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THE ROLE OF TECHNOLOGY STRATEGY IN COMPETITIVENESS INCREASING

Abstract

Technological change is one of the main generators of competition. It plays the most important role in changing the structure of existing and creation of new industries. In addition, technological changes equate company, since they may reduce the competitive advantage of well-positioned enterprises and point it to other companies. Many large companies have achieved their today success due to the fact that they were able to take advantage of technological change. Technological changes are one of the most important factors that can change the rules of the competition.

Technological enterprises' strategy is an integral part of its global development strategy and is defined as a long-term commitment of the company to the place and role of technology in business. The procedures of technology strategy forming have been studied in this research through strategic analysis and definition of technology strategy. Research has shown that forming the basis of technological strategy should consist of a set of long-term goals of the company, the overall potential of the company as well as environment demands fulfillment.

It has been concluded that the strategy of technology is actually the company's commitment to become a pioneer or the one that quickly forms alliances or partnerships in the branch. Strategy of technology is competitive advantage achieving through differentiation and low cost of production. It also establishes the basic ways of acquiring and using technology, while balancing optimization can be achieved by allocating resources (capital, human resources, technology, raw materials, etc.), which leads for a long time stability.

Keywords: Business; Technology Development; Technology Strategy; Competitive Advantage, Long-Term Objectives.

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РОЛЬ ТЕХНОЛОГИЧЕСКОЙ СТРАТЕГИИ В ПОВЫШЕНИИ КОНКУРЕНТОСПОСОБНОСТИ ПРЕДПРИЯТИЯ

Аннотация

Технологические изменения являются одним из главных генераторов конкуренции. Они играют важную роль в преобразовании структуры существующих и создании новых производств. Кроме того, технологические сдвиги могут изменять правила конкуренции, выравнять положение компаний на рынке, снижая конкурентные преимущества одних и при этом давая импульс другим. Многие крупные компании возникли именно благодаря тому, что сумели осуществить технологические изменения.

Технологические стратегии предприятий – это неотъемлемая часть их глобальной стратегии развития, определяющие долгосрочные обязательства компаний относительно места и роли технологий в бизнесе. На основе стратегического анализа авторами изучены базовые подходы к формированию технологической стратегии предприятия и предложена авторская разработка процедуры создания такой стратегии в контексте повышения конкурентоспособности производства. Исследования показали, что в основу технологической стратегии должны быть положены долгосрочные цели компании, ее совокупный потенциал, а также экологические требования.

Ключевые слова: бизнес; технологические изменения; технологические стратегии; конкурентные преимущества; долгосрочные цели.

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РОЛЬ ТЕХНОЛОГІЧНОЇ СТРАТЕГІЇ У ПІДВИЩЕННІ КОНКУРЕНТОСПРОМОЖНОСТІ ПІДПРИЄМСТВА

Анотація. Технологічні зміни є одним із головних генераторів конкуренції. Вони відіграють важливу роль у перетворенні структури існуючих та створенні нових виробництв. Окрім того, технологічні зрушення можуть змінювати правила конкуренції, вирівнювати положення компаній на ринку, знижуючи конкурентні переваги одних і при цьому надаючи імпульс іншим. Багато великих компаній виникли саме завдяки тому, що зуміли здійснити технологічні зміни.

Технологічні стратегії підприємств – це невід’ємна частина їх глобальної стратегії розвитку, що визначають довгострокові зобов’язання компаній щодо місця та ролі технологій у бізнесі. На основі стратегічного аналізу авторами вивчені базові підходи до формування технологічної стратегії підприємства і запропонована авторська розробка процедури створення такої стратегії в контексті підвищення конкурентоспроможності виробництва. Дослідження показали, що в основу технологічної стратегії мають бути покладені довгострокові цілі компанії, її сукупний потенціал, а також екологічні вимоги.

Ключові слова: бізнес; технологічні зміни; технологічні стратегії; конкурентні переваги; довгострокові цілі.

1. Introduction

Technology is the main stimulus that initiates the growth and development in general – from individual companies to the world economy. It is based at the world achievements high technology and innovation, knowledge and developed infrastructure. Many studies have shown that the basic factor of industrial growth and higher living standards in developed and developing countries is a continuity of technological change, whereby it is seen as a means, not an end of changes. In this sense, today we talk about «new economy», based at technology, information and knowledge, which replaces «old economy», based at physical factors of production – labor, capital and land.

Nowadays, factors that surround the organizations are becoming increasingly complex and turbulent. The answers to the pressures on an organization can be divided into five categories: strategic systems for competitive advantage, continued efforts to improve, reorganization of business processes, business associations and e-commerce.

2. Methods, data analysis and qualitative research

There has been proposed a strategy to increase the rigor of combining different methodologies, as well as empirical and theoretical sources, in integrative review.

In the work, we set the research center exclusively on the relationship between market orientation and innovation in production with regard to its contribution to the overall business success.

3. Purpose

To investigate certain issues that are essential for the growth and development of the company as follows:

- whether the firms with a high level of advanced technology have a high level of production,
- whether the involvement of managers in formulating strategies have a high level of competitive ability and if they work in the companies with a high level of competitive ability,
- whether the higher customer satisfaction improves performance.

4. The foundations of economic development

Rapid technological advances created preconditions for expanding and increasing the availability of technology in the world. In fact, technological progress is primarily influenced by the monopoly of knowledge reducing. In this respect, the most appropriate interpretation of the term «technology» refers to the level and form of knowledge application. Only knowledge is much more than capital and labor (knowledge cannot lose its value, but increases the expanding of usage), and is the main driver of productivity and economic growth.

The essence of today economic growth is represented by ideas, information and knowledge. The main role goes to information, technology and learning, as well as elements of the knowledge-based economic performance. Knowledge includes information in any form, skills («know-how») and understanding («know-why»), including ways of interaction, both individuals and communities. Knowledge economy is directly based on the

production, distribution and application of knowledge and information within the basic technology input. This has an impact on the trend of increased investment in high technology, highly sophisticated operation and productivity growth. In fact, much of the increase in global productivity in the last decade is attributed to information and communication technologies. How this fact follows the expansion of services on a global scale, is the basis of competitiveness in the world market in modern conditions. It is driven by comparative advantage in innovation, in which information and communication technology have primary importance.

Technology is one of the main stimulants of the global market formation. Development of technology encourages integration of markets. In practice, this means designing a basic model for the broader market, and its adaptation to a specific market segment, depending on preference. The mobility of modern technology is great, because there are significant limits that would prevent rapid dispersion after its production. Therefore, we may talk about a new technological paradigm that works towards a radical transformation of productive resources in the macroeconomic and microeconomic aspects.

In general, technology is a variable that shapes the world today and strongly influences the developmental tendencies. There is a direct proportionality between the level of technological development and the growth of international trade, both at the country level and at the enterprise level. The formula for success of the global company combines technology and finance, which paves the way towards the global market. The traditional way was to develop technology in the industrialized countries, particularly among the global companies. However, technology has quickly become obsolete, so the elimination of obsolete technologies through the sale in less developed countries is a challenge when it comes to developmental trends in the international context.

It should be noted that during the last fifteen years the dominance in international trade recorded the high-technology products (Hi-Tech) – computers, electronic compounds, cars etc. At the same time, marketers have established an observation from the point of view of the coefficient intensity, i.e. according to the input research costs in relation to the value of the product. Research and development, together with investment, marketing and strategic activities, make a formula for successful participation in the global market. It leads to conclusion that implementation of activities, resulting in high technologies, suppresses traditional industries.

On the one hand, rapid development of digital technology and telecommunications has obtained the name of «digital age». Reflection of these characteristics on economic relations we can find in appearing of electronic commerce. In this regard, new technologies have enabled global insight into the changes in the market, demand, competition, and in the marketing context lead to faster adaptation of enterprises and adequate response to changes in the marketing environment. In addition,

information and communication technologies have enabled the anticipation of behavior, interests, and potential economic and other developments in different parts of the world. Internet and e-business create greater interactivity and flexibility of operations, faster, cheaper compared to traditional, higher level of integration of business segments and so on. Opportunities provided by the Internet and information technology are not even visible, as every moment new forms of communication, information provision, market expansion and the like appear. Technological development has contributed to the deregulation of many industries, making them open to foreign investment. Technology has become one of the most important tools for achieving competitiveness, combined with efficient marketing performance.

On the other hand, one of the pitfalls of technological development is related to the rapid obsolescence of products i.e. technology, which entails the necessary adjustment and improvement to maintain the pace of competitive struggle. In these conditions, a modern company should not only monitor the changes in technology, but also provide them, in order to achieve lasting competitiveness in the global market. This happens because the perception of future technological trends enables the company to promptly create products that will be subject to a promising future demand. The companies that are leaders of new technological solutions are faced with increasing risk, but also the possibilities of higher profits when their technological solutions will be fully accepted.

It is clear that information technology will shape the economy of the next century. Leading position in the IT revolution in many ways defines the dominant vector in the global market. Therefore, implementation of technological development in combination with the possibilities offered by the market is a key to success in the international market of the future. Some analysts argue that technological integration with free trade is not an inevitability, and emphasize its dark side. The negative effects of rapid technological development, in this group of theorists, are reduced to: increasing gap in income, overflow jobs abroad and side effects related to the homogenization of culture.

The paradox is that the technology on the one hand is a source of pollution, and on the other – the only hope for the elimination of consequences of pollution, both today and tomorrow. Furthermore, technological evolution contributes to the growth of social standards and the gradual redistribution of goods in the world. The development of technology, especially information and communication, contributes to the greater market integration, free trade, and promote sustainable development. The concern for the environment is becoming the subject of increased attention in most societies, which supports technology-oriented contributions to environmental protection.

Finally, the technologies that will enable faster and cheaper communications worldwide to individuals, businesses and institutions are the imperative of sustainable development. Nevertheless, the road to economic prosperity should be faced with a paradox that the development of technology opens up new areas of both creative and destructive activities (e.g., computer crime), and that the increasing connectivity increases the adverse economic and social effects.

In any case, whatever seemed to be the world's economy in the future, it is likely to have a crucial importance of continuous innovation in technology that will lead to growth of competitiveness, while building new networks and appropriate knowledge system for the implementation of innovation will be a key factor in the progress of the world economic and social welfare.

5. The concept of competitiveness

The competition still reaches you. The best indicator of your success is the way you are prepared to meet the competition.

In this section we briefly discuss the theory of international exchange starting from the point of view of the classical economists to the more modern concepts of economic theory, in order to make an introduction to contemporary marketing considerations of international competitiveness and its connection with technology strategy.

In today's increasingly open and integrated world economy, the issue of competitiveness occupies a central place in economic considerations.

Defining competition and competitiveness is a very complex problem. Different forms (natural and economic competition, price and non-price economic competition, competitiveness at the micro and macro level, national and international competitiveness, competition based at comparative or competitive advantages and other categorization) are defined differently and have different specific meaning. In modern scientific research, special attention is paid to the international marketing competition, regardless of whether the focus is on the company, certain industry or the national economy.

Traditionally, the international competitiveness of the country is explained starting with the theories of international trade, towing the roots to the theory of Adam Smith. Nowadays, global economy is too complex to be easily explained by traditional theories, which resulted in the development of new theories, which include technology, investment and competitiveness. In this regard, special attention can attract more contemporary theories of international trade. In the literature usually are stood out such of them:

- theory of absolute advantage and comparative advantage;
- H-O-S (Heckscher-Ohlin-Samuelson, abbreviated H-O-S model) model and Linder's theory;
- theory of international product life cycle (IPLC);
- Porter's theory of competitive advantage;
- theory based at economies of scale and technological gap theory;
- theory of international investment portfolio with three modalities;
- theory of monopoly advantages of direct investment;
- FDI theory of internalization;
- eclectic theory of FDI.

One of the first theoretical explanations of international trade, which is the theory of absolute advantages and absolute costs by Adam Smith, is based on the assumption of free competition, the mobility of factors of production and final products in the international context. Trade is seen as a way to increase efficiency, in view of the fact that it encourages competition, leading to specialization and differences in economic size. The main factor of production is work, expanded on the production of a product, and the exchange between countries, according to this theory, takes place on the basis of specialization and the international division of labor. This means that countries should not import the goods, production of which is expensive, and should export goods for which they are specialized in and production of which is cheaper. The term «absolute advantage» in this context is understood as the capacity of companies from certain countries to achieve greater efficiency in the production of certain products in relation to another country.

A. Smith's setting was completed by D. Ricardo, developing the theory of comparative advantage that, unlike to Smith's one, has a dynamic character.

According to D. Ricardo, the country still needs to produce what it does best, although, there are countries that are better in a given activity. Comparative advantage is based on the measurement of the cost of production in non-monetary way, in terms of lost opportunity to be produced otherwise.

Thus, according to this theory, international trade is based on the realization of the differences in the relative costs of production, and not on the difference in absolute costs. The theory is based on the assumption of free exchange and perfect competition, watching the two countries and the two products, and the cost per unit of output are constant.

In recent theoretical interpretations the above shortcomings have been overcome. Ricardo's theory is a good explanation when it comes to ordinary products, which include natural resources or manufactured products and components. Contemporary international marketing environment is characterized by globalization; liberalization; organizational, institutional and technological change. Michael Porter nowadays gained a worldwide reputation based on his research studies with a special attention to the international marketing environment analysis.

M. Porter started from the assumption that the theory of comparative and absolute advantage of 18th century cannot explain the flows of modern international trade. Therefore, the

term «competitive advantage» means the abandonment of traditional economic thinking that has been concentrated on comparative advantage. Basically, comparative advantage is inherited and refers to the availability of basic production factors, such as low-cost labor and energy, natural resources, etc., which resulted in the formation of competitive advantage. Turning to the history of industrial development, we can see a series of firms, regions and countries that work very hard to create a competitive advantage. Hardly ever a sustainable growth built on the basis of inherited factors, but it is as a rule a result of relations between factors and activities.

In general, theoretical assumptions before Porter started from a given volume of labor, capital and natural resources, which effectively and efficiently established certain competitive advantages. In his model, Porter explains why in terms of globalization some countries are more competitive than others, and why some industries are more competitive than others in the country. Porter in his work «Competitive advantage of nations» tried to prove that the national environment plays a central role in the competitive advantages of the company, and that certain national economies are more stimulating than others. According to him, the state should create conditions, so that the factors of production are invested in the business with the highest labor productivity. Its premise is essential to compete in the global market for companies, not for the nation-states. Porter in the aforementioned paper points out the factor of demand dynamics to economic activity and stresses that the country's competitive advantage in a particular branch is created in a period of ten years or more, not in four years. He mentions that some countries have a competitive advantage in certain sectors because of differences, not similarity with others, and that this advantage is usually geographically concentrated.

As it has been mentioned, the main theme of Porter's theory is based on the view that, in terms of globalization, companies, and not the nation-states, become carriers of the international exchange. There are a number of reasons in favor of this idea. Factors of production are no longer tied to a single country, and already available to global companies that seek to adequately utilize them.

Development of transport and technology significantly boost the international economic interaction, which provided the availability of production factors for companies, regardless their geographical situation. These developments show that the role of the state in international business is decreasing, and the companies become carriers of the inclusion of national economies into the global one. According to M. Porter, forming a competitive advantage is based on innovation and change. The essence of his theory is that the company achieves a competitive advantage by changing restrictions, rather than maximizing sales and profits in time.

Thus, the national level of productivity and standard of living in the country depend on the ability of its companies to achieve increasing levels of productivity. In this regard, M. Porter says: «Nations elected prosperity if they create such policies, laws and institutions that support productivity growth. Competition itself is working towards increasing productivity and international exchange allows the state increase productivity by eliminating the need for the production of all products and services». He also argues: «Companies, not the government, determine the level of productivity, while their opportunities for advancement depend on the national business environment. When the companies focus towards more sophisticated modes of competitiveness at the national level, their chances of achieving global competitiveness is growing».

Porter grounded four determinants of different importance for each country, which forms its the competitive advantage and encourages or restricts their creation. These determinants are: the conditions that determine the factors of production; conditions that determine demand; supporting industries; the company's strategy, structure and condition of the competition. These determinants constitute the so-called «Porter's diamond». Therefore, each country can gain a competitive advantage in the industries where the diamond is the most favorable.

6. Conclusions

A strategy of organization development ensures the alignment of employee's performance with reliable performance of the organization. Thus, the most important requirement of the process is human resource. In this mode of development lies the possible coherence of the individual and business system's objective development. Strategy of business in general is seen as the deliberate pursuit of the planned action which will develop and provide a competitive advantage through the process of formulating a set of strategies and implementation them in practice. Strategy expresses the uniqueness of the company, its managerial potential, organizational structure, ways of problems solving, competitive strengths, strategic management, and business activity.

Regardless the type of chosen growth strategy, the main goal of professional management is to obtain optimal developmental strategy, i.e. to take several varieties of possible future development, aimed at the same strategic goals, and to select a strategy that is most appropriate in certain circumstances and proved to be optimal. The aim of the functional strategy or action plan for companies, which have been accepted by the major sectors, is to support the overall or major business strategy.

The strategy of technology is in fact the company's commitment to become a pioneer, one that quickly forms alliances or partnerships, or a combination thereof. Strategy of technology is achieving of competitive advantage through differentiation and low cost. It also establishes the basic ways of acquiring and using technology, while balancing optimization can be achieved by allocating resources (capital, human resources, technology, raw materials, etc.), which leads for a long time stability. For small companies executives usually apply the strategy of filling a market gap and strategies of cooperation with leaders in the industry, which may represent an optimal strategic option.

It is essential for formation right technology strategy to know the market situation, and who are consumers, engaged in innovation activities, and from whom information is collected and how they adopt new products in existing product lines.

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