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DEVELOPMENT OF THE FACTOR MODEL FOR THE DEVELOPMENT OF THE CONSUMER MARKET

Abstract. The main tendencies of development of markets for the sale of consumer goods of Ukraine are investigated. The customer-oriented model of the consumer market is formed and its main elements are characterized. The mathematical functions of forming consumer preferences and demand for products are developed. The estimation of the marginal propensity of households in Ukraine to be consumed has been estimated. The complex factor model of the development of the consumer market is proposed. Its practical use allows to carry out a comprehensive assessment of the influence of factors on the consumer market and assess its state of affairs both at the state and regional levels.

Keywords: consumer market, value proposition, consumer value, consumer demand, consumer spending multiplier, consumer confidence index.

JEL Classification: D51, C38, P23

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РОЗРОБКА ФАКТОРНОЇ МОДЕЛІ РОЗВИТКУ СПОЖИВЧОГО РИНКУ

Анотація. Досліджено основні тенденції розвитку ринків з продажу споживчих товарів України. Сформовано клієнтоорієнтовану модель споживчого ринку та охарактеризовані її основні елементи. Розроблено математичні функції формування переваг споживача та попиту на продукцію. Здійснено оцінку граничної схильності домогосподарств України до споживання. Запропоновано комплексну факторну модель розвитку споживчого ринку. Її практичне використання дозволяє здійснити комплексну оцінку впливу факторів на споживчий ринок і оцінити його стан як на державному, так і регіональному рівнях.

Ключові слова: споживчий ринок, ціннісна пропозиція, споживча цінність, споживчий попит, мультиплікатор споживчих витрат, індекс споживчих настроїв.

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РАЗРАБОТКА ФАКТОРНОЙ МОДЕЛИ РАЗВИТИЯ ПОТРЕБИТЕЛЬСКОГО РЫНКА

Аннотация. Исследованы основные тенденции развития рынков по продаже потребительских товаров в Украине. Сформирована клиентоориентованная модель потребительского рынка и охарактеризованы ее основные элементы. Разработаны математические функции формирования предпочтений потребителя и спроса на продукцию. Оценена предельная склонность домохозяйств Украины к потреблению. Разработана комплексная факторная модель развития потребительского рынка. Ее практическое использование позволяет осуществить комплексную оценку влияния факторов на потребительский рынок и оценить его состояние как на государственном, так и региональном уровнях.

Ключевые слова: потребительский рынок, ценностное предложение, потребительская ценность, потребительский спрос, мультипликатор потребительских затрат, индекс потребительских настроений.

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Introduction. At the current stage of development of the Ukrainian economy, issues of ensuring the sustainable development of the consumer market in the long-term perspective are becoming of topical importance. As it is quite rightly noted in the scientific article [1], "... the domestic consumer market is a general indicator of the development of the state's economy, since the productivity of other sectors depends on its size and efficiency, in particular the activity of the business environment, openness and intensity of competition, consumer orientation. economics and balancing supply and demand. The volume, structure and efficiency of the domestic market are the determinant factors of the competitiveness of the national economy and ensuring sustainable economic growth. "

Trends in the growth of the impact of consumer market efficiency on ensuring reproductive process at macro and macro levels indicate the relevance of addressing the question of an objective assessment of its condition and development. Since the state and dynamics of the consumer market are the main factor in ensuring a high rate of GDP growth in the country. The level of consumption by the population of goods and services today is an objective condition not only of the existence and development of society, as a single socio-economic system, but also the most important condition for competitiveness of the country in the world market. In turn, the formation of demand is carried out depending on personal consumer preferences, consumer confidence of households, structure of consumer expenses. This actualizes the issue of forming a comprehensive model for the development of the Ukrainian consumer market.

Analysis of research and problem statement. Theoretical aspects of the management of the consumer market are covered in scientific articles [1–3]. In particular, in [1], it was determined that the consumer market is one of the segments (subsystems) of the market that characterizes the totality of socio-economic relations of the producer and consumer of consumer goods, which are formed during the process of purchase and sale (lease), and services for the final (personal) consumption. The author, articles [2] clearly defined the main purpose of the functioning of the consumer market, which is to meet the needs of the population in various goods and services. Focusing on the main purpose of the consumer market in the work [3]. it is noted that "... the consumer market represents the most important part of the modern economy, because it is here that the daily needs of the population are realized, the level of satisfaction which ultimately determines the efficiency of the functioning of the economy as a whole." Undoubtedly, the state and trends of

the development of the consumer market are a determining factor in the economic growth of Ukraine's economy and raising the overall level of competitiveness of the state.

A significant number of scientific researches [8–10] is devoted to the development of various types of consumer market management models. Thus, the author of the article [3] focuses on the issues of programmatic management of the consumer market and the consumer market management system at the regional level. At the same time, such an approach does not take into account the peculiarities of promotion of value proposition on its different consumer segments.

Emphasizing on the aspects of economic diagnostics, [4] proposes a system of integrated assessment of the development of the consumer market, which is based on expert assessments. This approach allows only partially to take into account a wide range of factors that influence the development of the consumer market

In the scientific article [8] the practical aspects of modeling and forecasting of demand by methods of multicriteria optimization are highlighted. However, the proposed methodical toolkit is reduced to building a mathematical model of demand, taking into account the main economic factors affecting it, and does not take into account such an important, in our view, indicator as the marginal inclination of consumers to consume. In the search for effective tools for the innovative development of the consumer market [7] the issues of the formation of consumer value are actively studied.

As a result of the analysis of scientific sources, it can be concluded that, despite the significant scientific achievements of scientists, they did not receive sufficient coverage of the crucial issues of the formation of a client-oriented model of the consumer market, the study of practical aspects of the formation of consumer demand for a variety of goods and services, taking into account their income and personal preferences, estimating the impact of the consumer spending multiplier on the dynamics of the consumer market development; the formation of a complex factor model for the development of the consumer market. Therefore, the purpose of the research is to further develop and develop appropriate modern methodical tools for the formation of a factor model for the development of the consumer market.

Research results. The generalization of the main characteristics of the consumer market makes it possible to define it as a general indicator of economic development, since the productivity of other sectors of the economy and the balance between supply and demand depend on its size and efficiency, in particular the activity of the business environment, openness and intensity of competition, consumer orientation. According to [1], the volume, structure and efficiency of the domestic market are determinants of the competitiveness of the national economy and ensuring sustainable economic growth.

According to [6], it has been established that starting from 2014, the number of markets for the sale of consumer goods in Ukraine tends to decrease (Fig. 1).

Analysis of the data presented in Fig. 1 shows that in 2015, the number of markets for the sale of goods decreased compared to 2014 and amounted to 20134 units. This negative tendency, above all, is the result of the instability of the economic and political situation in the country, the existing shortcomings in the system of control over commodity flows.

According to [1, 2, 4], the consumer market includes: markets for food and non-food products, the market for restaurant and hotel services, the market for tourist services, the markets for domestic, housing and communal services, transport services, markets for cultural services, education and health (the latter are increasingly infused in the sphere of market relations by providing a wide range of paid services). For a specific segment of the consumer market, a value proposition is formed that creates benefits by the combination of elements that meet the requirements of a particular segment. Fig. 2 shows a client-oriented model of the consumer market.

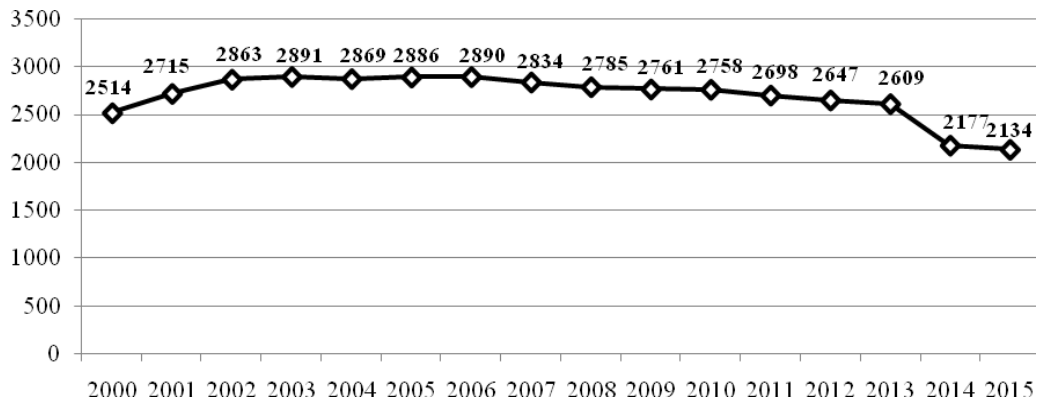


Fig.1 Dynamics of development of markets for the sale of consumer goods in Ukraine
 Source: compiled by authors on the basis of [6]

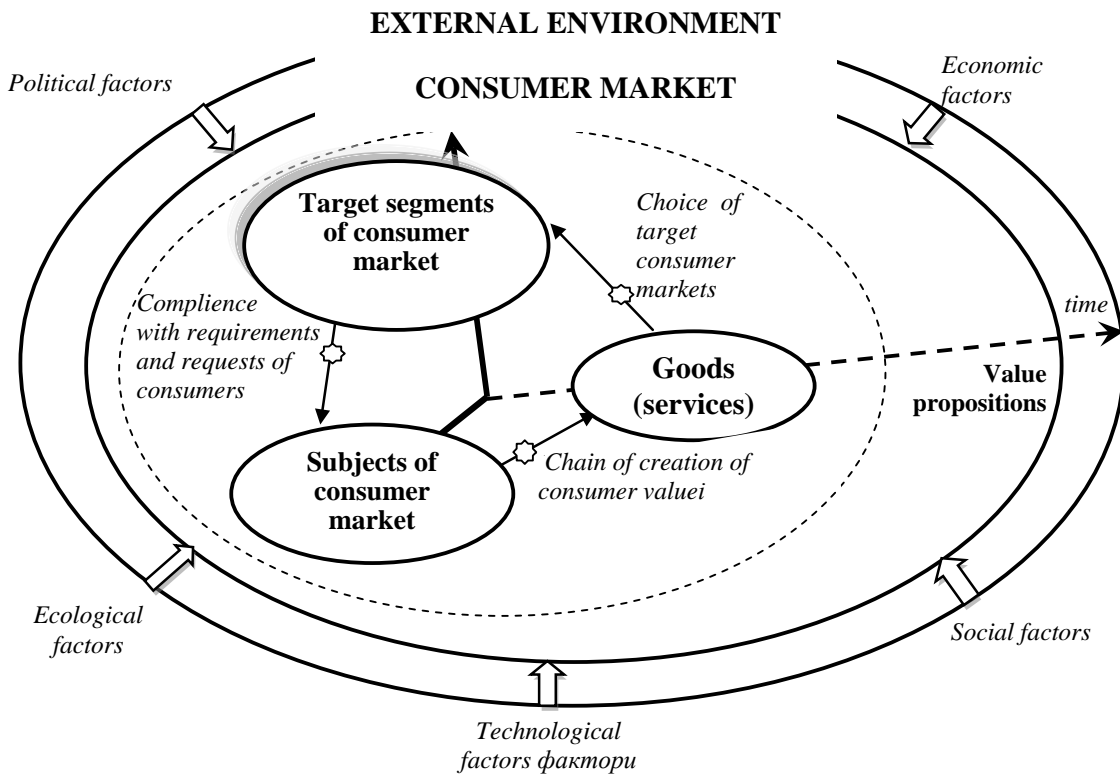


Fig. 2 Client-oriented model of consumer market
 The source is developed by the authors

Accordingly, the same model or product can be offered to the target consumer by the consumer market and on the basis of different business models. It should be noted that under certain conditions and with one technology, one business model will be effective, in others it is completely different. Accordingly [4] the versatility of the concept of value proposition, which is created in different segments of the consumer market, represents a certain foundation for creating a logical, holistic and constructive mechanism for developing a strategy and tactics of the behavior of business entities. Formation and development of the consumer market is carried out under the influence of a wide range of economic, social and demographic factors: economic (level and structure of cash income of the population, volume and composition of the commodity offer, level and ratio of prices for goods, turnover of economic entities offering consumer market goods and services); social (social structure of society, real incomes of the population, culture of consumption); demographic political and technological.

The current state and trends of the domestic consumer market are characterized by a high level of competition and a strengthening of the position of consumers. Saturation of consumer markets and increasing competition on a qualitative basis will raise the issue of finding its own – an efficient and convenient place on a certain segment of the consumer market. In such a situation, the actions of any enterprise cannot be limited to a simple response to changes occurring in the external environment. The ability to "remain a player" in the consumer market in conditions of increased competition can only be maintained by offering high quality value proposition. In accordance with [7] the content of the system for creating a value proposition is disclosed through the structure of internal business processes of the enterprise – a stable and focused set of interrelated activities, which, by a certain technology, converts inputs to outputs that are of value to the consumer.

Thus, the modern consumer market is multifunctional and is formed under the influence of several factors simultaneously. Their influence is integrated. The main factor in the development of the consumer market is consumer behavior – the process of shaping the demand of consumers for a variety of goods and services, taking into account their income and personal preferences.

The purpose of the consumer is to maximize the satisfaction of their needs, obtaining the highest level of utility of consumption of any benefit from the value proposition of the consumer market. As well as the manufacturer, the consumer is not completely free in his choice. He has to take into account not only his personal preferences, but also the real income at his disposal, market prices for goods and services, and other factors in the market situation.

Consider the model of the development of the consumer market: the consumer independently chooses a segment of the consumer market which interests him, which is characterized by the corresponding function of the advantages of $f(x)$. Its argument is the vector of demand for the corresponding products or services presented on the consumer market, the elements of which are equal to the consumer budget for the purchase of certain goods and services. The consumer, who has some financial resources q , seeks to achieve the maximum of its function of $f(x)$ with a minimum cost of resources q , ie:

$$f(x) \rightarrow q_{\min}. \quad (1)$$

At the same time, the decision of the consumer on the purchase of goods (C) mathematically means the choice of a point in the space n propositions of goods (or services):

$$C = \{x : x \geq 0\}. \quad (2)$$

The argument of the consumer's decision to purchase a product (or service) is the corresponding vector of prices:

$$\vec{p} = (p_1, p_2, \dots, p_n)^T, \quad (3)$$

where p is the price of the unit of goods (or services) offered on the consumer market.

The consumer seeks to achieve the maximum possible value of the function of the benefits of $f(x)$ with a given limit on the total cost q :

$$\begin{cases} f(\vec{x}) \rightarrow \max \\ \vec{p}^T \times \vec{x} \leq q \end{cases} \quad (4)$$

In this case, according to the theory of rational consumer, the vector of demand for products (or services) satisfies the system of equations:

$$\begin{cases} \frac{\partial}{\partial x} f = \lambda \vec{p} \\ \vec{p} x = q \end{cases} \quad (5)$$

where λ is the Langrange multiplier.

Thus, the volume of demand in the consumer market is determined by the size of household expenditures, which are aimed at the purchase of goods and services. And since households spend only part of total income on final consumption, the limitation of the $f(x)$ advantage is the propensity to consume. In [9], it is noted that, according to Keynes's theory, the marginal propensity to consume (C') is the amount of consumption in an additional unit of income.

In general, the consumption function in the Keynesian theory can be represented as follows [12]:

$$C = C_0 + C'Y, \quad (6)$$

where C is a consumption; C_0 is a stand-alone consumption; C' is the marginal propensity to consume; Y is a revenue.

To estimate the dynamics of consumer spending, data from the State Statistics Service of Ukraine on household income and expenditure for 2010–2016 [6] were used.

Table 1

Dynamics of monetary incomes and consumer expenditures
per one household of Ukraine in 2010–2016

Year	Cash income per household, UAH	Consumer expenditures per household, UAH.	Absolute deviation +/- of	
			cash income, UAH.	consumer expenses, UAH
2010	3906,85	2762,90	–	–
2011	4335,10	3115,66	428,25	352,76
2012	4554,40	3261,63	219,30	145,97
2013	4923,46	3445,91	369,06	184,28
2014*	5003,62	3708,79	80,16	262,88
2015*	5852,01	4600,41	848,40	891,62
2016*	7254,42	5331,41	1402,41	731,00

* without taking into account the temporarily occupied territory of the Autonomous Republic of Crimea, the city of Sebastopol and part of the area of the anti-terrorist operation.

Source: compiled by authors on the basis of [6]

The analysis of the main trends in the household income and expenditure changes allows us to conclude that during 2010–2016 period, cash inflows per one household in Ukraine had a steady upward trend. In 2016, the amount of cash income amounted to 5331.41 UAH, which compared to 2015 became more than 1402.41 UAH. At the same time, the volume of cash incomes per one household in Ukraine remains rather low (the share of consumer spending on households is 73.49%).

The study of the dynamics of the marginal propensity to consume allows us to demonstrate the response of consumer demand to changes in the income of the population, but also to identify the main trends in the development of the consumer market. To calculate this indicator, the formula [11] was used:

$$k = \frac{1}{MRS}, \quad (7)$$

where k – consumer spending multiplier; MPS is the extreme propensity to consume.

The households' marginal propensity to consume (MPS) and savings (MPZ) is the ratio of household consumption expenditure to cash income. The calculations carried out are summarized in Table. 2 and Fig.2.

Analyzing the results of the calculations, it should be noted that in 2014 and 2015, the value of the multiplier of consumer spending has a negative value. This completely contradicts Keynes's theory. In the period of 2014–2015, a situation in which the Keynesian theory does not work has developed in Ukraine. Any state "infusions" in the state's economy do not ensure its growth, but only contribute to the "untwisting" of the inflationary spiral.

Table 2

Value of the household consumption multiplier as a whole in Ukraine for the period of 2011–2016.

Year	Value of indicators of households' marginal propensity to consume and save		Consumer cost multiplier, coefficient.
	<i>MPS, коеф.</i>	<i>MPZ, коеф.</i>	
2011	0,824	0,176	5,67
2012	0,666	0,334	2,99
2013	0,499	0,501	2,00
2014*	3,279	-2,279	-0,44
2015*	1,051	-0,051	-19,63
2016*	0,521	0,479	2,09

*without taking into account the temporarily occupied territory of the Autonomous Republic of Crimea, the city of Sevastopol and part of the area of the anti-terrorist operation.

Source: compiled by author on the basis of [6]

A positive trend is the increase in consumption, as evidenced by the positive value of the consumer spending multiplier in 2016, which was 2.09. The positive dynamics of the growth of the consumer spending multiplier is due to an increase in the purchasing power of households, which is the result of an increase in wages (in 2016 real wages increased by 9%, against its reduction in 2015 by 20.2% [6]), as well as improvement consumer confidence of households, which reflects the consumers' assessment of the current situation in the state's economy, their financial situation and their expectations in the future. According to [12], consumer confidence is directly influenced by their readiness to spend on goods and services. According to [5], in the average monthly calculation in 2016, the consumer confidence index was 51.4, which is by 5.4 p higher compared to 2015.

In accordance with the results of the research, a complex factor model of the development of the consumer market () can be represented as follows:

$$\vec{CR} = \langle F_i^{mac}, F_i^{mic}, Q_i, S_i^p, p_i, x_i, k, C_i, L \rangle \quad (8)$$

where , F_i^{mac} – macro factors; F_i^{mic} – factors of the microenvironment; Q_i – number of goods (or services) that form a value proposition; S_i^p – consumer value of goods (or services) offered on the consumer market; p – the price of the unit of goods (or services) offered on the consumer market; x – consumer demand for products (or services) offered on the consumer market; k – multiplier of consumer expenses; C – consumer decision on the purchase of goods; L – consumer confidence index of households.

Conclusions. To summarize, we note that the volume of demand in the consumer market is largely shaped by the influence of a wide range of macro– and micro–factors of the environment, consumer preferences, patterns of household consumption expenditure and their consumer confidence. The advantage of the proposed factor model for the development of the consumer market is its complexity and integrated character. The proposed model may be useful for financial analysts in studying the impact of factors and developing a program for the development of the consumer market at both the regional and state levels.

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