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THE PRICING STRATEGIES AND THE DOMINANT TECHNOLOGY MODES

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Kramarenko A. O. The Pricing Strategies and the Dominant Technology Modes

The article is aimed at defining the basic approaches to pricing that correspond to the modern technological mode, as well as the prospects of substituting them with new strategies in the process of evolution of technology and socio-economic development. The technological evolution within the terms of cyclic substitution of the dominant technological ways together with periodicity of domination of the single pricing strategies have been considered. It was identified that in the process of transition to the sixth technological mode, the core of which is the high-tech and the science-driven types of economic activity, the strategies of premium pricing are at the forefront, due to their significant profitability in conditions of the fast updating of assortment of products and the particular characteristics of products and services. It has been substantiated that the dominance of premium pricing creates an inflationary effect, especially in the terms of innovative economic activities, which are potentially the basis for active implementation of technologies of the new mode.

Keywords: premium pricing, key technology of the mode, marketing innovations.

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Крамаренко А. О. Стратегії ціноутворення та домінуючі технологічні уклади

Метою статті є визначення основних підходів до ціноутворення, які відповідають сучасному технологічному укладу, а також перспективи заміщення їх новими стратегіями в процесі еволюції технологій та соціально-економічного розвитку. Розглянуто технологічну еволюцію в межах циклічного заміщення домінуючих технологічних укладів та періодичність домінування окремих стратегій ціноутворення. Виявлено, що в процесі переходу до шостого технологічного укладу, ядро якого складають високотехнологічні та наукоємні види господарської діяльності, на перший план виходять стратегії преміального ціноутворення, що обумовлене їх значною рентабельністю в умовах швидкого оновлення асортименту продукції та окремих характеристик продуктів та послуг. Обґрунтовано, що домінування преміального ціноутворення створює інфляційний ефект, особливо в межах інноваційних видів економічної діяльності, які потенційно є основою для активного впровадження технологій нового укладу.

Ключові слова: преміальне ціноутворення, ключові технології укладу, маркетингові інновації.

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Крамаренко А. А. Стратегии ценообразования и доминирующие технологические уклады

Целью статьи является определение основных подходов к ценообразованию, которые соответствуют современному технологическому укладу, а также перспектив замещения их новыми стратегиями в процессе эволюции технологий и социально-экономического развития. Рассмотрена технологическая эволюция в рамках циклического замещения доминирующих технологических укладов и периодичность доминирования отдельных стратегий ценообразования. Выявлено, что в процессе перехода к шестому технологическому укладу, ядро которого составляют высокотехнологичные и наукоемкие виды хозяйственной деятельности, на первый план выходят стратегии премиального ценообразования, что обусловлено их значительной рентабельностью в условиях быстрого обновления ассортимента продукции и отдельных характеристик продуктов и услуг. Обосновано, что доминирование премиального ценообразования создает инфляционный эффект, особенно в рамках инновационных видов экономической деятельности, которые потенциально являются базой для активного внедрения технологий нового уклада.

Ключевые слова: премиальное ценообразование, ключевые технологии уклада, маркетинговые инновации.

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The substitution of technological modes, according to Glazyev's theory, occurs with a frequency of 45–60 years. Thus, each mode is characterized not only by key technologies, but by dominant economic sectors, principles of management and production organization. In addition to the orientation towards the most effective sizes and organizational forms of enterprises within the dominant economic activities, another important factor for conducting effective business is a properly chosen pricing strategy. Within each technological mode with its dominant production technologies that penetrate all spheres of business, there created favorable conditions for powerful development of individual economic sectors. In accordance with the dominant sectors of economy, certain pricing strategies also become common. In this regard, an urgent issue facing economic entities is to identify not only the most promising spheres for investment but also the most effective approaches to setting production prices. The latter are the basis for sales and profit increase, as well as for optimization of a product's life cycle.

The study of recent publications on the selected topics allows to state that most of the scientific papers and research consider the impact of technology on socio-economic processes. Thus, in accordance with the annual OECD Science, Technology and Innovation Outlook, further reforms in scientific and technical research can accelerate or expand the dynamics of megatrends [1]. Within the review, common problems and issues associated with the evolution of technology are revealed, but the practical conditions of management need to be specified in terms of strategies of optimal behavior in the modern competitive environment.

According to S. A. Erokhin, significantly complicating economic interrelations and strengthening their nonlinear character, technological modes form the corresponding production structure that exerts a determining influence on the process of material production and the sphere of services [2]. However, the author pays insufficient attention to the impact of technological innovations on pricing and peculiarities of promoting products and services in the market.

Each technological mode as an integral system, according to V. L. Osetskyi, is able to resist introduction of extraneous production and technological principles, in a certain sense not to accept elements of other technological structures [3]. Further research in this aspect, in our view, is necessary to consider specific manifestations of this phenomenon in the context of real business practices.

Given the above mentioned it can be argued that the chosen subject is quite relevant and requires a more detailed study.

The *aim* of the article is to identify the basic approaches to pricing that correspond to the modern technological mode as well as the prospects of replacing them with new strategies in the evolution of technologies and socio-economic development. Problematic issues are also the identification of the type of technological mode of the national economy and the most effective pricing strategies within individual sectors of the economy.

Economic development of each country goes through a series of successive stages, the duration of which is determined by social, institutional, and economic features. On

reaching the limit of economic growth at a certain point, the economic system acquires a state, when the interaction of the technical and economic spheres starts out formation of a new paradigm, which again revolutionizes the production system [4]. A technological paradigm is often understood as a set of key technologies that determine the dominance of certain types of economic activity, legal forms of economic entities and a corresponding institutional structure. Such technological paradigm displays itself as a technological mode. The substitution of technological modes takes place cyclically based on principles of the periodic upswing of Kondratiev waves. According to the historical periodization and key technologies that are driving socio-economic transformations, there singled out the following technological modes:

- ✦ the first technological mode (1770–1830) – the key factor is the mechanization of the weaving process;
- ✦ the second technological mode (1830–1880) – the key technological invention that became the driving force of the mode is considered the steam engine;
- ✦ the third technological mode (1880–1930) – the key technological invention that became the driving force of the mode is the internal combustion engine;
- ✦ the fourth technological mode (1930–1980) – the key technological invention that became the driving force of the mode is considered the electric motor;
- ✦ the fifth technological mode (1980–2030) – the key technological changes are related to micro-electronics;
- ✦ the sixth technological mode (2030–2080) – the basic driving forces of the mode are genetic engineering and nanotechnology.

The period of existence and the need of changing the technological mode are influenced by purely economic factors. Outdated institutional mechanisms that do not correspond to the new structure of investment and market behavior are squeezed out in the process of diffusion of new technologies, types of economic activities and modern organizational forms. These changes result in a radical change in the usual type of engineering and management thinking regarding an effective economic practice [4].

Therefore, an important issue is the identification of the type of dominant mode within the national economy, as well as relevant directions for future shifts. Forecasting possible socio-economic changes in this aspect is a scientific problem that requires solution. In particular, a considerable increase in the international competition, not only in foreign but also in domestic markets, has become a new important development feature [4]. And this, in turn, conditions corresponding changes in the market interaction, and certain macroeconomic consequences of these shifts.

For the identification of the dominant technological mode, the production share by type of economic activity in the gross value added is often used. In Ukraine, in terms of this indicator, the share of the fifth technological mode makes up about 4%. About 58% of production accounts for the third technological mode and 38% – for the fourth mode [5].

However, it is possible to use a different approach, in which the dominance of certain spheres of activity and the relevant technological mode are determined by the dynamics of value added of an economic activity. Thus, in particular, the official data from the OECD indicate that, due to a more significant growth in the information and communications sectors in Germany for the past 7 years, a gradual transition to the sixth technological mode is observed in this country. In the Netherlands, in 2010–2016 the growth of professional, scientific and technical services, in our opinion, also gives grounds to assert that the country is on the path of substituting the fifth technological mode with the following, more advanced, one. The relevant data for Argentina show the most rapid pace of development in recent years in the financial sector, trade and transport [6]. The dominance of these sectors is inherent in the fourth technological mode, and, therefore, the sectoral structure of the economy does not correspond to the latest innovative trends. The dynamics of Israel's economic structure for the past 7 years is characterized by a rapid growth of professional, scientific and technical services, as well as the information and communication sector. The share of agriculture has also critically decreased over the past years. The data trends indicate that Israel's economy is characterized by its transition to the technologies of the sixth mode.

Since each technological mode is characterized by the dominance of certain sectors of economy, we can say that there is a pricing strategy that is dominant in a certain technological mode. Each sphere of activity implies using both specific production technologies and certain techniques concerning effective promotion and sales of manufactured products. One of the elements of enterprise marketing strategy is pricing policy, which includes choosing the most effective pricing strategies and pricing methods in the framework of these strategies.

The main pricing strategies are:

- ✦ *Skimming Strategy*, which involves setting prices at a higher level than, according to most buyers, a product with a certain economic value should cost;
- ✦ *Penetration Strategy* means setting prices at a lower level than, according to most customers, a product with a certain economic value deserves. Profit increase is provided by rise in sales and capturing the rivals' market share;
- ✦ *Neutral Strategy* means setting prices on the basis of correlation of the value and the price that corresponds to most of other similar products sold in the market.

For most types of economic activity, the choice of a neutral strategy is typical, and for enterprises operating in the mass consumer market, a penetration strategy is more attractive. For innovative enterprises that are able to offer new products and actively develop new product specifications, it is advisable to use skimming strategies, because they create opportunities for rapid increase of profitability.

Taking into account the fact that at the present stage the newest socio-economic development trends correspond to the transition to the sixth technological mode, in the framework of which the most knowledge-intensive sectors of the economy come to the fore, a skimming strategy

becomes most widespread. This is due to several factors. Firstly, the development and implementation of key technologies require significant investments aimed at upgrading the technological, organizational and marketing elements of economic activity. Secondly, under the saturation of the market with products, the condition for survival of firms is not their following the market trends but the creation and implementation of innovations. In particular, in the third edition of the Oslo Manual, starting with the survey CIS 2008, there was introduced a new comprehensive definition of innovation that includes organizational and marketing innovations, which can affect the performance of firms entering new markets or market segments as well as develop new ways of products' promotion [7]. However, these innovations also require measurement and appropriate assessment, and, therefore, they increase the price of a product to the level above average. Thirdly, the sectors that are most promising in terms of the key technologies of the next technological mode provide the creation of high value of a product due to its technologization and individualization. Thus, skimming strategies have prospects of significant spread in the process of substitution of the dominant technological mode. However, this may cause an inflationary effect within relevant sectors of the economy.

Nevertheless, there is an opinion that inflation is indirect evidence that the technologies introduced are related to technological modes that are aging [3]. In our view, under modern conditions, this approach is losing its relevance, since it is the dominance of a skimming strategy that causes the inflationary effect in the most innovative sectors and also the sectors that are the core of the basic technological mode. Therefore, price increase is a sign not of outdated technologies but, on the contrary, of innovation development of enterprises involved in particular types of economic activities.

In particular, according to the State Statistics Service of Ukraine, during 2008–2010 the share of innovation active enterprises in the country increased by 3.0%, mainly due to the increase in the share of enterprises that were engaged in organizational and marketing innovation. As for the types of economic activity, during 2012–2014 the highest share of innovative enterprises was among the enterprises supplying electricity, gas and conditioned air (18.6%), as well as those in the sector of information and telecommunications (16.3%) [5]. At the same time, the highest level of growth in the producer price index on average for the period of 2007–2012 was demonstrated by the mining industry, and the lowest rates of growth of the corresponding indicators during the same period were observed in machine-building and in the production of electrical and electronic equipment. According to the Annual Report 2014, the main inflationary factors in the industrial sector was the increasing prices for raw materials, fuels and lubricants, energy products, prices for agricultural products, as well as hryvnia devaluation and fluctuations in the world prices for metal and oil refining products [8]. In 2015 the most significant price increase took place in the sphere of supply of electricity, gas, steam and conditioned air (by 33.2%), production of heat energy and electricity, with the price increase by 49.4%, and 31.3% respectively. In the

manufacturing of computer, electronic and optical products prices rose by 33.3% in the same year [8].

A special place in the pricing process is occupied by the organizational structure of the economy. Today micro-enterprises in wholesale and retail trade services play an important role in driving international trade. They comprise around three-quarters of all enterprises in the sector engaged in international trade, and around 15–50% of all imports and exports of the sector [9]. And since small businesses are unable to take advantage of economies of scale, which is associated with higher unit costs, prices in global trade will increase. These trends are supported by the increase in the share of medium and small enterprises, which within the sixth technological mode are key agents of innovation and production.

The above mentioned data confirm the opinion that at the present stage of development the indicator of dominance of certain spheres of economic activity in the process of substitution of dominant technological modes is the preferential application of skimming strategy, which forms the investment basis of technological renewal and has an inflationary effect within the relevant sectors of the economy.

The world statistical data can also be an argument for these statements. Thus, in 2010–2016:

- ✦ in *Germany* there was observed a steady rise in prices in the sphere of scientific and technical activities as well as education and health care (5–10% of the average growth rate), indicating the active deployment of the sixth technological mode;
- ✦ in the *Netherlands* a steady increase in prices in the service and financial sectors was observed, the growth of gross value added of these economic activities was rather slow (the decrease or slight increase). It may indicate that the process of substitution of the dominant technological modes is at the nascent stage and lags behind the dynamics of this process in Germany;
- ✦ in *Israel* there is extremely rapid annual growth in the information technology and scientific and technological sector (30–60%), while prices in almost all sectors of the economy are also growing fast. This reflects the active deployment of a new technological mode. It also should be noted that this country is characterized by the most significant on worldwide scale expenditures on scientific and technological development and a powerful innovation economy;
- ✦ in *Japan* the price increase occurred only in the sphere of scientific and technological activities, and the growth rate of this sector during this period was the most significant compared to other sectors of the economy. This also confirms the assumption about the dominance of skimming strategies in transition to technologies and production of a new mode;
- ✦ in *Mexico*, the most significant price increase occurred in the sphere of trade and processing industry, and it was the sphere of trade, as well as the financial sector, that had the highest level of an-

nual increment in value added. Based on this information we can conclude that in this country the fourth technological mode is dominant;

- ✦ in *Argentina*, along with the rapid development of the financial sector and trade, it is possible to observe inflationary trends within these economic activities. In this situation, it can be concluded that, since the financial and trade sectors are characterized with the self-inflating value added, the country is actively developing technologies of the fifth mode.

Thus, dominant technological modes and prevailing pricing strategies are interdependent. The technology forming the core of a mode and affecting the efficiency of the production and industrial structure of the economy, determine the choice of a pricing strategy that will prove to be most effective under existing conditions. In turn, the optimal pricing strategy influences the process of substitution of dominant technological modes, the duration of this process and the overall profitability of innovative technologies.

CONCLUSIONS

The study of the latest available information sources on the selected topics, analysis and systematization in accordance with the aim of the research allow to draw the following conclusions:

- 1) technological evolution within cyclical substitution of dominant technological modes is inextricably linked with the periodicity of dominance of particular pricing strategies depending on the sectors that dominate in the economic structure;
- 2) in the process of transition to the sixth technological mode, the core of which is high-tech and knowledge-intensive economic activities, skimming strategies come to the fore due to their significant profitability in the face of the rapid updating of the product range and individual characteristics of products and services (the above mentioned has a potential for mass creation of conditions close to the monopolistic market structure);
- 3) dominance of skimming strategies creates inflationary effect, particularly in the context of innovative economic activities, which potentially are the basis for the active implementation of technologies in a new mode;
- 4) reinforced inflationary trends within individual sectors of the economy are correlated with value added growth of products of these activity types. This can determine further changes in the process of substitution of dominant technological modes. ■

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