



Pricing in the Concept of Cognitive Marketing in the Context of Globalization: Theoretical, Methodological and Applied Aspects

VITALII NITSENKO¹, OLENA CHUKURNA², ABBAS MARDANI³,
JUSTAS STREIMIKIS⁴, NATALIYA GERASYMCHUK⁵, IRYNA GOLUBKOVA⁶
and TETYANA LEVINSKA⁷

¹ Associate Professor, Odessa I.I.Mechnikov National University, Odessa, Ukraine, e-mail: vitaliinitenko@gmail.com, ORCID: 0000-0002-2185-0341

² Associate Professor, Odessa National Polytechnic University, Odessa, Ukraine, e-mail: elenchukurna@ukr.net, ORCID: 0000-0001-9285-7068

³ Azman Hashim International Business School, Universiti Teknologi Malaysia (UTM), Skudai Johor 81310, Malaysia; e-mail: mabbas3@live.utm.my

⁴ Lithuanian Institute of Agrarian Economics, Vilnius, Lithuania, e-mail: dalia.streimikiene@knf.vu.lt

⁵ Professor, e-mail: 90999nag@gmail.com, ORCID: 0000-0002-3931-5320

⁶ Associate Professor, National University "Odessa Maritime Academy", Odessa, Ukraine, e-mail: prof.irinagolubkova@gmail.com, ORCID: 0000-0002-9931-8291

⁷ Senior Lecturer, National University "Odessa Maritime Academy", Odessa, Ukraine, e-mail: pelegrim08@ukr.net, ORCID: 0000-0001-7257-5186

ARTICLE INFO

Received January 22, 2019
Revised from February 26, 2019
Accepted April 30, 2019
Available online September 15, 2019

JEL classification:

M31

DOI: 10.14254/1800-5845/2019.15-4.10

Keywords:

Cognitive marketing,
product value,
cognitive value,
innovative demand,
parametric quality index,
algorithm of price setting..

ABSTRACT

The study used the following general scientific methods of theoretical and empirical research: a systematic approach – to justification for parametric index at set prices based on the additional premium for quality, based on the use of quantitative and qualitative indicators; methods of theoretical generalization – for grouping the principles and functions of prices in the context of the concept of cognitive marketing; the method of dispersion analysis – to detect and assess the price formation dependence not only on quantitative characteristics (material costs), but also on the qualitative characteristics of the product (parametric quality index); the method of correlation-regression analysis – for constructing a regression model of pricing. The main results of the study were to identify the differences in the marketing mix in the context of the concepts of cognitive and traditional marketing. The evolution of cost categories in the concept of cognitive marketing was substantiated. It was proposed the concept of cognitive value. Innovative demand was defined as a new factor influencing pricing. The formation of value through the use of methods for the formation of demand for innovative products was proposed. A new price function and pricing algorithm in the concept of cognitive marketing was substantiated. An approach is proposed that involves the creation of potential demand at the expense of the value already specified by the manufacturer. It was substantiated that the value of the factors of production should be transferred to the value of the goods, which involves taking into account the value of both the material and the intangible compo-

ment. It is suggested to take into account the parametric quality index when setting the price as an additional price premium. This approach has been tested in the formation of predictive values of the price of products of machine-building enterprises with the help of regression-disaggregated analysis.

INTRODUCTION

The necessity of writing a scientific work is updating research in cognitive economy. The rapid development of technologies of the seventh technical and economic structure contributed to the emergence and substantiation of the concept of cognitive marketing. At the core of the concept of cognitive marketing lies the thesis that it is precisely multinational corporations, having access to resources and financial opportunities for the introduction of innovative technologies, initially create pioneer products, and then with the help of cognitive technologies, form the demand for such goods, introducing their consumption technologies. As a result of saturation of the market for high-tech goods, the consumer should be taught to use such products, which contributed to the emergence of a new production factor – knowledge. This approach justifies an entirely new marketing paradigm – cognitive marketing. Authors of the concept emphasize that marketing takes on the functions of influence and formation of consumer consciousness, influencing the cognitive processes of the consumer. At the same time, the paradigm of the concept of marketing is constantly evolving, creating conditions for the successful development and competitive positioning of the business. All of these processes require scholars, practitioners and researchers to analyze existing cost categories and pricing systems and transform them under the influence of changing the marketing paradigm.

The purpose of the study is to form the theoretical foundations of cost categories, values and prices in the context of the concept of cognitive marketing. *The hypothesis of the research* is to prove the formation of the value principle and pricing algorithm in the conditions of globalization, which is accompanied by the emergence and spread of a cognitive economy. In this context, pricing depends not only on the quantitative characteristics (material costs), but also on the qualitative characteristics of the product (parametric index of quality), which is forming at the stage of product creation and its promotion on the market. Most scientists who study the genesis of marketing concepts do not bind the spread of the theory of cognitive economics of globalization. In general, the concept of a cognitive or behavioral economy has been proposed and grounded by such scholars as R. Thaler (2017) who substantiated the theory of a new behavioral economy based on the theory of justification for the interconnection of rational choice and value of D. Kahneman and A. Tversky (1984). Among the marketing theorists who studied the influence of the cognitive economy on the development of marketing concepts, two fundamental directions were identified:

- The first is related to the fact that the cognitive approach is used in studies on the study of factors affecting the behavior of consumers. The adherents of such a scientific approach are apologists to the fundamental theory of marketing, which include F. Kotler and K. Keller (2012) and J.-J. Lamben (2004). They use a cognitive approach to marketing as a consumer behavior research tool. In turn, J.-J. Lamben (2004) focuses on the analysis of the differences between cognitive, affective and behavioral responses, and various methods and methods for evaluating it. F. Kotler and K. Keller (2012) focuses in his research papers on the study of such categories as perception, assimilation, persuasion and attitude. These categories F. Kotler and K. Keller (2012) considers in the relationship of communication elements.
- The second scientific direction justifies the emergence of the concept of cognitive marketing, whose fundamentalists are O.U. Yuldasheva (2005), O.I. Yudin (2009). The rationale for the emergence of a new concept – cognitive marketing, based on the forming the pool of potential consumers of the company, which have identical cognitive responses, a similar cognitive system and way of thinking, world outlook, representation and consciousness. The theoretical and

methodological principles of such an approach to the substantiation of the concept of cognitive marketing were elaborated in detail and proved in scientific works by O.U. Yuldasheva (2005).

1. LITERATURE REVIEW

Cognitive marketing, as a social technology, is considered by I.O. Yurasov (2006), who argues that modern marketing should influence mental activity, perception, cognitive responses, and program the behavior of the consumer for the necessary reaction for the manufacturer of the product. In this context, the concept of cognitive marketing is preventive in nature. Both scientific approaches to a greater extent reveal the essence of cognitive marketing, as a communicative technology of influence, almost ignoring the aspect of creating additional value of the product in the formation of demand and programming of consumer reactions. In addition, most scholars do not carry out the relationship between the emergence of a cognitive economy in the context of which the concept of cognitive marketing and the spread of globalization.

The problems of evolutionary development of marketing concepts and its categorical apparatus, instruments and methods of promotion deals with many famous foreign and Ukrainian scientists, such as: T.P. Danko and I.I. Skorobogatyh (2005), O.O. Karpishenko and Y.E. Lginova (2005), I.V. Liluk (2011), M.A. Oklander, T.O. Oklander and O.I. Yashkina (2018), M. Stelzner (2012), R. Holidej (2014), O.U. Yuldasheva (2005). A critical review of the evolution and periodization of the development of marketing theory was widely covered in the scientific works of M.A. Oklander, T.O. Oklander and O.I. Yashkina (2017). According to M.A. Oklander, T.O. Oklander and O.I. Yashkina modern marketing concept should be viewed as marketing of mass individualization. Given the significant contribution of M.A. Oklander, T.O. Oklander and O.I. Yashkina in the development of the conceptual provisions of the theory of marketing, we believe that in this approach, the scientist is somewhat abstract from the global economic trends that shape the current distribution of markets between large companies in the world and the problem of imbalance of demand (Oklander, Oklander and Yashkina, 2017).

The latter is manifested in the fact that in developed countries there is a growing demand and satisfaction of basic needs of society, leading to market saturation, while in other countries there is a significant drop in demand. This tendency in the global world determines certain transformations in approaches to the theory and practice of marketing activities. In general, many studies of foreign authors was devoted to research on the impact of globalization on the economic development of national economies and the assessment of the degree of influence of global factors. Thus, I.V. Skavronska (2017) explores the development of creative technologies in the Ukrainian economy, considering them as the main factor in the free passage of the national economy into global processes. It argues in his study low level of creative technologies in the Ukrainian economy and confirms its more industrial focus.

In turn, such scholars as A.P. Balcerzak and M.B. Pietrzak (2016) view the global economy as a knowledge-based one. In their research, the emphasis was placed on the introduction of innovations as drivers of the global economy. They analyze in detail the quality of the institutional systems of the European Union (EU), the degree of integration of the countries of Eastern Europe into the EU through the attraction of innovative technologies to the goods and services that are implemented in the markets of the EU countries. Innovative component becomes the basis of knowledge economy in the global market.

Lithuanian scholars A. Mikalauskiene, D. Štreimikiene and K. Mulagalejeva consider globalization as a process of interaction and influence of foreign economic, social and cultural factors, which involve all countries of the world, the formation of single international markets without national barriers and the development of a single legal environment for all countries (Mikalauskiene, Štreimikiene, & Mulagalejeva, 2016). In their research, scientists focus on evaluation methodology degree of involvement of the country in global processes with integrated indicators. Some scien-

tists investigate only certain aspects of global processes and their role in the global economy. For example, O. Ishchenko-Padukova, E. Kazachanskaya, I. Movchan, Ł. Nawrot (2017) focuses on the determinants and prospects of economic development education in conditions of globalization. In turn, U. Nwabueze and J. Mileski (2018) focus on information technology as a driver of influence on the distribution of competitive advantage in the global environment. I. Chychkalo-Kondratska, N. Bezrukova, V. Svichkar (2017) in the study show the global transformation of the world centers that concentrate in certain unions integration of national economies. They proved the reasons that affect the displacement of centers of the global world, using integrated indicators of the degree of globalization of countries and their integration unions.

At the same time, it is widespread among scholars that the global economic processes quickly integrate those economies that have innovative technologies that shape the modern world. In this context, the opinion of L.I. Fedulova is interesting (2015), which proves in his monograph that the countries that have technologies of the seventh technological structure, which are formed as a result of the influence of the cognitive economy, are freely integrated into the global economy. In the context of the development of technologies that will form the next seventh technological process, L.I. Fedulova expresses the following opinion: "In this way, technology applies to reflection and management. It places emphasis on the subject applying technology. Thus, there are serious reasons to think that the technologies of the seventh structure will be socio-humanitarian" (Fedulova, 2015).

Given the significant contribution of these scientists in the theory and practice of marketing concepts, this problem needs continuous research, due to its dynamic development. The achievements of scientists are the basis for further consideration of the development of the marketing paradigm in the context of global change. Megatrends, resulting from globalization have made changes in the technical and economic structure of developed countries, which in turn caused the change vectors of the marketing concept and its value categories and change the price structure. Thus, the basis of a cognitive economy will form artificial intelligence in a combination and close interconnection with human intellect. This technical and economic approach will affect the change and complete transformation of economic laws and consumer behaviour. Under these conditions, consumer behaviour can become fully managed and the traditional marketing toolkit will be completely lost. This contributes to the actualization of the issues of studying trends in changing the value categories in the modern concept of cognitive marketing.

2. RESEARCH METHODOLOGY

The substantiation of the dependence of the development of marketing concepts, depending on the technical and economic structure prevailing in a society in the conditions of globalization, has allowed determining the following determinants:

- Globalization contributed to the proliferation and diffusion of transnational corporations, which contributed to the scattering of their assets across different national economies and the transition of the capital reproduction process to a supranational level. This makes it possible for transnational corporations to receive additional value. In addition, these enterprises have certain priorities in the implementation of innovations, thus creating an innovative demand.
- In the global economy are easily integrated national economies, which have certain competitive advantages and don't have significant gaps in technical and economic structures. Considering stratification of many national economies raises the question of enhancing the differentiation and fragmentation of markets, accompanied by consumption trend of individualization.
- Globalization has contributed to the revolutionary shift in existing technologies and the emergence of a cognitive economy against the backdrop of these changes. The Fourth Industrial Revolution brought the pioneering developments into the global world, promoted the spread of information through neurotechnologies, the transformation of information and knowledge

into goods. Technological achievements of the Fourth Industrial Revolution have created the foundation for the creation of instruments of a common consumption economy (Schwab K., 2017).

- Globalization has created grounds for substantiating the global problems of humanity and finding solutions to overcome them. By global issues that have a significant impact on the conceptual foundations of marketing activities include: economic growth of developed economies and increased differentiation of consumer income; full satisfaction of material needs of consumers; changes in qualification requirements for professions and partial or complete disappearance of certain professional skills; ecological policy of society and appearance of ecological requirements for goods from consumers; growth of competence and knowledge of consumers due to free access to information.

The above-mentioned determinants influence the evolution of the marketing paradigm. In this context, it is necessary to consider these transformations and determine their impact on marketing pricing policy. Periodization of the change of marketing concepts coincides with the transformations in the techno-economic arrangements, which are based on innovation in technology. Undoubtedly, the innovative component of the technological structure took place on the factors of production, which form the basis of pricing policy. The genesis of marketing concepts has allowed us to conclude that the basis of marketing pricing lies not only in factors of production, which determine the level of cost of goods, but also its value. Beginning with the fifth technical and economic structure, pricing begins to focus on the value created by the consumer demand for goods. On this basis based pricing traditional marketing. However, with the advent of technologies seventh technical and economic structure arises cognitive concept of marketing in the context of which it is proposed to form value not based on consumer demand, and based on the level of values which defines the producer. The manufacturer creates value level and introduces it to market. Thus, a new paradigm of pricing arises, which justifies the methodology of price setting based on the value-based approach of the producer. The determining factor in the emergence of this approach is fully meeting their basic needs to the pyramid Maslow, which influenced the emergence of a need for methods of creating demand. The current problem of imbalance of demand with the increase in the saturation of the market goods and services generates consumption society, which is guided by inappropriate factors in making purchasing decisions. In this context, the well-known American scientist T. Skitovsky proved the following: "When a consumer has a choice between pleasure and comfort, he can often not make a rational choice" (Skitovsky, 1971).

Consumer behaviour becomes inefficient and requires marketing tools for emotional impact in the formation of demand for goods. Thus, the consumer does not determine the level of value of the product or service, but the manufacturer. This justifies the emergence of a new pricing principle - *valuable*. Nowadays you can see examples of the formation of demand for their goods and services by transnational corporations – producers of well-known brands. The traditional concept of marketing pricing involves the use of two principles of pricing - market and administrative. The market principle justifies the consideration of market factors of influence at the establishment of the final price, and the administrative principle completely ignores the impact of market factors. Of course, the market principle justifies the role of demand and its impact on the value of goods, the level of which determines the consumer.

In the context of globalization, where multinationals have priority in shaping values and promoting it to the market value of the goods does not begin to determine the level of final consumer demand. The value is formed immediately before the stage of product development that is the principle of market pricing can be implemented only in certain markets or within national economies, but not globally. In turn, enterprises is operating within national economies must adapt to the existing demand on the market and adjust the price depending on its level. Thus, the principle of *adaptive pricing* is realized.

As the global economy uses the approach to fragmentation of the markets on the basis of the introduction of innovative products, to become actualization of demand formation is focused on innovative products. It was concluded and justified that in the conditions of globalization, innovations become a factor in pricing. In addition, the dissemination of innovative and information technologies of the seventh technical and economic structure is associated with the emergence of an unprecedented phenomenon – the economy of common consumption. This approach involves not just the use of digital technologies, through which the individualization of consumer relations is achieved, it is a new type of economic relations that changes not only the marketing concept but also promotes the transformation of economic laws.

The emergence of a common consumption economy is a consequence of the development and spread of elements of the cognitive economy in the global world. The economic essence of the cognitive economy, which directly affects the change in the marketing paradigm as a whole, is that market processes, connections and flows that attract market entities, rather than isolated market actors, take on the first place. In addition, the dissemination and perfection of the cognitive economy paradigm contributed to the emergence of the noosphere theory, which influenced the emphasis of scientists and humanity on environmental problems. Subsequently, ecological management as a separate branch of knowledge influenced the economy of enterprises, formed the methodology of taking into account the environmental factor in the economic activity of enterprises. This direction contributed to the creation of environmental management systems at enterprises, which in turn influenced the environmental factor in the creation of innovative products. This tendency keeps its essence in the conditions of the economy of common consumption. That is why the environmental factor becomes a factor in pricing.

In general, the phenomenon of the economy of common consumption consists in the technological ability for individuals or legal entities to share goods or services at a level that was previously impossible at all. Such a distribution of goods or services became possible through the use of digital technologies, especially the emergence of virtual platforms and mobile platforms. They allowed them to reduce transaction costs in the system to the extent that all its participants receive economic benefits. The economy of joint consumption is already a consequence of the impact of globalization, which facilitates the unification of consumers and producers of goods and their joint production and consumption. In this aspect, globalization, as a phenomenon that promotes the unification of people, without the creation of integration unions between national economies, completely erases the boundaries of not only national economies but also consumer markets. That is why the phenomenon of the economy of common consumption refers to the global megatrends of mankind, which are being conducted scientific discussions within the framework of the Rome Club and the World Economic Forum (Schwab K.,2017)

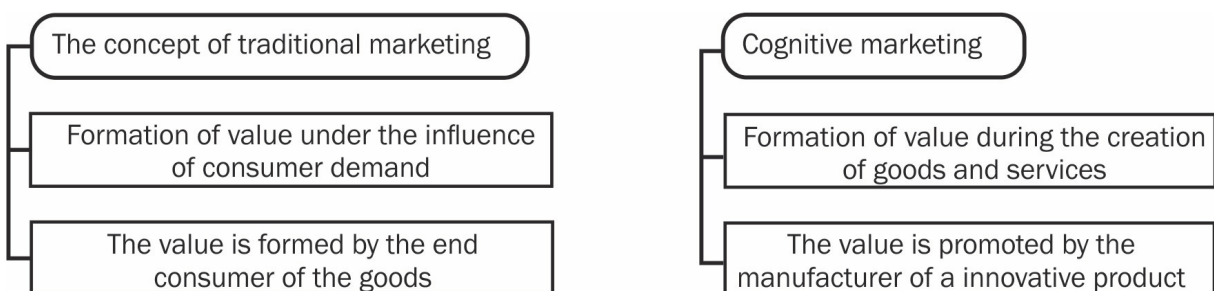
The ambiguous consequences of the spread and development of the economy of common consumption include the following: the emergence of new forms of ownership of assets; the blurring of the boundaries between employment and consumption; the complexity of measuring the effectiveness of the main economic indicators; the complexity of income taxation. The economy of compatible consumption completely eliminates all the boundaries and delineation inherent in traditional markets. In this context, its global nature is realized. Its origins were influenced by the so-called "Internet of Things and for Things". The basic idea "Internet of Things and for Things" is that with the continuous increase in computing power and lower prices for hardware devices from an economic point of view it is possible to connect all things to the Internet. This tendency also refers to global megatrends, which revolutionize the way of human life. Its distribution will promote: the creation of new types of business; adding digital products to the main functional product; a shift in the labour markets and professional knowledge; generating additional knowledge and values based on connecting to smart things; automation of work related to knowledge; increase of standards of use of complex and technical goods; the digital twin becomes an active participant in information and business processes and provides ongoing monitoring, management and forecasting. Given this megatrend, it can be argued that digital technology is not only a tool for promoting prod-

ucts, services and ideas, but is also a product that also needs to be sold with the main function of the product, to control its distribution and software update information. Global megatrends, which include neurotechnology, which many scientists associate with the foundation for the development of a cognitive economy, which in turn is the basis for the development of the seventh technical and economic structure. It is believed that it is precisely in the development of the seventh technological structure that there is another factor of production - the creative intelligence, which changes the production function and, accordingly, the practice of economic relations. The basis of the emergence of creative intelligence is neurotechnology. Thus, the basis of a cognitive economy will form artificial intelligence in a combination and close interconnection with human intellect. This technical and economic approach will affect the change and complete transformation of economic laws and consumer behaviour. In these conditions, consumer behaviour can become fully managed and the traditional marketing toolkit will be completely lost. The rapid development of technologies seventh technical and economic structure and global changes in technology contributed of the concept of cognitive marketing (Thaler R., 2017).

The concept of cognitive marketing was fundamentally substantiated by the famous scientists O.U. Yuldasheva (2005). The authors point out that marketing activity is aimed not only at finding ways to meet existing needs, it aims to create needs and creating demand for a product that meets its. The concept of cognitive marketing is the idea that what multinationals, having access to the resources and financial means for the implementation of innovative technologies, first create new products and then using cognitive technologies form the demand for these products, introducing technology consumption. According to the author, this aspect can be attributed to global megatrends. As a result of saturation of the market for high-tech goods, the consumer should be taught to use such products, which contributed to the emergence of a new production factor – knowledge. This approach justifies an entirely new marketing paradigm – cognitive marketing. Authors of the concept emphasize the fact that marketing takes on the functions of influence and formation of consumer consciousness, influencing the cognitive processes of the consumer.

The main marketing tools within the concept of cognitive marketing are demand. The concept economically substantiates the influence of emotions as a factor of influence on the cognitive process that the consumer carries out in the course of making a decision on purchase. As a result, a scheme was proposed to transform the consumer's emotions to demand. Of course, demand is defining category in the formation categories of goods and values factor in determining the final price. As a result of the transformation of the demand category to the concept of cognitive marketing, the conceptual provisions of marketing pricing and its category change. In order to justify certain transformations, it becomes relevant and necessary to analyze the differences in the content of the category of value in the context of classical marketing and in the concept of cognitive marketing (Figure 1).

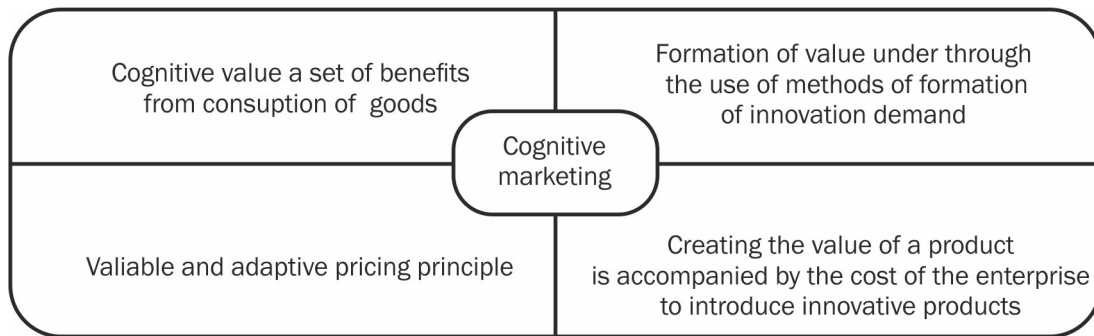
Fig. 1. Differences in the content of the value category in the context of classical marketing and in the concept of cognitive marketing



Source: own research

In terms of the theory of cognitive marketing concept of value is revealed through the following four components: cognitive value; value pricing principle and adaptive pricing principle; formation of value through the use of methods of forming demand for innovative goods; creation of utility of goods is accompanied by expenses of the enterprise on the introduction of innovative goods (Figure 2).

Figure 2. Components of value in the context of the concept of cognitive Marketing



Source: own research

Cognitive marketing can, through the neural channels of communication with the human brain, fully influence the behaviour of the consumer. Moreover, the stage of consumer choice of a product on the basis of information received by the consumer may be completely ignored. In a cognitive economy, knowledge and information become the factor of production, because a number of goods and services become purely informational, that is, information and knowledge is a commodity. The question arises as to how to take into account this factor of production in the methodology of pricing: in structure and structure of cost or in the form of additional value created by the information component.

Summarizing the aforementioned provisions of the transformation of the theory of marketing in the context of the effect of global change, it is necessary to determine the author's understanding of these processes. First, globalization has contributed to changes in the marketing paradigm, namely the emergence of the concept of cognitive marketing. Under cognitive marketing, we will understand the marketing activity that is carried out with the help of cognitive technologies in order to create the value of the goods for the consumer. It should be aimed at finding instruments to influence consumer behaviour through cognitive technologies. Secondly, these conceptual changes relate precisely to the latest trends in the field of marketing pricing. The main tool in the concept of cognitive marketing is the formation of demand, which is based on the law of marginal utility, whose level is determined not by the consumer but by the producer. In this context, the approach proposed by O.U. Yuldasheva (2005) deserves attention. Noting the methodological principles of reproduction of demand, they propose the following principles: the principle of orientation to the true needs of society; the principle of prediction needs; the principle of the reciprocal relationship; the principle of future satisfaction; the principle of emotional action.

Justifying the use of the above principles, scientists determine the cognitive approach, which involves the formation of a certain perception and thinking systems among consumers about the consumption of certain goods and services. This means that the manufacturer of the goods actually creates and participates in the process of constructing the cognitive system of consumers. Such changes in demand formation approaches determine the use of the following consumption technologies: technology consumption of a particular product category; technology of consumption of a certain brand; technology of consuming a group of interconnected products.

It should be noted that the authors of the concept of cognitive marketing, offering the technology of consumption in the framework of approaches to the formation of demand, in no way emphasize the fact that all three proposed technologies are related to the cost of consumption of the product. The authors investigate in detail the marketing content of demand and the methods and tools of its formation, detailing its emotional composition and revealing the content of the process of reproduction of demand. However, they do not link the process of reproduction of demand with the cost of consumption. Although, the exact price of consumption has a direct impact on the reproduction of demand for goods. In addition, the very category and concept of consumption technology is based on the integrated consumption of goods with information and knowledge about the product, which is constantly updated. Thus, information and knowledge becomes a factor of formation of values and prices of goods. Although, the exact price of consumption has a direct impact on the reproduction of demand for goods. In addition, the very category and concept of consumption technology is based on the integrated consumption of goods with information and knowledge about the product, which is constantly updated. Thus, information and knowledge becomes a factor of formation of values and prices of goods. This relationship forms **a new function of adding a new value to the price of a product** at the expense of the price of information and knowledge. The emergence of this function of pricing influences the problem of ethical price due to the impact on it of information and knowledge. The problem of price ethics is also related to the fact that cognitive marketing is aimed at a methodology for creating demand, where the methodological basis is the approach of transforming emotions into demand. Given that the level of demand is determined by the value of goods, the level of which specifies the manufacturer, there is a function of ethical price. The **function of the ethical price** should take into account the real value of the product, and not the one that will be formed at the stage of transformation of emotion into demand. In the conditions of demand for goods, the role of innovation, which is being implemented mainly by large multinational corporations, is growing. That is why, in the industrial markets and B2B markets, innovation companies become the most competitive ones. It is they who determine what will be sold and shape demand. This tendency becomes crucial for competitive advantages based on intangible assets. Because of the connection of innovations, as sources of formation of intangible assets of the enterprise, the level of implementation of innovation becomes the basis for determining the value. This contributes to the emergence of **the function innovation of price**. The function innovation of price explains the impact of intangible assets on the price of goods. Stating the decisive role of the demand category in the concept of cognitive marketing, it should be noted that in most developed countries there is a delayed solvency, which allows you to immediately meet the needs of credit resources. Thus, it contributes to the satisfaction of demand for goods that will be paid in the future. This mechanism affects the cost of credit resources, which in turn affects the cost of factors of production and price of goods. This effect is increasing in the face of growing fragmentation of markets, which has led to a reduction in the effect of the scale of production. This leads to an increase in the value of goods. The distribution of this approach creates conditions for the emergence of a new price function – **the functions of providing feedback between the cost of credit resources, factors of production, innovations and the price of goods**.

Thus, up to five existing pricing functions in the theory of marketing pricing, four more, which were substantiated higher, are added. A complete list of price functions is presented in Figure 3.

The emergence of new price features also contributes to the transformation of the category of commodity value. In contrast to the marginalist approach to the formation of the value of goods based on its marginal utility (J.B. Clarke) or the equilibrium price (A. Marshall), the authors of the cognitive concept believe that the value of the product is formed by its producer through the management of consumer perception (Bazilevich, 2005). Affecting the perception as an emotional and psychological component, the producer is influenced by the level of demand, thereby exercising not only its regulation, but also formation. Thus, the transition from the traditional marginal and neo-classical foundations of value creation, which is based on the perception of the usefulness of goods or goods to cognitive value by consumers. In the aspect of creating value, as a result of the

formation of demand through the management of consciousness and perception of consumers, a significant role belongs to digital marketing.

Figure 3 Functional of pricing in the concept of cognitive marketing

FUNCTION OF PRICES									
↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
Informative	Stimulating	Measuring	Accounting	Distributive	Regulating	Adding a new value	Ethical	Innovative	Provide feedback

Source: own research

Based on the above-mentioned provisions, the cognitive value of the author considers the value created by the enterprise on the basis of the cost of creating the utility of goods for the consumer. Thus, cognitive value is a set of benefits from consumption of goods. Creating the value of a product is accompanied by the cost of the enterprise to introduce innovative products to the market with the help of cognitive technologies and the formation of consumption standards through the dissemination of information and knowledge about the product by modern methods of digital technology.

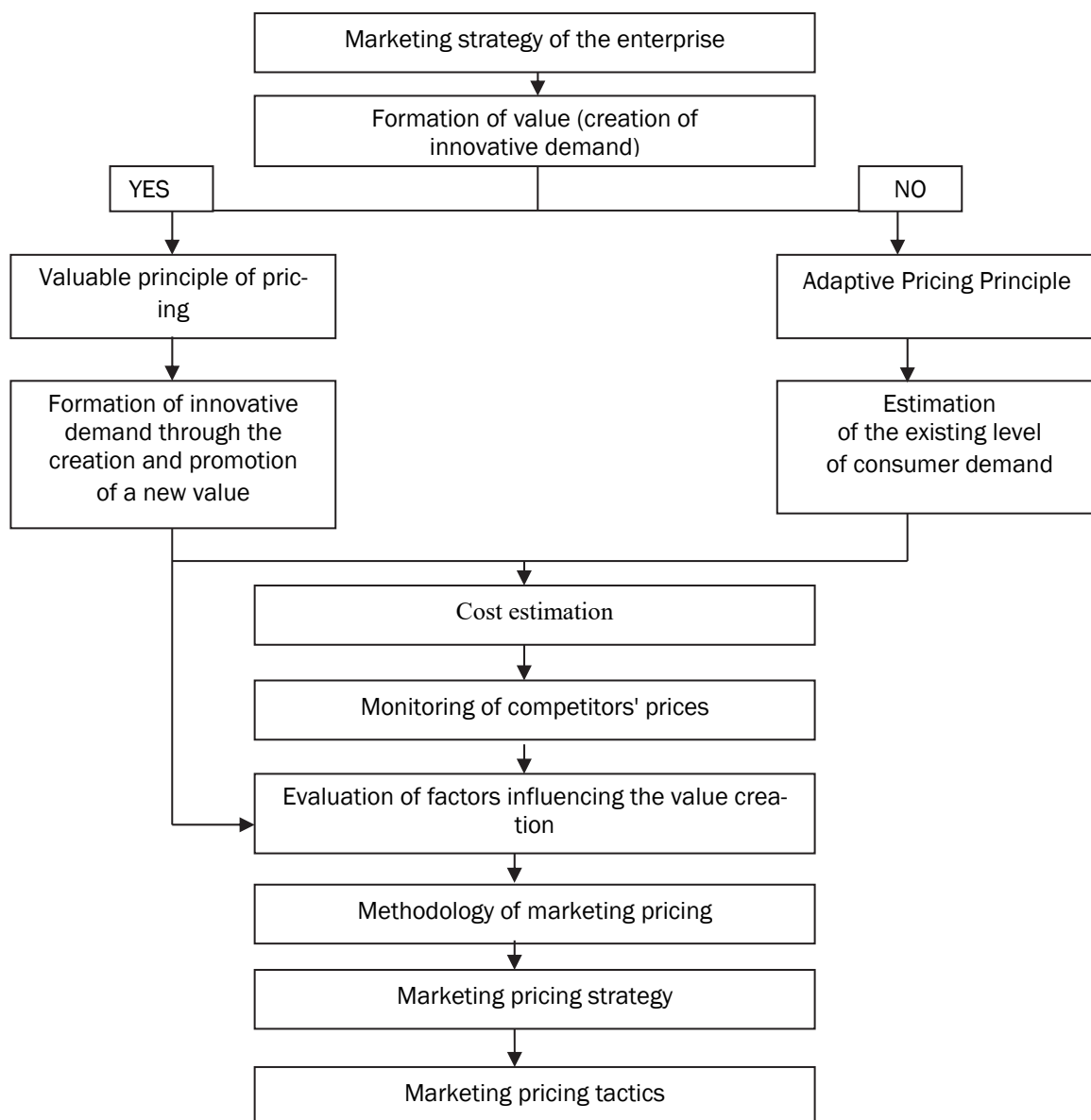
The cognitive approach implies that the level of utility of the product must be determined by the manufacturer and transferred to the market. Thus, unlike the marginalist approach, which was laid down in the fundamental theoretical foundations of marketing pricing, the cognitive approach is considered to be the determining category of potential demand creation at the expense of the value already mentioned. Accordingly, the value of the factors of production is transferred to the value of the goods. This approach is decisively costly, but takes into account the intangible component contained in the tools for value formation.

The effectiveness of creating a cognitive value can be measured by the ratio of the value of goods to the cost of creating cognitive value. The cognitive approach implies that the level of utility of the product must be determined by the manufacturer and transferred to the market. Thus, unlike the marginalist approach, which was laid down in the fundamental theoretical foundations of marketing pricing, the cognitive approach is considered to be the determining category of potential demand creation at the expense of the value already mentioned. Accordingly, the value of the factors of production is transferred to the value of the goods. This approach is decisively costly, but takes into account the intangible component contained in the tools for value formation.

If marginality in the theory of marginal utility believed that production costs are derived from the value of consumer goods, then the cognitive approach implies a reverse effect. Nevertheless, both within the framework of the marginality approach and in the cognitive approach, the question of determining the share of each factor in the structure of the cost of products that is produced is not resolved. The answer to this question in the context of the marginality concept was proposed by J.B. Clark (Bazilevich, 2005) in his theory of marginal productivity. According to him, the participation of each factor in production in the formation of value is determined by the marginal product. The latter shows how much of the cost of the product being produced can be created at the expense of a separate factor, with the unchanged meaning of other factors. According to the marginal product, the distribution of income by factors must be carried out. According to this concept, such a division provides a fair level of income to the owners of each factor.

As part of the cognitive approach, there is also the question of evaluating the factors of production in the formation of value. In addition, the factors that influence the creation of the value of the goods are also needed for additional justification. The solution to this problem could be the use of correlation and regression analysis, which reveals the degree of influence of each factor on the value. In addition, with the help of the regression model of pricing, it is possible to take into account not only the material costs of the production of goods but also the intangible (moral, emotional, innovation, etc.) in the price structure. Justification transformations theoretical foundations of marketing pricing in a globalizing allowed to offer the following marketing pricing algorithm (Figure 4).

Figure 4. Marketing pricing algorithm



Source: own research

To date, the scientific approach to pricing has been based on the definition of the traditional main objectives of marketing pricing. Under conditions of globalization, the action of global factors

is crucial for the methodology of marketing pricing, since the formation of value and value of goods is carried out at the supranational level. The methodological unit of marketing pricing is expanding and new principles and prices are emerging. In addition, at the supranational or global level of functioning of enterprises there are new target pricing, which can include the following: maximizing value added, focusing on the growth of competitive advantages through cost leadership, lowering the level of taxation. The stated goals are related to the implementation of a new pricing principle – transnational benefits that are not related to the country's place in the system of international division of labour. The basis of this principle is transfer pricing, which is based on the unfair distribution of world income. The principle of transnational benefits is the basis for the formation of a transfer pricing methodology.

3. RESEARCH RESULTS

The conducted researches and an estimation of efficiency of marketing activity have confirmed a significance of qualitative characteristics of the goods in pricing. Based on the research conducted, it can be argued that the basic quality indicators form the value of the product for the consumer. The calculations made and the assessment of the degree of influence on the pricing of qualitative characteristics of the products of the enterprises of mechanical engineering showed the dependence of marketing pricing not only on material costs, but also on the qualitative characteristics of the goods.

Marketing pricing, which is based on the establishment of an additional price premium at the expense of high quality mechanical engineering products, is a general trend for all enterprises operating on global markets for machine building, despite the high material production capacity. On the markets of the European Union's machinery industry, the coefficient of material intensity is 0.5-0.6, in the Ukrainian engineering this coefficient reaches 0.7-0.85, in the Russian engineering this coefficient is 0.6-0.7. In order to confirm the scientific hypothesis regarding the dependence of price formation not only on quantitative characteristics (material costs), but also on the qualitative characteristics of the product (parametric quality index), a dispersion and correlation-regression analysis was used.

The essence of the analysis of variance is reduced to study the effect of one or more independent variables are usually named factors on the dependent variable. Dependent variables are represented by the values of absolute scales (scale of relations). Independent variables are nominative (name scale), that is, they represent group membership, and may have two or more graduations (or levels). In our case, using the dispersion analysis, the degree of influence of material costs and the parametric index of quality of machine-building enterprises on the weighted average price for mechanical engineering products was determined. Dependent variables are represented by material costs and a parametric quality index, an independent variable – the weighted average price. Indicator of material costs was used from the accounting of enterprises of mechanical engineering, the parametric quality index was calculated using the parametric method of assessing the quality of products of mechanical engineering.

For the realization of calculations were based on quality indicators, which were ranked using the BEST marketing program. A team of seven-person experts made scoring each indicator and taking into account the ranking results obtained with BEST marketing factor calculated weight of each indicator. 11 enterprises of mechanical engineering participated were the research, including 7 Ukrainian machine-building enterprises, 2 Russian machine-building holdings, and 2 German transnational corporations. The level of significance (affects) in statistical hypotheses is the probability of rejecting the correct hypothesis (this, so-called, the error of the first kind). The significance level usually takes the value of 0.05 and 0.01, which corresponds to the likelihood of committing the first type error of 5% and 1%.

Using the ratio of the explained part $D(\hat{y})$ of the dispersion of the variable to the entire dispersion, which can be expressed by the following formula (1):

$$R^2 = \frac{D(\hat{y})}{D(y)} \quad (1)$$

or

$$R^2 = \frac{\sum_{i=1}^n (\hat{y}_i - \bar{y})^2}{\sum_{i=1}^n (y_i - \bar{y})^2}$$

This correlation is called the determination coefficient R^2 . The larger R^2 , the greater part of the dispersion of the resultant Y is due to the regression equation, and the better the regression equation describes the source data. In the absence of a relationship between Y and independent variables, the determination coefficient R^2 will be close to zero. Thus, the determination coefficient R^2 can be used to evaluate the accuracy of the regression equation. The question arises when the values of R^2 of the regression equation should be considered statistically insignificant, which makes its use in the analysis ungrounded. The answer to this question is given by Fisher's F-criterion, which is presented in the dispersion statistics, or the value of this criterion is possible using a single- or multivariate dispersion analysis.

In this case, it is known that the F-criterion Fisher is calculated by the formula (2):

$$F = \frac{\frac{ESS}{K}}{\frac{RSS}{n - 1 - k}} \quad (2)$$

Where: ESS - explained the amount of squares of deviations; RSS - unexplained amount of squares of deviations; k is the number of independent variables in the regression equation (for pair regression $k = 1$), in the case of a normally distributed error E_i , is the F-statistic of Fisher (a random variable distributed according to the Fisher law) with the number of degrees of freedom $k_1 = k$, $k_2 = n - k - 1$

According to Fisher's F-criterion, the "zero" hypothesis H_0 is proposed for the statistical insignificance of the regression equation, that is, the statistically insignificant difference between F and zero. This hypothesis is discarded under the condition $F > F_{cr}$, where F_{cr} is determined by the Fischer F-table, with the degrees of freedom $k_1 = k$, $k_2 = n - k - 1$ and the given level of significance α .

The significance level (denoted α) in the statistical hypothesis is the probability of rejecting the correct hypothesis (this is the so-called first type error). The significance level α usually takes the value of 0.05 and 0.01, which corresponds to the likelihood of committing the first type error of 5% and 1%. Thus, using the relation (1), the value of F can be expressed through the determination coefficient R according to the following formula (3):

$$F = \frac{R^2}{1 - R^2} \times \frac{n - k - 1}{k} \quad (3)$$

Where: $n - k - 1$ - the number of degrees of freedom; R^2 - Determination factor.

As a result of the conducted dispersion analysis without repetitions, the purpose of which was to determine the level of influence of the parametric quality index on the weighted average price by Fischer criterion using the Excel analysis package, the following results were obtained (Table 1).

Table 1. Results of the dispersion analysis without repeating the influence of the parametric quality index on the weighted average price according to Fisher's criterion (F-criterion)

Enterprises	F- criterion	F critical
PJSC "Azovzagalmash" (Ukraine)	4.85	3.63
PJSC "Dniprovagonmash" (Ukraine)	11.78	3.44
PJSC "Kryukivskiy railway coach manufacturing plant" (Ukraine)	26.48	3.40
PJSC " Uralvagonmash " (Russia)	56.10	4.10
Transmashholding Group of Companies (Russia)	3.50	3.80
Alstom Corporation (Germany, EU)	29.40	3.80
Corporation "Siemens" (Germany, EU)	243.30	3.50
PJSC "Stakhanovskiy railway coach manufacturing plant" (Ukraine)	13.10	4.50
PJSC "Umanfermmash" (Ukraine)	19.20	3.40
PJSC "Odessa Machine-Building Plant" (Ukraine)	50.90	3.40
PJSC "Holmodmash" (Ukraine)	18.02	3.34

Source: own research

The calculations performed with the help of the dispersion analysis using the Excel analysis package showed that the obtained $F \text{ criterion} > F$ is critical, which results in high influence of the parametric quality index on the weighted average price. At the same time, the obtained calculations of the F value for PJSC "Kryukivskiy Wagon Building Plant" according to the above method showed an opposite result. In order to avoid the low reliability of the results, in the first stage of the study, a correlation analysis of the relationship between the weighted average price and material costs and the parametric index of machine-building enterprises, the results of which are presented in Table 2, was carried out.

Table 2. Correlation coefficient between average weighted price and material costs and parametric index of machine-building enterprises

Enterprises	Correlation coefficient between average weighted price and material costs	Correlation coefficient between average weighted price and parametric indicator
PJSC "Azovzagalmash" (Ukraine)	-0.35	-0.64
PJSC "Dniprovagonmash" (Ukraine)	-0.24	-0.35
PJSC "Kryukivskiy railway coach manufacturing plant" (Ukraine)	-0.13	0.33
PJSC " Uralvagonmash " (Russia)	0.67	0.98
Transmashholding Group of Companies (Russia)	0.77	0.84
Alstom Corporation (Germany, EU)	-0.94	0.81
Corporation "Siemens" (Germany, EU)	-0.12	0.90
PJSC "Stakhanovskiy railway coach manufacturing plant " (Ukraine)	0.54	0.63
PJSC "Umanfermmash" (Ukraine)	0.22	-0.0024
PJSC "Odessa Machine-Building Plant" (Ukraine)	0.30	0.91
PJSC "Holmodmash" (Ukraine)	-0.53	-0.89

Source: own research

As can be seen from the results of calculating the correlation coefficient, the largest interconnection between the weighted average price and the parametric indicator is mainly foreign enter-

prises (PJSC "Uralvagonmash" (Russia), Transmashholding Group (Russia), Alstom Corporation (Germany, EU), Siemens Corporation (Germany, EU) and only two Ukrainian machine-building enterprises show high values of the influence of the parametric quality index on the weighted average price (PJSC "Stakhanov Wagon Works" (Ukraine) and PJSC "Odessa Machine-Building Plant"). The obtained results confirm the proposed scientific hypothesis concerning the dependence of pricing on qualitative indicators. Six machine-building enterprises out of 11 who participated in the study confirmed this assumption. In addition, it should be noted that all foreign companies surveyed have a high correlation between the weighted average price and the parametric quality index. Two Russian machine-building enterprises of PJSC "Uralvagonmash" (Russia) and Transmashholding Group (Russia) demonstrate a high degree of communication not only between the weighted average price and the parametric quality index, but also between the weighted average price and material costs. Taking into account the results of the correlation analysis, regression equations were obtained for price determination taking into account two factors: material costs and a parametric quality index for those mechanical engineering enterprises that have high correlation coefficients according to these two parameters. The obtained linear regression equations for calculating the price of machine building products are presented in Table 3.

Table 3. Linear regression equation for calculating the price of machine building products

<i>Enterprises</i>	<i>Equation of linear regression</i>
PJSC "Kryukivskiy railway coach manufacturing plant" (Ukraine)	$Y = -0,00034 * X_1 + 256,29 * X_2 - 11721,8$
PJSC " Uralvagonmash " (Russia)	$Y = -4,3 * X_1 + 21,29 * X_2 - 1094,42$
Transmashholding Group of Companies (Russia)	$Y = 1,2 * X_1 + 17,3 * X_2 - 865,98$
Alstom Corporation (Germany, EU)	$Y = -0,00039 * X_1 + 0,86 * X_2 - 15,78$
Corporation "Siemens" (Germany, EU)	$Y = 7,76 * X_1 + 2,72 * X_2 - 131,5$
PJSC "Stakhanovskiy railway coach manufacturing plant" (Ukraine)	$Y = 3,24 * X_1 + 43,5 * X_2 - 1438,8$
PJSC "Odessa Machine-Building Plant" (Ukraine)	$Y = 1,39 * X_1 + 91272,55 * X_2 - 3989989$

Source: own research

The second stage, it was used the approach outlined above and using formula (3), determine the significance of the obtained regression equations using the F-criterion. Summary calculations for machine-building enterprises are presented in Table 4.

Table 4. Summary calculations for machine-building enterprises

<i>Enterprises</i>	<i>F-criterion</i>	<i>F-criterion critical</i>	<i>Reliability of the linear regression equation</i>
PJSC "Kryukivskiy railway coach manufacturing plant" (Ukraine)	3.60	4.84	Low
PJSC " Uralvagonmash " (Russia)	96.00	3.95	High
Transmashholding Group of Companies (Russia)	12.24	6.61	High
Alstom Corporation (Germany, EU)	94.80	6.61	High
Corporation "Siemens" (Germany, EU)	45.30	5.32	High
PJSC "Stakhanovskiy railway coach manufacturing plant" (Ukraine)	6.70	5.12	High
PJSC "Odessa Machine-Building Plant" (Ukraine)	67.50	4.84	High

Source: own research

Based on the calculations performed, the 6 linear regression equations are fully adequate and possible for use in calculating price determination taking into account two factors of influence – material costs and a parametric quality index. Calculations show that most of the investigated companies are oriented to foreign markets. In particular, all foreign companies investigated are global, with the exception of PJSC "Uralvagonmash" (Russia), but this company is also export oriented, therefore it is fully involved in international supply chains, accordingly receives added value from it.

Ukrainian enterprises such as PJSC "Azovzagalmash" (Ukraine), PJSC "Dneprovagonmash" (Ukraine), PJSC "Umanfermmash" (Ukraine), PJSC "Holmodmash" showed a low interconnection between the weighted average price and material costs and the parametric quality index. Taking into account that PJSC "Azovzagalmash" (Ukraine) has been in a zone of financial instability in recent years, these calculations can be considered not quite reliable. In addition, the wagon-building enterprises of PJSC "Azovzagalmash" (Ukraine) and PJSC "Dniprovagonmash" (Ukraine) were 90% focused on the production of their products on the Russian market. After imposing sanctions against Russia, both companies suffered significant losses and significantly reduced the production of cars. As a result of these factors, the calculations made may have a significant margin of error.

CONCLUSIONS

As a result of the study, differences in marketing tools were identified in the context of the concepts of cognitive and traditional marketing. The connection between the spread of globalization and the emergence of a cognitive or behavioral economy is substantiated. Systematized determinants of the influence of globalization processes on the evolution of the marketing paradigm.

The author proposed the concept of cognitive value, which should be understood as a set of usefulness of consumption of goods. The author identifies innovation demand as a new factor influencing pricing. The formation of value through the use of methods for the formation of demand for innovative products is proposed. New price functions in the concept of cognitive marketing were substantiated. It was proposed a pricing algorithm, which realized through value and adaptive principles of pricing.

The evolution of cost categories in the concept of cognitive marketing is substantiated. It was concluded that the cognitive approach is considered to be the determining category of the creation of potential demand at the expense of the value already specified by the manufacturer. In the framework of such an interpretation, the value of the factors of production should be transferred to the value of the goods, which involves taking into account the value of both the material and intangible components. It was proposed to include a parametric quality index in projected prices. This approach has been tested on an example of the formation of prices for products of machine-building enterprises by means of economic and statistical methods.

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