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Economics and Society in the Era of Technological Changes and Globalization



# Innovation and Marketing Activity of High Technology Companies in Business Management

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## ABSTRACT

The article states the results of researching the problems related to managing business activity of high technology companies whose key components include innovation and marketing activity. These components of business activity are interrelated, because as the innovation activity increases, the need in increasing the marketing activity in order to ensure the market readiness to consuming new products grows as well. In its turn, it creates conditions for widespread output of innovations and quick return of investments. It is proposed to estimate and regulate innovation and marketing activity by using the combination of the stipulated indicators and models. In order to successfully manage innovation and marketing activity, relevant mechanisms are required. Their methodological peculiarities are described in the article.

**Keywords:** Innovation and Marketing Activity, High Technology Company, Non-equilibrium Conditions, Economic Proportions, Highly Technological Products, Regulation Opportunities, Estimation, Production System, Sector Cluster

**JEL Classifications:** L11, L21, L22, O21, O33

## 1. INTRODUCTION

The transfer of the Russian economy to the innovational path of development requires revolutionary changes in the management of scientific and industrial complexes for the purpose of increasing the competitiveness of national innovations on the world markets under the conditions of economy globalization.

Under these conditions the urgency of creating relevant mechanisms related to managing the innovation and marketing activity of micro- and nano-sized electronics enterprises is increased. The coherence of these types of activity is stipulated by the fact that when innovations occur, the market must be ready for consuming new products. In the real practice one can observe the lack of the consumers' readiness to use the novelty. It restrains the growth of the volume of manufacturing new products and decrease

in its prime cost. The innovation and marketing activity become key components of the business activity.

Every year the company functions it simultaneously performs its current activity and develops. The business activity reflects the cumulative results of the intensity of the current activity and strategic development. Economic proportions must be complied between these types of activity, because disproportions (observed in the real practice) lead to financial instability and unbalanced activity. The business activity is an integrated result of the impact of such types of activity as production, innovation, marketing, financial (investment), labor, economic, intellectual, and social activities (Aniskin, 2015).

Thus, "business activity" is a comprehensive category of the business functioning that is a resulting indicator of the company

stipulated by the level of the impact of local (particular) components on it. These components include productive activity, innovation, financial, marketing, investment, labor, social and economic activities (Aniskin, 2015). The activity is characterized by tempos of changing key indicators for every type of the company activity.

In order to construct a high quality interrelation infrastructure, it is also necessary to synchronize financial, human resources and material flows in space and time. The branch cluster proved itself to be a good organizational form of the interrelation that meets all the above terms and conditions on the market of the highly technological science-driven products. It gains acceptance in the process of the economy globalization (Rygalin, 2008; Bespalov et al., 2010).

Researches show that the intensity of the innovation activity must be sustained by the results of foresight researches and performed with the aid of forecasting the development processes on the basis of foresight projects and scanning horizons of innovational cycles management (Khainish, 2003; Popper, 2012).

The market instability has a considerable impact on results of the business activity performed by the business subjects, and first of all, on the management of the company marketing intensity. Relating to the marketing systems based on market relations, the term “intensity” requires deeper purposeful nature focusing on “the confrontation” to an external or internal system that must be overcome. The force of this confrontation changes depending on its members, their energy and goals. In this case, “marketing intensity” is interpreted as opportunities of the development and confrontation to the forces of the market economy, and, first of all, competitiveness.

There are different forms of confronting forces of the market, but the nature of their occurrence is identical. Methods related to changing the marketing activity and its intensity depend on many factors (the environment of the system, internal structure and nature of elements interrelations, potential opportunities) and negative phenomena that aspire to cut up its integrity and harmony.

## 2. PECULIARITIES OF MANAGING HIGH TECHNOLOGY COMPANIES IN TODAY'S BUSINESS

In order to ensure successive development, every functioning production system (processing line, workshop, enterprise) must regularly or continuously change. The development of the system assumes transformations related to updating technological basis and technical base of the production, changing organizational structures of management, starting the production of brand new products. Final results of the production systems development are expressed in increasing the quality of the enterprise functioning and providing its competitiveness (Glasl and Lievegoed 2000; Gusarov, 2003).

The innovational process is a component of the scientific-technological progress. It is organically built in the mechanism of

developing the commodity-money relations. Such components of this mechanism as competitiveness, manufacturer, consumer, and the state are in the condition of constantly changing contradictory interdependence. The implementation of the process related to updating science-driven products that is the basis of the innovational development is of special difficulty. It is stipulated by the fact that the output of high quality and high technologically science-driven products requires not so much an increase in expenses for the innovational process (however, it is objectively necessary) as the improvement of the organizational mechanism of implementing these processes (Moiseeva et al., 2011).

The research by Gebhardt (Gebhardt, 1994) dedicated to developing the concept related to innovational processes functioning in production systems allows to make a variety of conclusions about regularities of transformations which native enterprises must experience under contemporary quasi market conditions.

In a number of cases, concepts of innovational development that are worked up on the level of group corporations, firms, enterprises, etc. are based on the personal experience of their founders. They are often unsatisfactory because they cannot objectively analyze the real state and forecast the further development of both the structural unit and its infrastructure.

The analysis of theories related to the development of production systems made by Gebhardt (Gebhardt, 1994) showed that the majority of theories are based on the following assumptions:

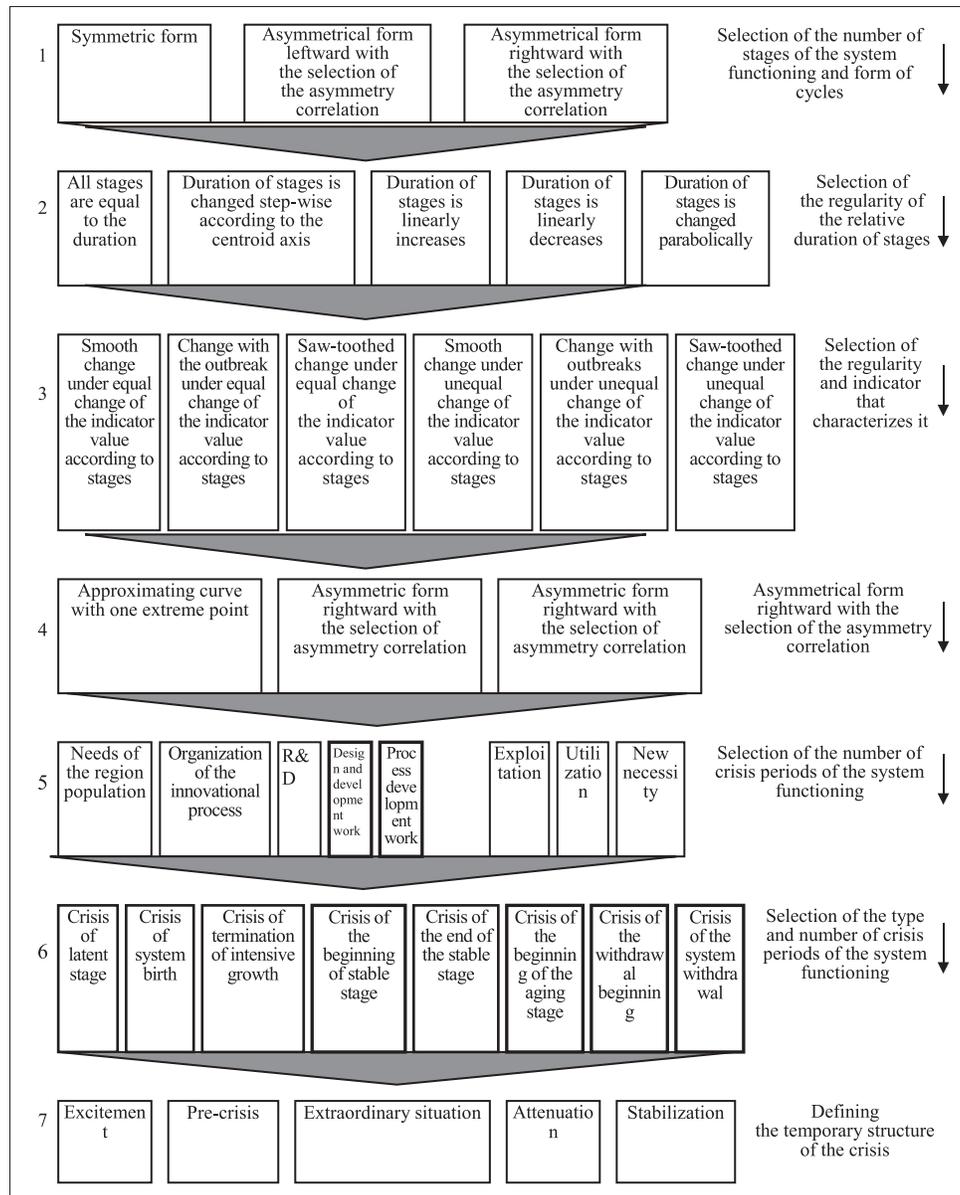
- Processes are changed in a monotonous manner; from the mathematical point of view, there are no bifurcation zones.
- The first part of the system functioning cycle (FC) is the most important. As the practice shows, it is wrongful because in their development production and economic systems undergo the complete FC, and the part of the cycle related to the fall (aging, withdrawal) processes also requires a research.

The problems related to changing the tendencies of production systems functioning, i.e., the reasons that cause their changing and mechanisms related to the transfer of systems from one state to another are directly related to the problems of economy development cyclicity.

Figure 1 shows the generalized structural and logical scheme of analyzing the innovational process that stipulates the stages of the systems functioning and peculiarities of these systems that change one another and cause various goals, problems, and terms and conditions to solve them. They include:

- Population's needs,
- Organization of the innovational process,
- Research works,
- Experiment and technological works,
- Production,
- Exploitation,
- Utilization.

Every cycle consists of seven stages of functioning. Herewith, the moments when crisis situations occur are displaced in time. The

**Figure 1:** Generalized scheme of innovational process analysis taking into account business cycle

interrelation of cyclically functioning systems via crisis periods allow to formalize the process of developing high quality models of innovational processes that take place in production systems.

Based on the systematization of crisis situations (Table 1) accepted by the seven-staged cyclical model, it is possible to single out crisis transitional periods that correspond to the beginning and the end of the stages of FC of the production systems (Figure 2). It allows to forecast extraordinary situations in their functioning.

Taking into account the temporary structure of crises that consists of five stages (excitement, pre-crisis, extraordinary situation, attenuation, and stabilization), Gebhardt offers two variants of undergoing the crisis situation by the system: With full reaching of the extraordinary situation and without reaching it (Gebhardt, 1994). This systematization is the basis for organizing optimal undergoing crisis situations with minimum losses by the production system.

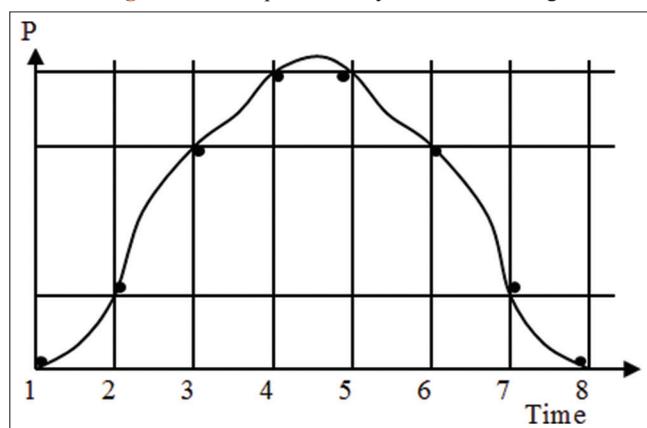
Let's consider the effect of the cyclicity theory through the example of the process of updating products and organizing production at high technology enterprises of the technology industry.

The technological progress is known to be characterized by a periodic change of models, series, generations of equipment, devices and materials. In a specific period of time (it differs for every type of products) the output range is completely updated.

From the point of view of basic functions of the enterprise that include the function of updating the issued products, products innovations are defining (or primary) and interrelated with other types of innovations. As a rule, the creation of entirely (or radically) new products directly causes the necessity to implement relevant innovational processes of production, work force and organizational and management activity (Moiseeva, 2013), (Aniskin et al., 2015).

**Table 1: Morphological classification of crisis phenomena**

Level (characteristics)	Option code							
	1	2	3	4	5	6	7	8
Moments of crisis situations occurrence	Beginning of the latent stage	System birth	Termination of the growth intensity	Beginning of the stable stage	End of the stable stage	Beginning of the fall	Beginning of withdrawal	System withdrawal
Extraordinary situations in the critical period	Lack	Available	-	-	-	-	-	-
Forms of crisis	Disturbance	Extraordinary situation	-	-	-	-	-	-
Types of extraordinary situations	Extraordinary	Catastrophe	-	-	-	-	-	-
Reasons of extraordinary situations	External	Internal	-	-	-	-	-	-
Stage of critical period	Excitement	Precrisis	Extraordinary situation	Attenuation	Stabilization	-	-	-

**Figure 2: Crisis periods of systems functioning**

When organizing innovational processes, it is necessary to have an idea about the level of radicality (or complexity) of innovations. The introduction of any innovation causes contradictions between specific changes made in the system, and the aspiration of the system for stability and integrity. Innovations break the balance of the system for a specific period of time. It is one of the reasons of treating innovations in production and organizational systems negatively. Due to this, when implementing innovational processes, it is necessary to have a mechanism of compensations. It allows to decrease the effect of innovations on the stability and balance of the production system (Khainish, 2003).

The expansion of outputting a new product requires partial or complete update of technological processes depending on the level of novelty (radicality) of the created product.

In the process of updating products, technological innovations occur in two cases: Either as a result of the unified innovational process, i.e., a close interrelation of research and development on creating the product and technology of its manufacturing or as a product of individual special technological researches.

Penetration (diffusion) of a technological innovation in the existing production process infringes the relevant economic balance

achieved by the enterprise and the established production relations. The return of the balance of production relations and connections on a higher technological level requires considerable investments and organizational efforts.

Complete or partial replacement of the current technology by technological innovations is a transient process from one balanced state of the production system on the basis of the existing equipment to another on a more progressive technical basis. Due to this, like any transient process, the production update is characterized by randomness, dynamism of changes of its state, instability of a new technology at this period, indefiniteness of receiving the target results, and psychological discomfort of employees. These and other factors (internal and external) define the organizational and technical and management complexity of implementing the processes of products and production update, because this new product and technological process are interrelated elements of the integrated production system.

Success of technological innovations depends on the speed of the innovation adaptation to the real conditions of the production. In its turn, it is stipulated by peculiarities and features of the environment where the innovational process takes place (Glasl and Lievegoed 2000; Khainish, 2003).

The most essential (according to the impact on the innovational process) parameters of production include the target volume of products output (production capacity) and size of the enterprise, i.e., substantial characteristics. The more these values are, the more inertial the production system is, and as a consequence, the slower implementation of update processes is. The analysis of the practice related to updating products and production proves the necessity to take into account the factor of the production range when implementing technological innovations, because there is a causative connection between them. Herewith, the causative model of radical and evolutionary types of technological innovations is different.

Planning the speed of replacing depends on relevant economical efficiency of the current and new technologies and tempos of these technologies development. The lower the level of revenues from products manufactured according to the current technology is, and the higher the tempos of decreasing operating costs by applying a

new technology are, the quicker the period of products updating will be completed (Ansoff, 1999; Hahn, 2000).

As a rule, in a definite target period every enterprise is simultaneously in the regimes of established functioning (when outputting series production) and successive development (when outputting new products), i.e., it simultaneously fulfills two functions: Ensuring stable production of serious products and updating products by outputting new products that requires economic proportions (Ivanus, 2006).

Every phase is characterized by relevant dynamics of changes of production indicators and definite position on the FC curve. Joint impact of characteristics related to development and functioning contributes to the changes of phase states of production and occurrence of definite cyclicity of the enterprise development. Various indicators of production, for example, volume of net products, return on assets, setting key assets, profit, etc. can act as indicators of cyclicity.

Successful fulfillment of the basic function of the system requires relevant organizational and economic impacts that ensure organized motion to the set goals for every regime. In the process of fulfilling the tasks related to functioning and successive development of systems, methods and principles of organization and self-organization are used.

In fact, updating processes are referred to cyclic processes when at the end of every cycle the synthesis of evolutionary and revolutionary transformations lead to uneven transfer of the object of updating to a whole new level of functioning.

In the process of updating (products, technology, equipment) the enterprise experiences the violation in relation to stable state of production. That's why the role of organizational processes becomes prioritized. The new structure that was created after a transient period (experience accumulation) passes to the stable state of functioning on a whole new level. The project output of new products finishes the cycle of updating and creates prerequisites for further cycles of the enterprise development. Thereby, the law of quantitative changes transfer to qualitative ones occurs.

Researching processes of updating products through the example of science-driven branches confirms definite cyclicity (7-8 years) and interrelation of technological shifts or innovations with economic consequences in the form of falls and up-rises. Herewith, the cyclic motion is characterized by the fact that the effects of the aggregate of factors that define the up-rise (investments, key assets, etc.) run out with time, gradually turn into the breaking factor, and become a reason of the production decrease. In its turn, the production decrease is an accelerator for the future up-rise. In other words, in case of oversupply of capacities and stagnation of basic branches, the necessity in large technological and organizational changes becomes urgent and is confirmed by the dynamics of both current and future capital investments profitability.

The landmark for forecasting economic rises and falls from the position of the innovational theory can include curves of products,

technology and capital functioning. Interacting in time, they define the aggregate efficiency of economic systems (enterprises, etc.) functioning.

The process of updating and dispersing knowledge also stimulates updating marketing relations in various areas of business. New knowledge contributes to the appearance of new products and/or technologies of their manufacturing. In their turn, they can require updating of the production in the form of refitting or re-equipment, expanding or narrowing production spaces, changing suppliers or their competences. Transformations are also required in organizing the distribution of new products. They are related to both the peculiarities of the product itself and the necessity to enter new distribution markets. Consequently, it can lead to changing marketing relations and thus to the necessity in transforming the organizational structure of interrelation subjects.

The analysis of the theory and practice of the entrepreneurship development allows to reveal all variants of the impact of new technologies on changes of marketing relations and organizational forms of the interrelation between business units in time. In case of the worst variant of the development, a temporary period of the marketing relations development occurs. It is called as  $\lambda$ -delay ( $[\lambda]$ -delay), Figure 3 (Moiseeva et al., 2015). It occurs due to the delay of the information required for changing the structure of interrelation because of the indefiniteness (at the moment of a new technology rise) of distribution markets, channels, ways of merchandise flow and products distribution, organization of sales support (service, logistics). As a consequence, there are breakdowns between FC that also precede a new technology.

The earlier the FC of new relations starts, the more opportunities it gets for accelerating technological development of the firm through decreasing the distance between curves related to technologies FC and increase in the frequency of their updating (its consequence is the acceleration of outputting new highly technological products to the market).

### 3. MARKETING ACTIVITY AND INNOVATIONAL DEVELOPMENT

Various forms of the interrelation between systems and their components increase the complexity of estimating and selecting the best strategy to maintain or strengthen the marketing activity, particularly as market situations are often unpredictable. The problems of marketing activity and innovational development become especially important under the conditions of the network interaction of systems that takes place in the contemporary market economy. There is an issue about the necessity and possibility to create the mechanism of coordination or coherence of economic agents' actions for the purpose of obtaining the maximum use from each of them (or their communication) in order to ensure the integrity and working capacity of economic and technical systems during their interrelation.

The marketing activity depends on many factors. According to the researches, it has not been fully studied, because it touches

on many theories that come into conflict with the reality and with one another. Under the conditions of “informational chaos,” when people speak about different phenomena by using the same words and about the same phenomena by using different words, the situation ravel so much that even the most perfect mathematical calculations cannot put some clarity into it.

Traditionally the chain of defining the cost was realized within the firm from creating a new product idea to introducing it to the target markets with subsequent after-sale service. Herewith, all developments inside the form were classified.

Such conservative model existed everywhere by the end of the XX century. However, the development of science and technology led to the increase in expenses for technological developments subject to simultaneous decrease in the FC of innovational products and the possibility to get the benefit from investments made in innovations. From the marketing expert’s point of view, the long-term component of goods novelty decreased. At the same time the access to knowledge about new technologies and new market opportunities became more complicated. Consequently, expenses for research and technological development decreased, and fundamental researches were replaced by applied developments. It resulted in the occurrence of the new innovations (NI) concept (Moiseeva et al., 2015; Franz and Lamberg, 2008).

While scientific and technological progress accelerates, it increases the requirements to business decisions to be made and performed

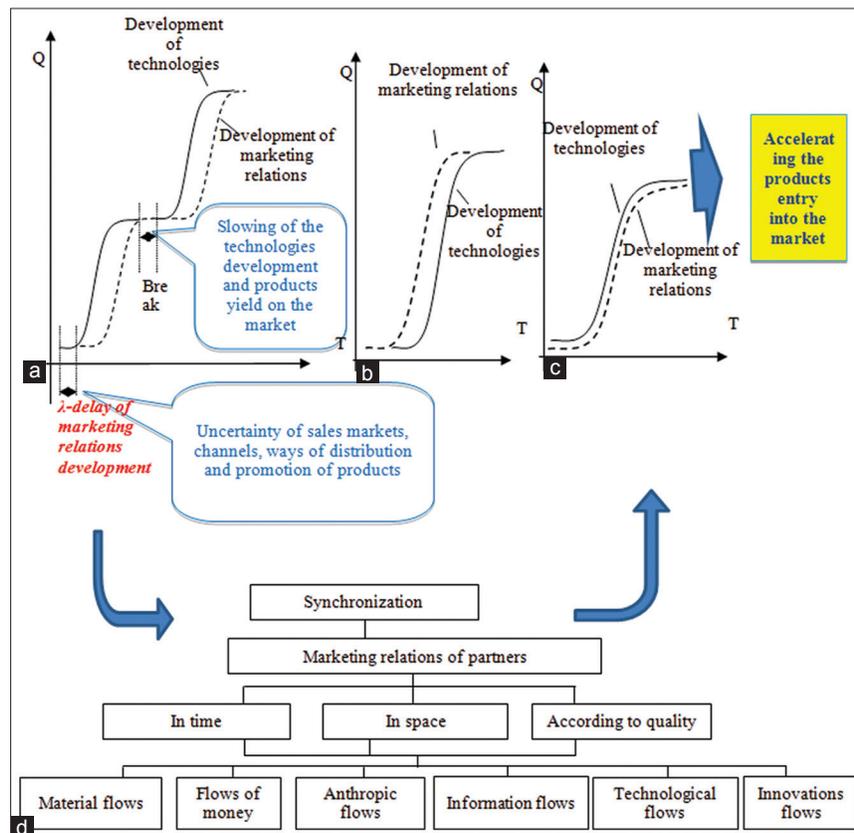
under conditions of stiff restrictions that mainly define the zone of the company marketing activity (Chesbrough, 2008).

In this transient period the role of marketing is unique and twofold: On the micro level this is a tool for placing the enterprise in the formed market environment and a means of investments attraction; and on the macro level this is a tool of the market environment.

Imposing the effect of factors of internal and external environment contributed to the occurrence of risk situations that cause insupportable losses. It is known that in order to decrease market risks, various tools can be used including contemporary marketing technologies (behavior in the competitive environment, forming the commodity and price policy, products allocation and promotion policy, etc.) (Kotler and Keller, 2014). The level and efficiency of using these technologies are defined by the infrastructure and combination of internal characteristics of the enterprise that is reflected in the level of marketing activity.

Every existing marketing system aims to increase the marketing activity to ensure successive growth of its qualitative level and maintain competitiveness. It means that it must regularly or continuously develop. The development of the system assumes its aggregated transformations related to updating the methodological basis and technological basis, changing of organizational structures of services, developing the output of brand new products, etc. Final results of the marketing systems development are expressed in increasing the level of the quality of fulfilling marketing functions

**Figure 3:** Development of marketing relations and technologies. Variant of marketing relations delay in regard to technologies development (a); variant of advancing the development of marketing relations in regard to technologies development (b); variant of synchronous development of technologies and marketing relations (c); basic directions of synchronizing marketing relations (d)



and elements of marketing “mix” in order to ensure market stability of systems including production relations. The necessity to develop arises in case of conflict between the current system and growing needs of the products consumers as well as terms and conditions of competitiveness on the market (Enkel et al., 2009).

Marketing activity of the firm is a multifactorial indicator that shows the directions of marketing investments, level of marketing potential, quality of the applied strategy of competitiveness and marketing “mix” for the definite period (Moiseeva et al., 2015).

In the generalized form the indicator of the marketing activity is as follows:

$$I_{ma} = f(ME, MP, SQ, MMQ)$$

Where  $I_{ma}$  is the indicator of the firm marketing activity,  $ME$  is marketing expenses of the firm,  $MP$  is the marketing potential of the firm,  $SQ$  is the quality of the strategy of the firm competitiveness,  $MMQ$  is the quality of the marketing “mix” of the firm.

In order to strengthen the impact of positive components of the marketing activity, enterprises can use various mechanisms - from separate efficient methods to organize work and technologies to considerable functional and structural transformations. They can touch on specific functions when the structure of marketing works at enterprises is changed. A more complicated variant takes place when new organizational and economical forms of several enterprises' interaction are introduced. They allow enterprises not only to survive under conditions of competitiveness but also ensure economic growth.

The marketing activity is an accelerator of the innovation activity that has its own sources and measuring instruments.

#### **4. METHODOLOGICAL BASIS OF ESTIMATING INNOVATION ACTIVITY AND ITS IMPACT ON ECONOMIC INDICATORS OF THE HIGH TECHNOLOGY COMPANY**

The innovational process is a component of the scientific and technical progress. It is organically built in the mechanism of developing commodity-money relations. Such components of this mechanism as competitiveness, manufacturer, consumer and state are in the constantly changing contradictory interdependence. The implementation of the process related to updating science-driven products is especially difficult.

When developing the mechanism of managing the innovation activity of high technology companies, the following basic methodological provisions are taken into account:

Innovational development is characterized by a periodical change of models, series, and generations of equipment, devices, and technologies. It leads to updating the product line of the

manufactured products. Objects of innovations differ in terms of fulfilling the innovational cycle, level of the complexity of development objects and level of the readiness to their perception by both the manufacturer and the consumer.

Thus, innovational development is performed under conditions of high indefiniteness. It must be taken into account in the mechanism related to planning the activity of high technology companies.

In every target period the company outputs series products (current activity) and develops new products (development), i.e., it simultaneously fulfills two major functions: It provides the company paying capacity due to series production and creates the added value when outputting innovations.

In order to fulfill these functions, it is necessary to comply with economic proportions of allocating production capacity for outputting series and new products, i.e., to plan reasonable (rational) tempos of innovation activity to ensure stable development.

In case of updating products, economic balance is violated and in the definite period the production system transfers to the unbalanced state. It leads to a decrease in the company financial stability. It means that during the development period conflicts arise between the flow of changes made in the system and its aspiration to stability and integrity. This circumstance must take into account the mechanism related to managing the innovation activity (Aniskin et al., 2015).

Production updating like any transient process is characterized by

- Production randomness,
- Dynamism of changes of its state,
- Instability of producing technological parameters in the period of assimilation,
- Increase in the level of production expenses,
- Social and psychological discomfort of personnel when assimilating the output of new products.

Speed of production depends on the level of economical efficiency of the current and new technologies and tempos of their development. It means that the less the profitability from series products is and the higher the tempo of decreasing expenses for producing innovational products is, the quicker the period of assimilating the output of new products finishes.

Under conditions of high dynamism and indefiniteness of external environment and growth of the companies' innovation activity, it is necessary to form a special mechanism related to managing the innovational cycle of creating new products.

In order to make decisions when planning a level of the innovation activity, it is necessary to take into account the enumerated methodological peculiarities.

The following methodology is offered in order to form an economic model of estimating the level of the innovation activity.

Key indicators that characterize the innovation activity are selected. Key indicators must be crucial, independent and relevant.

Such indicators may include:

- Coefficient of products update, i.e., a share of new products ( $q_n$ ) in the general list of the manufactured products ( $l$ ), i.e.,

$$K_{upd} = \frac{q_n}{l}$$

- Coefficient of the used technologies progressiveness (production, informational, organizational and management);
- Coefficient of the intensity of assimilating new products is characterized by the relation of the number of types of assimilated products ( $n_{assim}$ ) to the annual period in months ( $K_{assim} = n_{assim}/12$ ). This indicator is used in case of comparative analysis of high technology companies and planning proper tempos of updating. For example, the average tempo of updating in one company is  $K_{assim} = 2$  products/month, while in another company it is  $K_{assim} = 0.5$  products/month.

This coefficient characterizes the level of the innovational potential and readiness of the company to develop.

- Share of investment expenses in relation to the aggregate volume of sales. This share achieves 7-11% for high technology companies.

Index of relevant change is defined for every key indicator. This is a relation of the indicator of the target period to the base one (report for the previous period). For example, the base value of the updating coefficient for the previous period was  $K_{upd} = 0.15$  (or 15% of new products in the general list of the manufactured products), and the target indicator in the reporting period will be 0.2. In this case the updating period will be

$$I_{upd} = \frac{0.2}{0.15} = 1.33$$

that characterizes the growth of products updating by 33%.

General index of innovation activity is defined by multiplying indexes of key indicators change ( $I_i$ ), i.e.,

$$I_{IN} = \prod_{i=1}^k I_i \begin{cases} > 1 - \text{Increase in activity} \\ = 1 - \text{Maintaining tempos of development} \\ < 1 - \text{Decreasing tempos of activity} \end{cases}$$

Index of innovation activity characterizes the general state of this kind of the company activity for the definite period. Elements of the general index specify the contribution of every component in the general value that will ensure the target focus of management solutions (Aniskin, 2015).

Managing marketing activity of the company is as important, because the appearance of a great number of innovational products requires ensuring the readiness of the market to consume new products, otherwise the process of innovations commercialization and investments payback becomes difficult.

## 5. PECULIARITIES OF ESTIMATING MARKETING ACTIVITY AS PREREQUISITE OF INNOVATIONS COMMERCIALIZATION

According to the economic content, to some extent the notion “marketing activity” of the firm is close to the notion “firm competitive status” (FCS) as interpreted by Ansoff, because he considers FCS, being the position of the firm in competitiveness, as a specific measuring instrument of the firm state on the market (Ansoff, 2011). Marketing activity of the firm as a comprehensive characteristic of the enterprise behavior in the competitive environment reflects the level of flexibility and the level of using its potential; it also defines the correlation of actual and base productivity of using the firm resources (Moiseeva et al., 2011).

Similarly to the formula offered by Ansoff (Ansoff, 2011), in order to define the marketing activity of the enterprise, it is possible to use the additive model, where actual values of the marketing activity factors are correlated to their optimal values. Herewith, the factor of the level of marketing expenses is presented as profitability of marketing investments:

$$I_{ma} = 0.25 \left( \frac{ME_{f_t} - ME_c}{ME_{opt_t} - M\beta_{opt_t}} + \frac{MP_{f_t}}{MP_{opt_t}} + \frac{SQ_{f_t}}{SQ_{opt_t}} + \frac{MMQ_{f_t}}{MMQ_{opt_t}} \right)$$

where  $I_{ma}$  is the indicator of the firm marketing activity in the period of time  $t$ ,  $ME_{f_t}$  is an actual value of the firm marketing expenses in the period of time  $t$ ,  $ME_c$  is a critical point of the volume of marketing expenses that borders with the profits and losses and shows that the volume of marketing expenses below it does not lead to profits,  $ME_{opt_t}$  is a point of optimal volume of marketing expenses, after which the increase in marketing expenses leads to the profit decrease,  $MP_{f_t}$  is an actual value of the firm marketing potential in the period of time  $t$ ,  $MP_{opt_t}$  is an optimal value of the marketing potential,  $SQ_{f_t}$  is an actual value of the quality of the firm strategy as a component of the firm potential in the period of time  $t$ ,  $SQ_{opt_t}$  is an optimal value of the quality of the firm strategy as a component of the potential,  $MMQ_{f_t}$  is an actual value of the quality of the marketing “mix” of the firm in the period of time  $t$ , and  $MMQ_{opt_t}$  is an optimal value of the quality of the marketing “mix.”

The range of possible values  $I_{ma}$  is analyzed according to the levels whose gradations can include the values of ranges offered by Ansoff (Ansoff, 2011) for the additive model FCS:  $I_{ma} \geq 0.7$  - high activity,  $I_{ma} \geq 0.5$  - medium activity,  $I_{ma} \leq 0.4$  - low activity.

The marketing activity of the firm is not a constant. It reflects the reaction of the firm to the changes that take place on various levels: In economy, industry, firm, and it has a cyclic character of development (Schneider Deters, 2003). Cycles of the macro-environment influence the development of the firm and industry as a whole and must be taken into account when defining the required level of the marketing activity and investments in marketing.

When forecasting the level of the marketing activity, it is necessary to take into account the availability of lag in time between investments in marketing and their return (Amit et al., 2010). The effect of the investments multiplier assumes the delay in regulating the demand in relation to investments. Investments (including marketing) are minimum when the volume of demand achieves the minimum (in the period of booms), and maximum in the periods of slowdown. These investments initiate the growth of the marketing activity according to dynamics that coincides with the functions of demand and return of investments.

Thus, the marketing activity becomes not only the object of management but also a sort of indicator of the firm development in the innovational environment.

## 6. CONCLUSION

1. Strong interrelation of innovational and marketing problems in contemporary business systems imposes the necessity of their joint consideration
2. The diversity of the used tools and methodological developments allows to select them for specific conditions depending on the complexity of the arising problems
3. System viewing of business activity as a response to the disturbing impact of the business environment allows to expand the opportunities of adapting current science-driven production and marketing organizations to changes
4. In the process of the research, we formed the conditions and defined the restrictions required for developing the mechanism of managing the innovation and marketing activity in the process of developing high technology companies
5. In order to form the concept of managing the innovational development of a high technology company on the basis of the regulation of innovational and marketing potential, it is necessary to further specify developments and specify methodological materials in the context of changes.

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