15c'$  is the material cost (USD \$15) to produce one barrel;

$5c''$  is the depreciation charge (USD \$5) per barrel produced;

$5v$  is the payroll (USD \$5) per barrel produced;

$75m$  – profit (USD \$75) per barrel produced;

$100w$  is the price of one barrel of crude oil (USD \$100).

A country with a manufacturing industry carries out deep processing of one barrel of oil (gas and other raw materials) to produce final goods of value:

$$100c' + 20c'' + 70v + 35m = 225w,$$

where:  $100c'$  is the material cost (USD \$100) of refining one barrel of oil;

$20c''$  is the depreciation charge (USD \$10) for processing one barrel of oil;

$70v$  is the payroll (USD \$70) for processing one barrel of oil;

$35m$  is the profit (USD \$35) to process one barrel of oil;

$225w$  is the price of goods produced from one barrel of crude oil (USD \$225).

The economic outcome of the interaction of countries with the extractive and manufacturing industries in the value chain of final goods would be as follows.

The foreign exchange earnings of a country's upstream exports of crude oil (gas and other raw materials) to a downstream country:  $100w$  or \$100 USD.

The foreign exchange earnings of a country producing final goods based on crude oil:  $225w$  or USD \$225.

Produced net value added of corporations extracting raw materials ( $5v + 75m$ ) or USD \$80.

The produced net value added of corporations producing finished goods ( $70v + 35m$ ) or USD \$105.

Extractive industries payroll (jobs, employment) by ( $5v$ ) or USD \$5.

Manufacturing payroll (jobs, employment) by ( $70v$ ) or USD \$70.

## Conclusions

1. National institutions in the extractive industries of developing countries receiving foreign exchange earnings from raw material exports ( $100w$ ), then spend more foreign exchange for imports of manufactured goods from developed countries that process raw materials from developing countries ( $215w$ ).

2. Foreign corporations in developed countries, receiving raw materials from developing countries, develop the processing sectors of the national economy and create new jobs by increasing the wages of employees ( $70v > 5v$ ).

3. Foreign corporations are expanding the scale of production, the rate of capital accumulation, and recouping the costs of technological upgrading of production and modernising machinery through an increase in depreciation fund and profits ( $20c'' + 35m < 5c'' + 75m$ ).

4. Corporations in developing countries need to process raw materials (oil, gas, iron ore, non-ferrous metals, etc.) deeply, produce final goods and export them to world markets on their own.

5. Based on new technologies, produce innovative final goods and create high-tech jobs, increase the wages of workers and expand the domestic market.

Consider the trade relations of the Republic of Tatarstan with Eurasian countries as an example. So, we examined statistical data from the Russian Federal Customs Service on 24 countries belonging to the Organisation of Islamic Cooperation and to the Eurasian region. The countries with which Russia has close trade and economic ties has been divided into the Islamic far-abroad countries (Bahrain, Brunei, Jordan, Malaysia, Oman, Qatar, the United Arab Emirates, Pakistan, Saudi Arabia), the former Soviet republics – the Turkish-speaking countries (Azerbaijan, Turkmenistan, Tajikistan, Kyrgyzstan, Uzbekistan and Kazakhstan) and Muslim countries (Turkey, Egypt, Iran and Indonesia),

Tatarstan's foreign trade turnover and balances in 2017-2021 were as follows: in 2017 – 2.9% and 7.0%; in 2018 – 2.8% and 5.45%; in 2019 – 2.36% and 5.21%; in 2020 – 2.17% and 4.84%; in 2021 – 2.56% and 3.99%, respectively. The years before the COVID-19 pandemic (2019 and 2020), foreign trade turnover and balance of the Republic of Tatarstan increased by USD \$2361004.5 thousand and USD \$2394367.7 thousand, respectively in 2018 in compare with 2017, i.e. by 13.97% and 26.15%, respectively. In 2021, the foreign trade turnover and balance of the Republic of Tatarstan tended to recover compared to 2019 and 2020.

Table 6 shows statistics provided by the Federal Customs Service of Russia on the foreign trade turnover and balance of the Republic of Tatarstan with the twenty-four Organisation of Islamic Cooperation member states (comprising 57 states) with which there are close and substantial trade and economic relations.

**Table 6** – Foreign trade turnover and balance of the Republic of Tatarstan with the 10 Islamic OIC countries for 2017-2021 (USD \$, thousands)

Years	2017		2018		2019		2020		2021	
Name of country	Goods turnover	Trade balance	Goods turnover	Trade balance	Goods turnover	Trade balance	Goods turnover	Trade balance	Goods turnover Jan-Nov	Balance of trade Jan-Nov
1. Bahrain	-	-	13.7	6.3	83.8	83.8	0	0	0	0
2. Brunei	-	-	0	0	0.5	- 0,5	3.9	- 2,3	3.6	- 3,6
3. Jordan	-	-	11.1	7.1	76.1	49.7	37.8	- 13,8	59.2	2.4
4. Qatar	5176.3	- 5166,5	3898.5	- 2928,3	7547.1	- 5868,1	7281.6	- 7110	3541.7	- 3396,9
5. Kuwait	532.6	532.6	164.5	164.5	786.7	297.9	142.1	135.7	0	0
6. Malaysia	9824.6	- 6900,4	12066.5	- 5923,7	9250.1	- 4209,7	11155.2	- 6608,8	13875.4	- 13059
7. Oman	56.9	- 11,9	119.7	60.1	138.0	90.0	106.2	49.2	327.1	254.1
8. United Arab Emirates	21409.7	7422.9	34103.2	11133	20151.6	- 635,0	18002.0	13438.6	8031.5	5116.3
9. Pakistan	1039.6	290.0	713.5	- 171,1	989.6	- 323,8	564.3	- 135,9	791.7	- 227,3
10. Saudi Arabia	42844.8	30050.6	18651.8	3056.2	49409.3	43970.9	18597.7	14547.9	36130.0	27519.4
Total lines 1-10	80884.5	26217.3	69742.5	5404.1	88432.8	33455.2	55890.8	14300.6	62760.2	16206.4
11. Turkey	303946.0	- 15338,6	313949.5	- 73999,3	481028.3	60522.3	361838.0	- 77545,2	520189.9	-118657.1
12. Egypt	22821.3	21459.7	20913.6	17193.8	24335.5	17319.9	11807.2	3917.4	17451.2	14518.4
13. Sudan	24.2	24.0	1058.9	- 617,3	105.4	105.4	1.5	1.5	5831.6	5831.2
14. Libya	14.1	14.1	339.4	339.4	14.8	14.8	1091.6	1091.6	170.7	170.7
15. Iran	25007.5	10915.1	22941.6	17039.0	21794.9	14176.1	50975.5	39255.1	178839.2	171610.4
16. Indonesia	39627.1	- 38266,7	46285.7	- 34991,7	32500.2	- 21764,4	33753.8	- 14089,0	49172.7	- 31962,3
17. Afghanistan	1137.2	1134.6	2305.3	2301.9	654.6	652.6	1806.3	1806.3	500.2	474.4
18. Palestine	252.7	252.7	313.8	313.8	117.1	117.1	34.1	34.1	15.9	15.9
19. Azerbaijan	44970.4	21615.0	57434.8	37477.4	67239.8	46756.8	55967.3	53856.5	62564.9	36512.7
20. Turkmenistan	24977.6	14518.8	23898.6	- 3459,0	120681.4	58189.2	106656.8	78113.8	72980.3	65520.3



Years	2017		2018		2019		2020		2021	
Name of country	Goods turnover	Trade balance	Goods turnover	Trade balance	Goods turnover	Trade balance	Goods turnover	Trade balance	Goods turnover Jan-Nov	Balance of trade Jan-Nov
21. Tajikistan	34697.0	34624.0	12582.1	12479.7	22442.4	21664.2	20548.2	20430.4	18226.5	18211.7
22. Kyrgyzstan	50605.0	43539.0	61872.0	60720.4	61467.4	59748.0	41126.4	36537.6	48036.8	38502.6
23. Uzbekistan	92655.7	74880.3	145764.1	125392.5	194921.3	155988.5	156484.1	97471.7	171030.4	108638.6
24. Kazakhstan	702943.7	493701.7	700263.8	545047.2	551931.5	515759.5	630762.3	580808.7	560112.4	479156.2
Total lines 1-24	1343679	663073	1409923	705238	1579235	929250	1472853	821691	17051237	788544

Source: composed by author

The table includes Islamic countries of the far abroad (lines 1-10), former Soviet republics – the Turkish-speaking countries (Azerbaijan, Turkmenistan, Tajikistan, Kyrgyzstan, Uzbekistan and Kazakhstan) and Islamic countries (Turkey, Egypt, Iran and Indonesia), which characterise the specifics of export-import relations of the Republic of Tatarstan.

By the Table 6, these countries were 11.04% and 13.48% of total trade turnover and foreign trade balance in Tatarstan in 2021, 12.27% and 16.46% in 2020, 10.61% and 10.25% in 2019, 7.68% and 6.15% in 2018 and 8.43% and 7.53% in 2017, respectively. The largest volume and share of the Republic of Tatarstan's foreign trade turnover provided by:

- Islamic countries (Malaysia, UAE and Saudi Arabia) at 5.68% in 2017, 4.71% in 2018, 5.3% in 2019, 3.66% in 2020 and 3.55% in 2021;

- former Soviet republics (the Turkish-speaking countries of Azerbaijan, Turkmenistan, Tajikistan, Kyrgyzstan, Uzbekistan and Kazakhstan) at 67.75% in 2017, 67.71% in 2018, 61.08% in 2019, 62.87% in 2020, 52.77% in 2021;

- Islamic countries (Turkey, Egypt, Iran and Indonesia) 8.3% in 2017, 27.31% in 2018, 33.56% in 2019, 29.98% in 2020 and 43.31% in 2021.

The Republic of Tatarstan's foreign trade with Islamic countries, with former Soviet republics (with Turkic-speaking countries) and with Islamic countries has a positive balance in 2017-2021. At the same time, the positive balance in foreign trade turnover has been increasing over this period: in 2018 it increased by 3.09% compared to 2017 and in 2019 it increased by 35.47% compared to 2018. In 2020-2021, the foreign trade balance with these countries was also positive.

The above countries account for the following proportions of Tatarstan's total foreign trade balance with all countries: 8.43% in 2017, 7.68% in 2018, 10.61% in 2019, 12.37% in 2020 and 11.04% in 2021. The positive value of the foreign trade balance based on the inter-country structure.

The largest volume and share of goods imported into the Republic of Tatarstan provided by:

- Islamic countries (Malaysia, UAE and Saudi Arabia) at 5.92% in 2017, 7.35% in 2018, 5.63% in 2019, 3.81% in 2020 and 3.99% in 2021;

- the former Soviet republics (the Turkish-speaking countries of Azerbaijan, Turkmenistan, Tajikistan, Kyrgyzstan, Uzbekistan and Kazakhstan) at 16.44% in 2017, 29.15% in 2018, 22.4% in 2019, 20.83% in 2020, 19.35% in 2021;

- Islamic countries (Turkey, Egypt, Iran and Indonesia) at 56.12% in 2017, 62.27% in 2018, 69.42% in 2019, 73.16% in 2020 and 75.81% in 2021.

In our opinion, the countries of the Organisation of Islamic Cooperation have greater potential for socio-economic development. It is primarily depends on some economic advantages over developed and even post-industrialised countries. First, these countries have large concentrations of natural resources that are not profitably exploited: exports of intermediate goods and imports of final (manufactured) goods. These countries need to focus on processing raw materials together to produce final goods. The weak link in the OIC countries is the lack of new equipment and technology that needs to be produced by mobilising limited financial resources. There is a need to provide the economic analysis of the scientific and technical capabilities of certain states. For example, Russia, including Tatarstan, could specialise in the development

of new technologies and the training of scientific and technical personnel for future raw material processing industries within a joint division of labour. Also the economic function and role of the state in the planning of production, trade and logistics value chains should be enhanced.

The OIC countries have an undeniable competitive advantage – a social aspect, of an ethical, cultural, ideological and moral nature. Indeed, the main item for Islamic economic culture and ethics is the use of capital not for profit, speculation in the interests of individual actors, but for the purpose of collective investment in productive business projects and the concerted use of the capital earned. Therefore, Islamic moral norms need to be widely developed and popularised and transposed into economic life, the economy, such as Islamic financial institutions (Islamic banking, takaful insurance, etc). State organisations should propagate Islamic morality as a norm of economic life and translate its principles into the practice of mutually beneficial international economic relations.

There are some promising inter-state institutions for the further development of the OIC countries, such as the Eurasian Economic Cooperation, in which any OIC countries can participate, based on Islamic principles in economic activities. This requires increasing the economic function and role of the state in the OIC countries in guiding the planning and implementation of specific investment projects. In the context of global competition with Western and Eastern transnational corporations, OIC countries need to build their own production and trade chains for innovative goods at the inter-state level.

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# New conceptual approaches to process management of an integrated management system in the refining industry

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**Abstract.** The paper considers the issues of statistical process management of an integrated management system of a refinery under the conditions of a new conceptual approach of integration of statistical and qualimetric methods. The authors pay special attention to the scientific and methodological justification of the management processes of an integrated management system in the context of sector specific features. The authors show, using as an example the construction of control charts of individual values and sliding differences in Statistica Trial 13.3 for the process "Manufacture of products", that the highest correlation is characteristic for such quality indicators as kinematic viscosity at 700C and fractional composition 50%. Therefore, the process "Manufacture of products" should be managed and brought into a statistically manageable state by changing the values of the quality indicators noted. In order to ensure the stability of the production process and to improve the overall functioning of the IMS, the parameters of the main processes should be monitored regularly. The results of this methodical approach to process management will allow the justified corrective action for the effective functioning of the integrated management system, as well as increase the competitiveness of the enterprise.

**Keywords:** Statistical process control, integrated management system, quality control system.

**JEL codes:** C13, L15, L64

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## Introduction

Modern conditions, expressed in dynamic and complex management structures, determine the need to introduce modern mechanisms in order to improve the integrated management system, enhance the quality of the products, as well as increase competitiveness in the market segment. An integrated refinery management system is of considerable interest in this context. This system allows the implementation of a wide range of production tasks, the effectiveness and efficiency of which has been the subject of research. Integrated management systems are nowadays the most effective for increasing a company's competitiveness (Štofová, Szaryszová & Vilámová, 2017; Samoilenko, 2021; Salimova, 2019). Many researchers consider enterprise competitiveness in terms of the sustainability of enterprise business models and organizational management systems. Integrated management system models should be seen as the most effective and

efficient ones (Salimova & Biryukova, 2020). This is explained by the fact that increased competition is affecting new production methods and shorter product life cycles, forcing manufacturing companies to adapt in a rapidly changing business environment by adopting a process and system approach. Transparency, better manageability, and continuous improvement of the company's activities are ensured by documenting, monitoring, and analyzing processes in accordance with the requirements of the international standards.

One of the effective methods for improving the performance of integrated management systems (IMS) and their processes is to introduce statistical methods for assessing and managing the processes.

Statistical methods are tools for collecting and processing data, as well as information about quality. The main purpose of the use of statistical methods by many industrial enterprises is to minimize process variability.

An analysis of the literature on research in the field of process control of integrated management systems shows a wide range of methodological approaches, among which statistical and qualimetric methods are actively used in various industrial sectors (Lahuta, Kardoš & Hudáková, 2021; Suarez-Paba & Cruz, 2022; Shtovba, 2020; Tsareva & Yuzhakova, 2018; Terano, Asai & Sugeno, 1989).

It should be noted that statistical methods are widely used at all stages of the product life cycle. However, each stage requires an individual approach to the selection and implementation of a particular method. Figure 1 shows the use of static methods of product quality management at the relevant stage of the product life cycle.

**Table 1** – Application of statistical methods at each stage of the product life cycle

Marketing	QFD method, stratification, correlation and regression analysis
Projecting	7 simple tools, Taguchi methods, QFD method, stratification, FMEA analysis
Planning and design	Taguchi methods, expert judgement, FMEA analysis
Purchasing	Taguchi methods, QFD method, Ishikawa chart
Production	7 Simple Tools, Taguchi methods, analysis of variance and correlation, repeatability indices
Quality Control & Testing	Quality Control Sampling, QFD Method, 7 Simple Tools
Packaging & Storage	Acceptance Random Inspection
Product Delivery	Mass Service Theory
After Sales Activities	7 simple tools
Disposal	QFD method

*Source: composed by authors*

The relevance of the research subject is caused by the activity of oil refineries. Increasing of production efficiency and products competitiveness are achieved by improving the automated quality control systems as finished products so as raw materials in terms of implementation the statistical process control and quality indicators correlation analysis.

It is necessary to analyze the applied methods of integrated management system processes, develop a conceptual model of statistical management for enterprise activity improvement, and increase of effectiveness and efficiency indicators of IMS processes in connection with functioning of quality control systems at the oil refining industry.

The input information for statistical control contains the values of the quality indicators that determine the finished product quality. Quality measurements are made at various stages of the process cycle and processed in automated systems for industry management. The traditional approach to quality control of finished products based on inspection after the identification of defective products shows the inefficiency and frequent losses.



One of the major issues facing domestic refineries is the transformation from product quality management to process quality management. The industrial experience shows that only 15 % of the causes of process variability can be eliminated by local actions of the process performer, most of the causes require management decisions (Bykov et al., 2011).

The main objective of statistical process control is to ensure stability, maintain quality indicators, and process parameters at an acceptable level that will ensure established requirements of the manufactured products (Vetter & Morrice, 2019).

At present, a whole set of normative and methodological documents on statistical methods of process control have been developed, including standards for statistical acceptance control, control charts, statistical methods for regulating technological processes, organization of their implementation in industries, etc. (GOST R ISO 7870-1-2011; GOST R ISO 7870-2-2015; GOST R ISO 22514-1-2015; GOST R ISO 22514-2-2015).

### **Methods**

The object of the study is "Slavneft-YaNOS", one of the Central Russia's largest refinery products producers. A significant competitive advantage of the company, both regional and international markets, is the additive integrated management system in use, which includes, in accordance with the specific nature of the business: the quality management system (QMS), the environmental management system (EMS), and the occupational health and safety management system (EHSMS).

The integrated management system of the refinery under consideration optimally provides quality, environmental, occupational health and safety improvement requirements and considers the requirements of the following standards:

- GOST R ISO 9001-2015 (ISO 9001:2015) "Quality management systems. Requirements";
- GOST R ISO 14001-2016 (ISO 14001:2015) "Environmental management systems. Requirements and guidelines for use";
- GOST R ISO 45001-2020 (ISO 45001:2018) "Occupational health and safety management systems. Requirements".

Two approaches to quality control are used by the factory under consideration:

- 1) technical supervision means verification of the conformity of a product or process with established technical requirements;
- 2) automated control improves the speed and accuracy of measurement as well as the objectivity of control operations.

The collection, processing, and presentation of information on the quality of raw materials, secondary and commercial oil products, emission, and effluent analyses from process facilities is conducted in the quality control system (hereinafter referred to as QCS), the main characteristics of which are presented in the following section.

Statistical methods have a wide range of applications and in the field of product quality management cover the entire product lifecycle.

One of the most important issues in the implementation of statistical methods for managing the processes of an integrated management system in an industrial enterprise is to determine the role of each structural unit in this process.

The algorithm for implementing statistical methods in an industrial enterprise is shown in Figure 1.

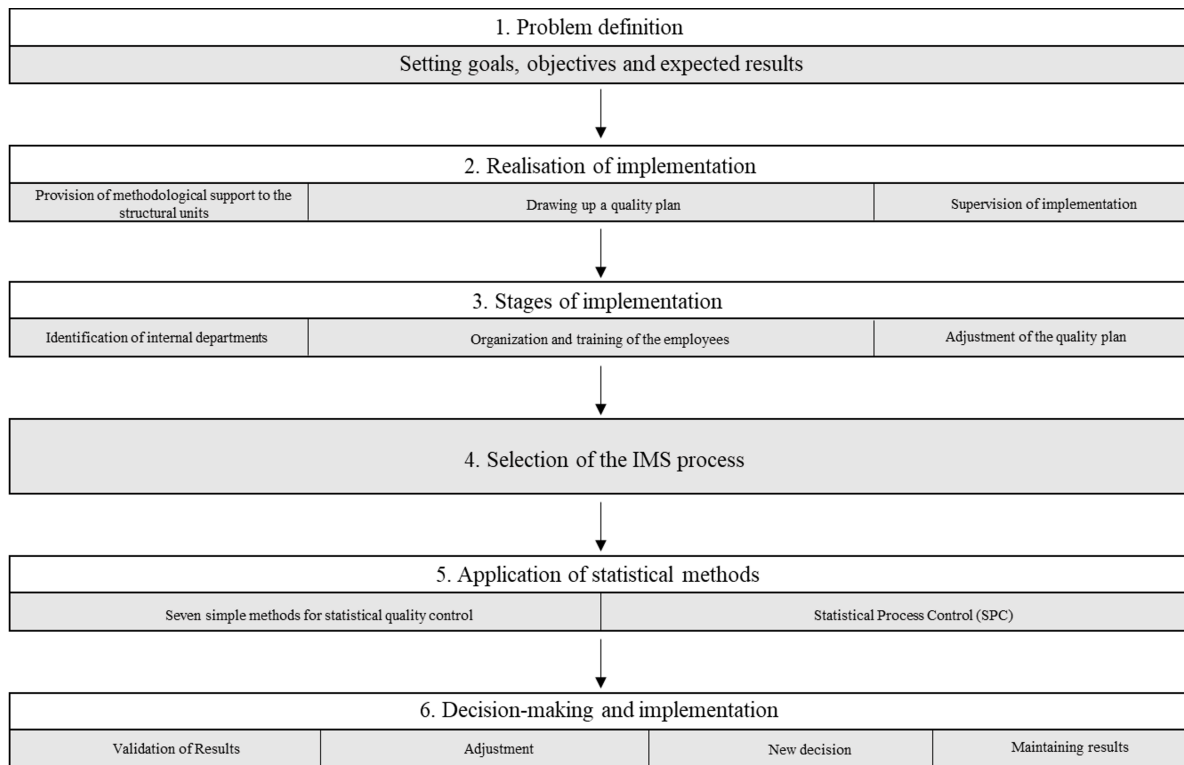
### **Results**

The national standard GOST R ISO 11462-2-2012 is a regulatory document for the implementation of statistical process control methods.

A quality plan for the implementation of statistical methods for managing IMS processes may include the following points:

- the choice of processes and quality indicators to be statistically managed;
- the development of process management plans;
- conducting assessment of the accuracy and stability of the processes;

- evaluating the effectiveness and efficiency of the implementation of statistical methods.



**Figure 1.** Algorithm for implementing statistical methods for process quality management

Source: composed by authors

In accordance with technological innovations and increased attention to the development and improvement of process control systems, such as the quality control process model developed in (Rylov, 2015), quality indicator calculations allow laboratory analyses to be filtered out and those that have been performed with significant inaccuracy or incorrectly entered to be eliminated. The plant operators can analyze the causes of quality changes within a given time period and take the appropriate corrective action.

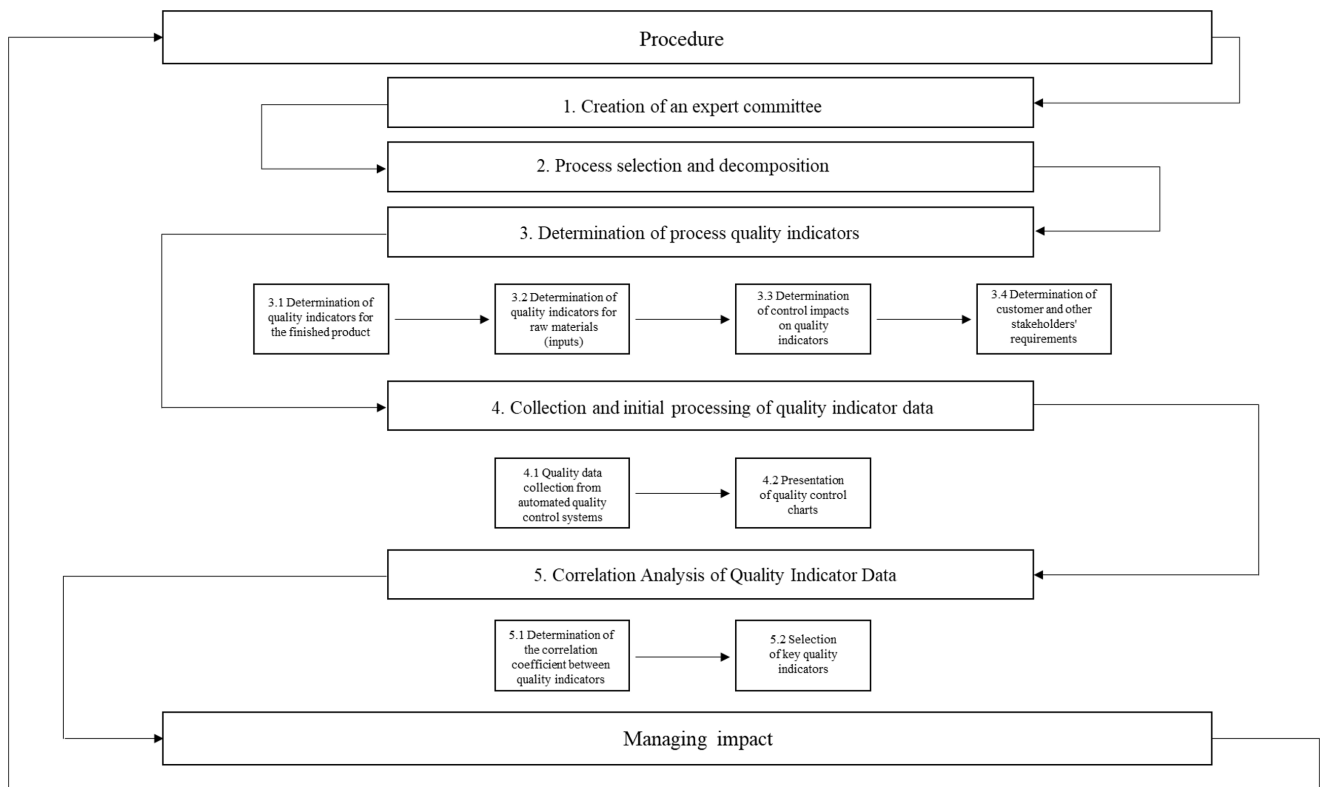
In order to improve the performance of IMS processes, there is a necessity to automate the refine systems that focus on statistical process control and analysis of the correlation between quality indicators. In this reason, the development of a statistical process control methodology is of great relevance.

Development and implementation of the methodology for statistical process control of the integrated management system for PJSC "Slavneft-YANOS" will make it possible to analyze the processes and determine whether they are in a statistically manageable state with identification of the correlation between the quality indicators of the process under study. The implementation of this algorithm will serve as a more accurate approach to assessing the performance indicators of the IMS processes.

The statistical process control methodology is based on tools and techniques such as the Schuchart control charts and the correlation analysis of quality indicators. The main stages of statistical management of IMS processes are:

- establishing an expert body;
- process choice and its decomposition;
- determination of process quality indicators;
- collection and primary processing of data on quality indicators;
- analysis of the quality indicator data;
- undertaking the corrective action to manage the process by changing the values of the key quality indicators.

The conceptual model for statistical management of refinery IMS processes proposed in this study is shown in Figure 2.



**Figure 2.** Conceptual model of statistical process control

Source: composed by authors

## Discussion

Summarizing the results of the analysis of the refinery quality control systems under consideration, it should be noted that they are identical, with standard forms and functionalities, which indicate limited conditions in process control.

To study the base oil production process of PJSC "Slavneft-YaNOS", control charts of individual values and moving ranges were drawn in the Statistica Trial 13.3 programme.

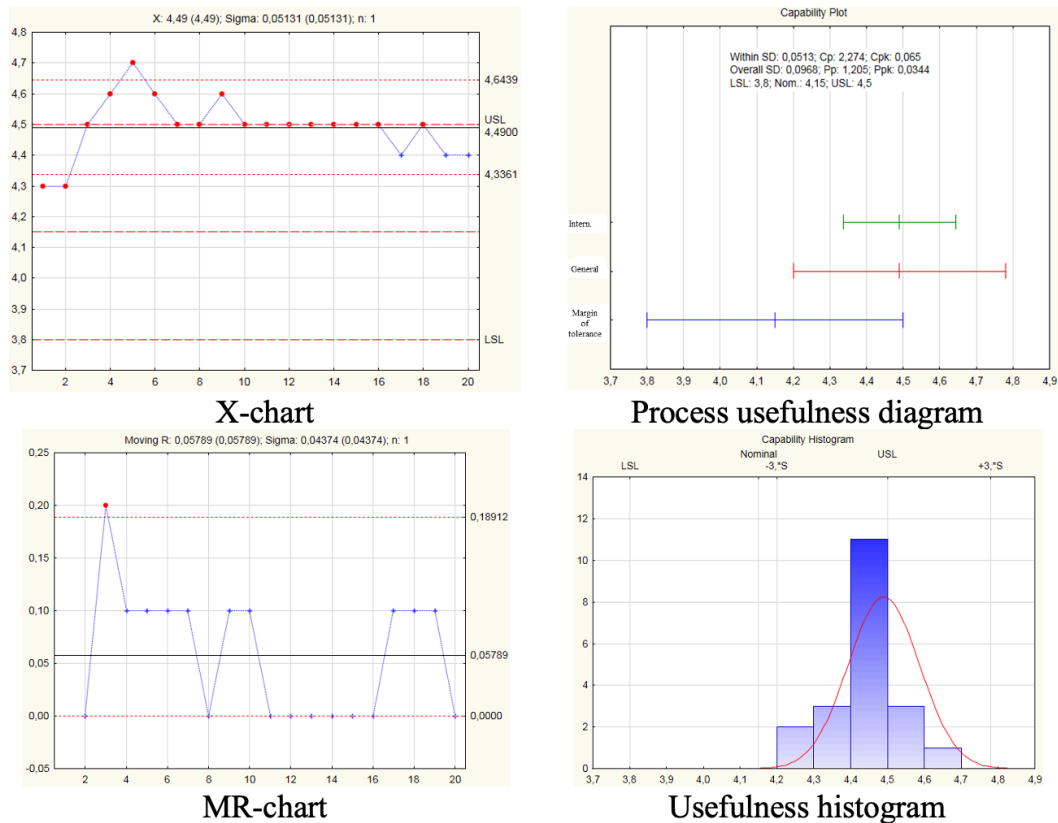
The X-MR charts for the base oil quality indicator – kinematic viscosity, are shown in Figure 3.

Analysis of the X-MR charts shows that there are points outside the USL and LSL control lines. This shows the possibility of some special causes of variation. The process is not in a condition of statistical controllability (C2 model).

Based on the requirements given in the form of tolerance levels with USL and LSL margins, the maximum and minimum values for the quality index Kinematic viscosity at 1000 C are 4.5 mm<sup>2</sup>/s and 3.8 mm<sup>2</sup>/s, respectively.

The following usability indices have been calculated:  $P_p = 1.205$ ;  $P_{pk} = 0.0344$  (see Figure 3). The resulting value  $P_{rk} < P_p$  indicates a process deviation from the nominal level. The process is unstable. Stabilization measures need to be taken, removing the influence of special causes.

The X-MR charts for the quality indicators viscosity index, kinematic viscosity at 400 C, kinematic viscosity at 700 C, and kinematic viscosity at 1000 C show that the processes are not controlled statistically. According to the technical data of the base oil, the viscosity index is a quantitative description of the change in viscosity of the oil in dependence on temperature. Kinematic viscosity and density also depend on the chemical and fractional composition. It is worth considering that the analysis showed the highest correlation between kinematic viscosity at 700 C and fractional composition of 50%. Therefore, the process "Manufacture of products" should be managed and brought into a statistically manageable state by changing the values of the quality indicators noted.



**Figure 3.** X-MR charts for base oil quality indicator – kinematic viscosity

Source: composed by authors

It should be noted that in order to ensure the stability of the "Production Process" and improve the functioning of the IMS as a whole. The quality indicators of this process should be regularly monitored according to the algorithm described above. The results of this methodological approach to process management will enable corrective action to be reasonably taken and, if necessary, changes to the technology of the process under study.

The implementation of regular monitoring of quality indicators of IMS processes will ensure the following:

- the accumulation of objective data on the process;
- monitoring the progress of the processes and their sub-processes;
- regulating the process in accordance with the aims to be achieved;
- reducing the deviation of the quality indicators of finished products from the target values;
- assessing the performance of the actions undertaken as part of the application of the IMS statistical process management methodology;
- monitoring the evolution of the significance of key process quality indicators, in order to identify new ones that have a significant contribution to the outcomes of the IMS process.

### Conclusions

A study of current models and approaches to integrated management system process revealed that the improvement of quality management system processes and the IMS are developed. However, the analysis and synthesis of methodological approaches has highlighted the special role of integrating statistical and qualimetric approaches.

A study of selected process control approaches has shown that statistical methods allow the process participant to monitor the processes in progress and provide the facts for adjusting and improving them. To improve the capacity of the process, it is necessary to improve its components, namely quality indicators. This



is when the need arises to identify the key quality indicators that have the highest correlation.

Development and implementation of the methodology for statistical process control of the integrated management system will make it possible to analyze the processes and determine whether they are in a statistically manageable state with identification of the correlation between the quality indicators of the process under study. The implementation of this algorithm will serve as a more accurate approach to assessing the performance indicators of the IMS processes.

Increasing the competitiveness of PJSC "Slavneft-YaNOS" by implementing statistical management of IMS processes is due to the following factors:

- the optimal use of resources;
- the modular approach for the sustainability of an integrated management system makes it easier to change it in order to improve both individual processes and the IMS as a whole;
- possible synergies in the effective functioning of the IMS;
- expanding the market to include new customer requirements, due to the objective identification of a correlation between product quality indicators and the performance of the priority IMS process;
- functioning of an integrated quality management system, guaranteeing the implementation of innovative technologies and management methods.

In addition, PJSC "Slavneft-YaNOS", in order to improve its competitiveness, should to refine automated systems focused on statistical process control and analysis of the correlation between product quality indicators and IMS process performance indicators.

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# Problems and prospects of the industrial enterprise development (on the example of “Uralasbest”)

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**Abstract.** The domestic enterprises operate in a context of intense competitive pressure and the powerful influence of external factors. This study considers the effectiveness of financial and economic activities of an industrial enterprise on the example of one of the largest enterprises in the Ural region of Russia, PJCS "Uralasbest". We assess the efficiency of the enterprise in order to identify problems that have a significant impact on the activity of the economic entity and determine the prospects for its development. PJSC "Uralasbest" is a city-forming enterprise, specializing in the production of chrysotile asbestos, the consumers of which are various industries in the Russian Federation and abroad. In our analytical research we define both external and internal factors, influencing the effectiveness of the enterprise. The authors identified the most significant factors: sanctions, the state of the global and domestic economy, the general decline in production, the non-payment crisis, the influence of Western politicians on the domestic economy (the market in Ukraine is closed), and the anti-asbestos campaign, etc. As a consequence, there is a decline in production and a shortage of production capacity. In the current situation, a prospective way of maintaining the efficient operation of industrial enterprises is to actively explore the domestic market.

**Keywords:** industrial enterprises, efficiency, problems, external and internal factors, prospects.

**JEL codes:** L5, D22

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## Introduction

The modern domestic economy, like the world economy as a whole, is experiencing great difficulties due both to the impact of the coronavirus pandemic and to the political decisions of national leaders.

By the Proceedings of the Third Urals Economic Forum (Ekaterinburg, 21-22 October 2021): "Under these challenging conditions, the joint search by the global community for new ideas and solutions to support sustainable development at the stage of post-crisis recovery of national economies is reasonable and necessary. It is now important not only to take a sustainable trajectory of qualitative growth, but also to create conditions for the development of competitive advantages in the context of a fundamentally new economic reality. There is a need to search the new resources in order to increase the innovative and technological potential of the domestic economy" (Materials of the III Ural Economic Forum, 2021).

Many scientists noted the relevance of the study of these issues: Animitsa E., Dvoryadkina E., Dubrovsky V., Mokronosov A., Lavrikova Y., Novikova N., Orekhova S., Pyankova S., Silin Y., Tkachenko I., etc.

For example, research on the potential for new industrialization in the regions, conducted by the Institute of Economics of the Urals Branch of the Russian Academy of Sciences, highlighted three main groups of the regions:

1) the industrial regions with high potential for new industrialization and industry 4.0 formation – the Kaluga, Nizhny Novgorod, Perm, Moscow, Novosibirsk, Sverdlovsk, and Chelyabinsk regions. The economies of these regions are dominated by high-tech industries with significant expenditure on research and development. These regions will be the new industrialization centers of Russia;

2) the industrialized regions with a medium potential for new industrialization – the Novgorod, Yaroslavl, Samara, Vladimir, Rostov, Omsk, Volgograd regions, and the Republic of Bashkortostan;

3) the industrialized regions with low potential for new industrialization – the Irkutsk, Krasnoyarsk, Lipetsk, Vologda, and Murmansk regions.

The new industrialization of Russia should be followed by reindustrialization – the restoration of production, technological systems, certain sectors and types of industries, accompanied by the solution of major problems, concerning the stock, technological and human resource base of industry with a general vector, in order to establish the domestic high-quality consumer values (Materials of the III Ural Economic Forum, 2021).

### **Main Part**

The Ural economic region of the Russian Federation occupies a rather favorable economic and geographical location. The main branches of specialization in the Urals are ferrous and non-ferrous metallurgy, transport, energy and agricultural machine building, chemical, petrochemical, and timber industries.

Also there are a lot of enterprises in the Ural region: JSC "Pervouralsk Novotrubny Zavod", "Russian Copper Company" (RCC Group), JSC "Scientific and Production Corporation Uralvagonzavod", JSC "Uralmashplant", JSC "Machine Building Plant named after M.I. Kalinin", JSC "Urals Electrochemical Plant", JSC "Synarsky Pipe Plant", PJSC "Uralasbest", etc.

Nowadays, the increased competition is ordinary one for the activities of domestic business entities. This process is facilitated by the more dynamic influence of various external and internal factors than before. These factors force the enterprises to respond to the changes.

The increased need to react to changes in the internal and external environment makes it necessary for the enterprise to increase the resources available to it, and therefore only increases the competition for them.

In the modern context of both global and domestic economic development, it is becoming increasingly difficult to keep a company operating efficiently. In the future, the most effective organization is the one that is strategically oriented, which management is engaged in the development and implementation of the long-term development goals of the business entity.

The different measures to improve enterprise efficiency are necessary in order to ensure the indicators of the company: better and more timely satisfaction of the customers; increased profitability, and cost savings for the company or reduced costs; improved competitiveness of the company; a balance between stability and innovation; continuous management and control of the level of efficiency in the enterprise as a whole.

On the example of one of the largest enterprises in the Urals, PJSC "Uralasbest" (a highly-mechanized mining and processing enterprise), we consider current problems and prospects for its development. The enterprise works on the basis of the richest Bazhenov deposit, the proven reserves of which will last more than 150 years. The deposit is developed by open-pit mining.

The mission of PJSC "Uralasbest" is to become a leader in the production of chryzotile as well as a wide range of construction and insulation materials for various industries in the Russian Federation and abroad.

The PJSC "Uralasbest" management responds to the customer's requirements and expectations for product quality, while continuously sustain and prevent the environmental impact. The enterprise has a rich history dating back to 1904, when the first primitive sorting plants were built.



The authors used methodological recommendations developed by a team of professors from the Department of Enterprise Economics at PJSC "Uralsbest" (Orlova & Dubrovsky, 2018) to assess the financial and economic activities of the enterprise.

The enterprise has considerable production capacity, although there was a slight decrease in 2020 (by 2.7%), which continued in 2021 (4.1%).

The analytical study of the main economic indicators of PJSC "Uralasbest" in the period of 2019-2021 shows the enterprise is developing dynamically, despite the fact that in 2020 there was a decline in production. But, already in 2021 there is an increase in revenue by 31.4%.

The enterprise runs its business mainly with its own funds (80.5% of its financial capital structure).

The majority of the assets in the property capital structure are current assets, which amount was 65.5% in 2021.

A high level of accounts receivable in the structure of current assets (71.2% in 2021) should be regarded as having a negative impact on the efficiency of PJSC "Uralasbest" operations, which is connected not only with a decline in customers' solvency, but also with the loyal credit policy of the company.

The analysis of financial factors, describing the enterprise's solvency, liquidity, and financial stability showed that PJSC "Uralasbest" performs its activities quite effectively: its balance is highly liquid, the sufficient level of equity allows the organization to feel financially independent from external sources and pay off its liabilities on time.

But there are problems associated with the long recovery period of the receivables. The company management is recommended to introduce strict monitoring of customers, taking into account their declining solvency, review their relations and payment terms in order to minimize receivables, and shorten their repayment period.

Thus, we can make the following conclusions: PJSC "Uralasbest" is a financially stable company. It uses its resources efficiently and increase production volumes.

However, there are internal problems such as:

- utilization of production capacity is not complete due to the suspension of sales to Ukraine;
- low workers' wages as a result of a shortage of basic motivation, hence a shortage of low-paid staff.

The main markets in which PJSC "Uralasbest" operates are asbestos cement companies in Russia, Uzbekistan, India, Vietnam, China, and Ukraine (temporarily suspended).

The main competitors of PJSC "Uralasbest" are JSC "Orenburg minerals", which is developing the Kiembayevskoye deposit. JSC "Orenburg Minerals" is a part of PJSC "United Minerals", involving company "Iowwa", a chrysotile asbestos mining company "Kostanay Minerals", located in Kazakhstan and developing the Djetigarinskoye chrysotile asbestos deposit.

The strengths of PJSC "Uralasbest": the Bazhenovskoe deposit, where the enterprise operates, has a flat structure and high gradeability. The advantages include: high quality and uniqueness of products; favorable geographical location; established logistic chain; availability of credit resources with a stable financial position; high reputation.

Uralsbest weaknesses are associated with the fact that chrysotile is at a low depth of occurrence, hence:

- higher production costs (competitors' prices are lower);
- high dependence on foreign exchange (markets in the far abroad);
- the large social safety net, responsibility (PJSC "Uralasbest" is a city-forming enterprise).

At present, there is a stiffening of competition because of the reduction of asbestos price by the PJSC "Uralasbest" competitor, PJSC "The United Minerals", which united two companies: JSC "Orenburg Minerals", Russia, Orenburg region and "Kostanay Minerals", Kazakhstan, Kostanay region.

In addition, manufacturers of chemical substitutes for chrysotile asbestos began an active anti-asbestos campaign.

The most important external macro-environmental factors affecting a business are the following:

- economic (sanctions, state of the global and domestic economies, rising prices of raw materials and finished goods, general decline in production, default crisis, bankruptcy of debtors, inflation);

- political (influence of Western politicians on the domestic economy (for instance, closed Ukrainian market));
- the level of science and technology development (ageing technology, insufficient capital investment in knowledge-intensive production, reduced investment);
- social (rising unemployment, falling wages, an outflow of cheap labor, falling purchasing power of both businesses and individuals);
- nature and climate factors.

In addition, other factors such as raiding, the theft of commercial information, and the threat of terrorist acts should also be taken into account.

The objective of improving the efficiency of a company, in general, is to maximize the satisfaction of owners, managers, employees, consumers, make optimum use of the external environment, improve the economy, and the final performance of the enterprise.

In order to achieve this objective, the following challenges are necessary to:

- define the strategic objectives (opportunities) for business development, taking into account the impact of changing factors in both the external and internal environment;
- assess the situation regarding the use of key resources, and the achievement of the enterprise organization's results;
- provide the optimal use of the available resources in order to improve the economy and efficiency of the enterprise.

The analysis of PJSC "Uralasbest" activities made it possible to assess the current situation, and identify the following tasks to improve the efficiency of the enterprise organization activities in the near future:

- increase domestic market share by finding new customers and increasing order volumes;
- increased the main facilities efficiency use.

In order to achieve these objectives, it is proposed to organize a PR campaign to promote the enterprise's products on the domestic market.

Also, it is suggested to establish contacts with potential customers by sending them promotional print publications, organizing a tour to PJSC "Uralasbest", providing free samples of chrysotile asbestos, and other products, in order to the potential customers can appreciate the high quality of the products.

It is expected that the production and sales volume of PJSC "Uralsbest" products on the domestic market will increase by at least 5%.

### **Conclusions**

Thus, based on the analysis of problems and prospects for the development of an industrial enterprise on the example of PJSC "Uralasbest", we can conclude that, despite the existing external threats, high competition, enterprises unique of the industry, producing products that meet all global standards, will quite successfully find new markets (Timoshin & Orlova, 2021).

One of the key indicators of successful industrial development is the adoption of digital technologies in their activity. For example, in her research professor I. Turgel noted that the stabilization of aggregate demand and supply in Russian regions is facilitated by "the introduction of digital technologies, new delivery methods, and a focus on new market sectors" (Turgel et al., 2022).

Moreover, almost all modern enterprise processes cannot proceed without the application of digital technologies, especially in industry, which is demanded, more than any other sector, the modernization of risk assessment methods in order to ensure the sustainable development of industrial enterprises due to the fact that many of them have closed production cycle.

Thus "the current crisis is the first example of a truly global crisis engulfing the entire world economy. Therefore, the way out of the crisis depends on both domestic factors and developments in the global economy. However, as applied to Russian industrial companies, it is primarily about changes in the external environment of their functioning and the need to find possible factors to improve the effectiveness of their survival strategy in the new conditions of the changed external environment of the 2000s" (Cherkasov, 2011).

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