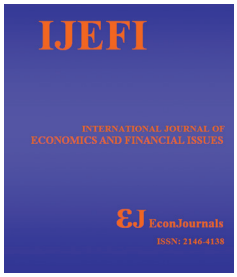

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Planning of New Products Technological Mastering and its Influence on Economic Indicators of Companies

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ABSTRACT

Improving the quality of services or improve product quality at the modern stage of economic development is one of the most important factors in the growth of production efficiency. The quality of products or services is essential to "stay afloat" and an important factor towards success in the market in conditions of tough competition. In the conditions of market relations in various companies and organizations the relevance of quality management is characterized by its focus on the formation of such level of quality products and services, which can absolutely meet all the needs of consumers. Maintaining the high quality of services and products is the main component that determines their competitiveness. Without consistency of quality, which meets the requirements of consumers in the market, it becomes impossible to integrate the national economy into the global economic management and to take in it high. A stable increase in the quality of products by enterprises is regarded currently as the main condition of its competitiveness on internal and foreign markets. The competitiveness of products or services largely determines the status of the country and is a fundamental factor of increasing its national wealth.

Keywords: Competitiveness, Planning, Technological Development, Investment Costs, Product Quality, Economic Performance, R & D
JEL Classifications: O14, O21, O32, O33

1. INTRODUCTION

Modern market economy puts new requirements to quality of manufactured products by enterprises. In modern market conditions with high competition the survival of any enterprise (organization), regardless of the scope of activities, its sustainable position in the market of goods and services subject to level of competitiveness. Competitiveness, in turn, interfaced with two indicators such as the level of product quality and the level of prices. With all these indicators, the first factor consistently comes out on top. Productivity, saving all types of resources is giving way to quality products.

Modern market economy is characterized by high competitiveness, which determines the improvement of production. Modification of economic activities of industrial enterprises requires the need to develop new methods, forms and mechanisms of formation and development of new competitive products, aims to ensure the predominant position of enterprises on domestic and foreign markets.

Methodological and theoretical base made up of monographs of foreign authors, research publications, and scientific articles in Economics of the enterprise for the production of a new product. Basis of research in the field of stability of development of economy of the enterprise were the Russian and foreign scientists.

Technological preparation of production is characterized by the continuation of work on the design of the product. At this stage, it is determined with the help of some techniques and tools, ways

of organizing production should be made of this product, and there is a final determination of its cost and efficiency (Ragulina, and Kamaev, 2013). This technique is formed for a single new product, as well as for traditional products in order to improve the technical level and the reduction of production costs, improvement of working conditions and environmental protection.

The technological development of the production of new products much more expensive than research and development. Before, funds will be allocated from the budget of the enterprise, must be wound marketing research and commercialization of a new product designed. In this case, the appropriate type of production is designed, planned its technological preparation. As practice shows, the higher the output, the lower the production costs, which have an impact on competitiveness.

2. FORMATION OF THE PRODUCTION PROCESSES ON NEW PRODUCTS

Russian and foreign enterprise practice highlights several production methods for new products. The main ones include: The option to stop and without stopping the production process of the enterprise. The primary stage of the cycle "research - production" is the development of new products (Kirillov et al., 2016). The development of new products forms the production process which are necessary to debug the technological process, organization and production planning for new products in a particular enterprise volume and achieve targeted economic indicators. New products can be considered mastered when it comes to a certain extent and possesses all the required technical and economic parameters.

Technological development of products is carried out in the process of formation of a new product still in pre-production period and is determined by the achievement of the technical parameters that are set for the product in the technical specifications and standards. Technical indicators should be achieved in manufacturing while preparing for mass production of new products. If given the high requirements that apply currently to product quality, to implement the technical development in mass production is not necessary.

The transition of enterprises to the launch of the new product possible is using the following methods: Sequential, parallel, and complex-combined and aggregate (Table 1).

When choosing a method of transition is necessary to consider a number of factors that characterize the organizational and technical level of production, design of new products and the technology of its production. Analyzing the organizational and technical conditions, should consider a number of factors: (a) Availability of production capacity; (b) availability of vacant production areas; (c) in-plant specialization; (d) division of labor in workshops and on sites; (e) the level of sectoral and cross-sectoral cooperation; (f) availability of qualified staff; (g) the level of organization of logistics; (h) the level of flexibility of the production apparatus, etc. (Lukin, 1978).

When assessing the design of new machines taking into account its originality, the level of uniform system of standardization, design continuity and specificity of a new product compared to the discontinued products (dimensions, weight, materials consumption, energy intensity, labor intensity and other technical and economic indicators). The production technology is characterized by the use of standard and special technological processes, is given in a single line and special tooling equipment and the use of computer controlled machine tools, industrial robots and flexible automated systems, the presence of waste production and impact on the environment and other parameters (Aristov, 2004).

Methods and variations of transition to release of new products have a great impact on time and efficiency. It is advisable to make

Table 1: Methods of transition to release of new products (Radchenko, 2006)

Method	Characteristic	Advantage	Disadvantage
Consistent	The production of new products starts after the complete cessation of production to be discontinued		
Continuously-consistent	After discontinuing old products on the same production areas are the overproduction, the completion of the process of production of new products	The simplest variant of transition in the organizational and technologically	Large losses in total output. Over time, there are costs that will be accrued to the cost of mined product
Continuous-sequential	The issue of mined product starts immediately after discontinuing the old	Not defined	Not defined
Parallel	The gradual replacement of the withdrawn from production. Along with the reduction in the volume of the old production there is an increase of production of new products	A significant reduction in losses in the total production output during the development of new products	Elongation produced by the upgrade process from a distance, as a result, premature obsolescence of new products
Parallel-consistent	Typical for mass production, significantly different in design from the withdrawn products	Carrying out the initial development stages on additional sections provides high rates of growth of manufacture of a new product	(a) Loss in total production output during stop production of the old products; (b) Require additional space for temporary sites
Aggregate	It involves the gradual replacement of individual units in the construction	Produced transient modified product. Production focuses its efforts on a small area of work	Modified product is equipped with only a single new nodes

calculations to reduce the amount of production in the period of development, increased overhead, and to assign the time which will be production and economic development.

Because of the large costs and significant amounts of future work to produce a new product made to apply the program-target method of planning of technological preparation and production of new products. In the process of program planning formed a hierarchy of goals and decisions on the most important staging areas of work that is associated with the achievement of the ultimate goal. Then developed target scientific and technological program, which are strictly oriented (Fedyukin, 2004; Doronina et al., 2016).

Existing intermediate results at the target scientific and technological program isolated in a separate subroutine:

- Routine implementation of design-technological preparation of production of new products;
- Routine for execution of construction works;
- Routine design and manufacture of custom equipment and tooling;
- Sub-program of technological development of new products to its required design level.

In the manufacturing process of the variant that hope for the desired income from the sale is not justified by investor, it can be taken the following measures: The decision to re-conduct R & D and scientific-technological program for production of new products will be less expensive (Pimnev et al., 2016). This is because production processes have become more flexible to changes. As an alternative solution, perhaps to modify the design of old products, or to pursue technological innovation to reduce energy consumption, resource conservation, etc. Therefore, alternative directions of innovation activities provide the opportunity to improve the competitiveness of products sold, and the goods as accepted and the price that is revealed by implementing it at the final stage of commercialization (Novischky and Oleksyuk, 2003).

3. PRODUCTION PLANNING OF NEW PRODUCTS AND THEIR IMPACT ON THE ECONOMIC PERFORMANCE OF THE ENTERPRISE

Economic analysis of economic activity of the enterprise is essentially the study of certain economic indicators, which are characterized by diverse aspects of this activity. Economic indicators are grouped in a pattern in accordance with known criteria. The system of indicators which reflects the main activity of the enterprise - a set of interrelated variables that exhaustively characterizes the property and financial situation of the company, its activities and the results of this activity (Ivanov, 1985; Silnov and Tarakanov, 2015).

Technology development of new products has a direct effect on the economic performance of the enterprise. The main indicator in economic practice is considered: Profitability, labor productivity, capital productivity and profitability. The basis for the creation of a new product is considered to be investment or rather capital expenditure. In a global sense, real investments are made in the company mainly: Extension; reconstruction and technical re-equipment; decision of social problems; the development of new markets; the upgrading of products and development of new.

Investing in a new product is carried out to achieve a number of purposes:

- Reduce production costs and implementation;
- Improve product quality and competitiveness;
- Increase the volume of products sold;
- The solution of social problems;
- Improve the technical level of production.

The main purpose of the production of a new product, of course, maximizes profit by achieving financial stability for now and for the future. The level of real investment in the accelerated release of new products in the enterprise, characterize the absolute and relative performance (Arzhakov, and Silnov, 2016). Quantitative indicators - the effect achieved from the implementation of investments aimed at the production of new products.

These indicators include: Growth in the volume of products sold; cost reduction of new products; increase profits by reducing costs, improving quality, and increasing volume of production.

The goods acquired new properties, production and sales which, added to the already existing assortment of the enterprise is called a new product. As such, improvements to existing products are not included here. New products may be entirely new product or a new combination of devices, mechanisms, without modifying the product itself.

When creating an innovative product of the enterprise has the following objectives:

- Finding new technical solutions task - the creation of the invention;
- Conduct research and development (R & D);
- Establishment of mass production of products;
- Parallel preparation and organization of sales;
- Introduction of a new product on the market;
- Consolidation in new markets by continuously improving technology, enhance competitiveness of product (Maslov, 1986; Vinichenko et al., 2016).

Innovation is an integral part of company marketing activities. This applies in particular to companies directly involved with the production of high-tech products. They found particularly close cooperation with R & D marketing service.

Importantly, in the innovation policy of the enterprise is an expression of the primary purposes of research and development, determination of the term of their carrying out, evaluation of the results in the form of specific objectives, reduction of terms of introduction of new products. Transparent policy in the field of new product development sets the pace for the collection of information and elaboration of proposals, which leads to active search for new opportunities and forms the motivation for the study groups.

As the primary criterion in the marketing program for the production of a new product is used to assess the impact of introducing a new product for advancing the objectives of the enterprise as a whole, these include: Sales of new products; modification in the implementation of other goods in connection with the introduction of new products; evaluation of the time interval of achieving profitability in the production of a new product (usually this period is set at 5 years) (Korovin, 1973).

If the new product is technologically created close to manufactured products, it allows you to use the experience of existing facilities of the company and thereby increase their effectiveness. Significant advantages arise when the promotion of a new product uses the existing distribution network and the methods of implementation have been worked out. In this case, the sales of a new product will not require additional cost of implementation and merchandising. Successful new products are the result of the activity, which is preceded by a thorough collection of information (Skvortsova and Nekrasov, 2003; Kunelbayev et al., 2016; Androsova et al., 2016).

There are a few methods of evaluating the effectiveness of the developed new product: Expert judgments; determining the expected rate of return; probabilistic approach; assessment of anticipated profits or the use of a rating scale taking into account a number of factors; the multidimensional evaluation criteria: The attractiveness of the industry, the possibility of injections in her competitors, the impact on the competitiveness of the new product and the company as a whole, the possibility of using development to improve old products, the impact of the production and marketing of a new product on the financial position of the company.

The level of involvement of the various departments of the company in the development of new products is characterized mainly by activities of the company and nature of the products they produce. For the most part in companies producing consumer goods, the leading role in determining company policy in respect of new products are marketing professionals. In companies that specialized in the production of industrial products, of particular importance in the formation of technical policy have research and development departments.

Initiative new product development is the study of consumer demand in the market of the product from its competitors, specific marketing research, which carried out the control of marketing activity of the enterprise.

At a time when ideas about the production and implementation of new products coming from R &D units, they are described as the fruit of focused research activities on the collection and accumulation of innovations, research activities, study information received on a given abstract idea or a promising product. Companies are going toward the expansion of sources of new ideas, maintaining a constant flow and create a favorable climate, which is ahead of innovation.

Reactive market orientation of innovation activities of companies can be seen in the widespread participation of consumers of high technology products in the development and learning stages of the innovation process (Malyshkov, and Ragulina, 2014). This is due, firstly, with the aspiration of manufacturers to provide a sustainable market, have constant customers and, secondly, potential consumer has the opportunity to make changes in the innovation and controlling the progress of the development of the production and development of innovations. On the economic performance of the enterprise, its profitability can influence and indirect initiators. These include customers who take the initiative of creating and acquiring new ideas, product or technical task, as well as to participate directly in its decision, the establishment, in particular, on the characterization of a new product, creating the prototype. Which leads to the strengthening of relations between producer and customer, while the manufacturer becomes not only a supplier of certain products, and participate in marketing activities, focused on the demands of the ultimate consumer.

Consumer involvement in the process of creating and developing new products is one of the main factors stimulate innovation. So, today, the most widespread this phenomenon is observed at the enterprises specializing in the sectors: Aviation, machine tool, automotive, instrumentation in many countries of the world. The main examples are the countries like, Germany, USA. In this case, consumers (customers) of new products affected research and production programs of the enterprises (suppliers) of equipment. In the end, for example, for companies in Germany, engineers and designers have much more close contact with the customers of machine tool production than the managers, starting from inception of ideas to the creation and evaluation of prototypes of machine tools (Shvandar, 2003).

In many of the largest companies in the U.S. and Japan relating to the listed industries, created specialized units for the exchange of information and maintenance of individual consumers. For example, such as “Procter and gamble,” “General electric” “General motors;” among the Japanese is: “Matsushita,” “Sony,” “IBM,” “Toyota,” they form a well-organized system of communication with consumers as a channel of information.

The final mission of the innovation process remains the commercial development of new products and the creation of cost-effective mass production. This is achieved only when research and development from the beginning to keep the reference to the production, when there is a real possibility of augmenting investment in the necessary new equipment might need to harmonize individual stages of scientific-production cycle and to determine the conformity of new products to the market demand and consumer needs. In this case, only a small proportion of complications can arise in the development of new products and its introduction into mass production. For example, according to statistics from the American companies are commercially reasonable and profitable, are only about 15% of the developed products, and among put on the market new types of products only 62% get consumer recognition.

Studies based on data obtained from 120 us corporations showed that more than 60% of all development does not turn into new products. The results of a survey of 50 U.S. companies showed that 50% of their R & D expenditure was aimed at innovations

that have proved to be commercially unsuccessful, and 30% innovation, recognized by the market, soon ceased to make a profit (Melamed, 2001). According to American economists, the success rate of innovations in the market, does not exceed 74%. Therefore, innovation-intensive, only large companies provided the financial means and resources (Lomonosov, 2002).

In the process of introducing new products to the market may experience failure or loss. First of all, they can be related to the fact that innovations have arisen on the basis of new knowledge and not needs, such explanations given by experts.

The main role of large companies in the development of new products and technologies due to the fact that directly they have the advantages of the strong and most capital-intensive stage of development of new products (innovations), namely the preparation of mass production, requiring the formation of special production facilities (Melamed and Trembovolsky, 2002).

Development and introduction into production of new products for the enterprises have a substantial value as a means of competitiveness and the elimination of the company's dependence on the lack of balance in the life cycles of products. In modern market conditions, product innovation goes at a rapid pace. In the industries of general machinery, automotive industry, instrumentation products, for example, is updated by 60% within 5 years. In the electronics industry and new products appear every 2 years.

As a result of significant investment in R & D as on firm-level and at the state level, a significant number of industries which are completely based on new technologies, there was a fundamentally new types of products has skyrocketed, technological equipment of enterprises.

4. CONCLUSION

The basis for the innovative activities of the company laid underlying causes of changes in technological structures of the economy of social production and the intertwining of business cycles in the functioning of capital. The main ones considered to be global discoveries and inventions, which will certainly lead to innovation capital with managerial, technological and organizational innovations, the emergence of new sources of raw materials, markets.

The generation and the emergence of new technological capabilities occur in the depth prior, when innovations form the monopoly of a new product, characterized by an effective monopoly of certain industries and companies. Effective monopoly determines the ability to acquire higher profit in a particular stage, determined by the legislative regulations on the protection of intellectual and industrial property.

Technological development of production of new products is necessary to carry out scientific and technological programs, focused on the manufacture of quite diverse items. Programs for the utilization of high technology equipment with an appropriate modification of the production sites and workshops.

An important element of functioning in today's market is, first of all, the quality of the company products, as quality forms the extension of market segments, the prosperity of the enterprise, profit growth.

International experience shows that the work on improvement of qualitative and quantitative indicators should be carried out within the framework of administrative management, which encompasses the entire product lifecycle - from design to consumption and disposal.

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