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GROUNDING OF THE CONTROLLING MECHANISM IN THE MANAGEMENT OF ENTERPRISE POTENTIAL DEVELOPMENT

The article presents guidelines as for the formation of the controlling mechanism in innovation activity activation cycles and the formation of industrial enterprise potential development programs. Proposed the understanding of the enterprise potential development and grounded the grouping of controlled parameters considering the level of enterprises' innovative capabilities. The strategic matrix of indicators' determination, establishing monitoring parameters and features of building the controlling mechanism is presented.

Keywords: Controlling, innovative development, potential of enterprise, management mechanism, strategic positioning.

Литвиненко А.О. ОБГРУНТУВАННЯ МЕХАНІЗМУ КОНТРОЛІНГУ В УПРАВЛІННІ РОЗВИТКОМ ПОТЕНЦІАЛУ ПІДПРИЄМСТВА

В статті представлено методичні рекомендації щодо формування механізму контролінгу в циклах активізації інноваційної діяльності та формування програм розвитку потенціалу підприємства. Запропоновано розуміння потенціалу розвитку підприємства та обґрунтовано групування підконтрольних показників з оглядом на рівень інноваційної спроможності підприємства. Представлено стратегічну матрицю визначення складу показників, встановлення параметрів моніторингу та особливостей формування механізму контролінгу.

Ключові слова: контролінг, інноваційний розвиток, потенціал підприємства, механізм управління, стратегічне позиціонування.

Литвиненко А.А. ОБОСНОВАНИЕ МЕХАНИЗМА КОНТРОЛЛИНГА В УПРАВЛЕНИИ РАЗВИТИЕМ ПОТЕНЦИАЛА ПРЕДПРИЯТИЯ

В статье представлены методические рекомендации по формированию механизма контроллинга в рамках активизации инновационной деятельности и формирования программы развития потенциала предприятия. Предложено понимание потенциала развития и обоснованно группирование подконтрольных показателей с учетом уровня инновационной способности предприятия. Представлена стратегическая матрица определения состава показателей, задания параметров мониторинга и раскрытия особенностей формирования механизма контроллинга.

Ключевые слова: контроллинг, инновационное развитие, потенциал предприятия, механизм управления, стратегическое позиционирование

Statement of the problem. Transformation conditions of the national economic system functioning require the industrial enterprises to enhance their adaptive capacity, transfer management on the strategic framework and improve the validity of the development programs. The essential part of the development programs is the strategy of maximizing the existing potential. Only the constant development of processes of support and secure controllability can provide the success to the domestic producers in the competition and improve the sustainability of their market positions. However, there are a number of obstacles to achieve it. Firstly, the programs of development should be focused on the innovative basis. Secondly, it is very difficult to control the implementation of the development programs, although the future success of an enterprise in the area of its own potential realization depends on the quality of its implementation. So, there are problems connected with forming such a mechanism of controlling that provides the implementation of the program of innovative development of an enterprise potential and conduces to establish the most rational parameters.

Analysis of recent research and publications. The issue of controlling organizing and conducting is closely submitted in the economic literature. In the present studies different approaches to the term "controlling" are considered (as a rule, German [1] and more advanced, American model of controlling [2, 3]), features of goals and objectives of controlling are defined (here in the most cases the distribution between operational and strategic controlling is presented [4, 5]), a number of classifications of controlling (mostly controlling is differentiated as a subject of activity, time of implementation, areas of activities and process of conduction [6, 7]) are discussed. We are going to focus on definition "controlling" provided by R. Mann [8] as "systems of managing the process of achieving the ultimate goals and results of activity".

To accept this definition it is necessary to expand it. Firstly, in the direction of specifying capabilities it is important to investigate innovative transformation of the enterprise. Secondly, when creating a structure of controlled parameters, the possibility to track innovative transformations that have to accompany the development processes should be discussed beforehand. Thirdly, the structure of indicators should disclose the enterprise capability to realize its own potential.

Emphasis on the unsolved aspects of the problem. The theoretical basis targeting the system of controlling to develop the enterprise potential is made by a numerical number of papers that include consideration of the enterprise potential through: the ability to achieve strategic or operational objectives [9, p. 88] (the system of controlling here provides support to implement the existing competencies of the enterprise); the set of the enterprise opportunities [10, p. 52]; the accessibility to use relevant resources [11] (controlling of the sufficiency in terms of element typology to implement the goals of the enterprise); the ability to meet the needs according to external conditions [12, p. 24] (controlling as overcoming the strategic gaps). However, by the majority of these sources it is recommended to transfer the development of the enterprise on an innovative basis. Whereas not all entities are capable to develop innovatively, it is necessary to differentiate

the structure of controlled parameters and define the features of controlling according to the level of the enterprise susceptibility to implement innovations.

The purpose of the article is to ground the features to form and use the mechanism of controlling in the processes of the enterprise potential development.

Presenting the main material. On the basis of the goals implementation the hypothesis is assigned that the establishment of the controlling mechanism for innovation development of the enterprise potential should be based on determining the enterprise susceptibility for transformational changes and innovations. Such innovations have to use the resources available at the enterprise (it is equivalent to the concept of resource to determine potential) and the technology of their transformation (it corresponds to the competency approach to determine potential). So, to introduce the possibility of quantitative evaluation of the potential let's review it in terms of the enterprises material and technical base development. Its indicators of evaluation are presented in the literature in detail [13]. The innovative development should improve indicators of the enterprise performance. So, the development of the enterprise potential is determined in coordinates of the enterprise ability to transform the existing elements of the material and technical base and the level of using the enterprise innovation potential.

Focusing on the resource paradigm to define the potential allows correlating the mechanism of controlling with the managing mechanism to develop the enterprise material and technical base (MMDEMTB), which has already been considered in details by the

Table 1

Indicators to determine the innovative susceptibility of enterprise [23]

Group	Structure of indicators and calculation features	Characteristic
EIS1j – sufficiency of financial support for innovation activity	EIS11 – the degree to support innovative development of the enterprise with financial resources; EIS12 – the annual budget for new developments; EIS13 – the share of budget expenditures on new developments in the operational budget of the enterprise; EIS14 – changing in the relative growth of the market value of the company compared to the relative growth in selected market area management; EIS15 – the share of contractors who finds the enterprise innovative; EIS16 – the level of usage of prosecuted and own resources to perform innovative tasks; EIS 17 – the share of innovation expenditure in total expenditure.	Innovating requires the diversion of funds from the current cycle of operation. Accordingly, only available opportunistic funds indicate the ability to change.
EIS 2j – system-wide susceptibility	EIS21 – diversification of production; EIS22 – type of reaction to changes in the environment; EIS23 – attracting new financial resources to implement innovative tasks; EIS24 – the level of social development; EIS25 – technology policy and enterprise culture; EIS26 – focus on implementation of strategies for permanent improvements; EIS27 – the level of competitiveness of innovative products in domestic and foreign markets; ICП28 – stability of functioning.	Parameters that reflect the quality characteristics of perception of innovation achievements. They are identified by the selected strategic imperatives of development.
EIS3j – susceptibility of the technological system	EIS31 – time passed since initiating innovations to launch an innovative project; EIS32 – a part of annual production recovery; EIS33 – a part of new exports in total turnover of commercial products (CP); EIS34 – a part of products improved during the last three years in total turnover of CP; EIS35 – the level of equipping the enterprise divisions with technological equipment; EIS36 – the annual rate of recovery the equipment; EIS37 – research intensity of products; EIS38 – variability of technology in the life cycle demand; EIS39 – scientific and technical level of the system.	Reflect the technological level of the enterprise development and the enterprise ability to change the phase of technological structure. Distribution of technological structure according to the production structures
EIS4j – personnel susceptibility to the implementation of changes	EIS41 – system parameters to motivate personnel; EIS42 – motivation of engineering creativity; EIS43 – a part of technical officers and researchers in the total number of the enterprise employees; EIS44 – a part of employees with Ph.D. degree; the average age of engineers and technicians and researchers; EIS45 – staff turnover in the innovation sphere; EIS46 – the level of training for the employees of innovation sphere; EIS47 –intensity of generation of successful innovative ideas.	Personnel focusing on technological innovation and readiness to the innovation process (readiness to overcome the difficulties of mastering innovations).
EIS5j – enterprise information susceptibility	EIS51 – readiness of the personnel regularly collect, study and use obtained information; EIS52 –enterprises' involvement in scientific research integration associations; EIS53 – volumes of innovation cooperation; EIS54 – readiness to engage the competitors' experience; EIS55 – a part of acquired (received) rights to patents from other enterprises; EIS56 –availability of situational base of knowledge and rules to fix experience; EIS57 – the share of spending on research involvement of the other companies; EIS58 – spending on conducting competitive intelligence and benchmarking; EIS59 – open exchange of information with subcontractors.	Susceptibility to innovations depends on the ability to receive, involve and handle significant amounts of information on the development of scientific and technological progress and competitor.
EIS6j – development of creative potential (innovation ability)	EIS61 – amount of obtained patents; EIS62 – amount of rational proposals (innovative ideas) received from employees; EIS63 – proportion of implemented ideas; EIS64 – time from the idea generation to its implementation; EIS65 – the level of employees' skill and experience involved in the innovation process; EIS66 – annual increase in the number of scientific publications per employee; EIS67 – a part of objects of industrial and intellectual property, with legal protection, their numbers in the general; EIS68 – a part of the rights to patents sold by the other companies.	Reflects the parameters to ensure maximum recovery rate of product innovation and technology through skills, knowledge and skills of the enterprise personnel.
EIS7j – structural susceptibility to transformation	EIS71 – probable assessment of evolutionary transitions; EIS72 – social protection of employees; EIS73 – the resistance level of the enterprise employees to planned changes; EIS74 – compliance level of direct control actions to planned changes; EIS75 – integrated management mechanism; EIS76 –the level of unity of perceptions about usefulness of innovation; EIS77 – redundancy links in the organizational structure; EIS78 – the degree of duplication of administrative functions.	Openness of organizational structure to innovative transformation (openness not requires the significant modifications of the other parts of the system.

authors [14, 15, 16]. Thus both mechanisms are considered as a set of instruments and tools to implement managerial influence, provided with the appropriate support. So the question is to define instruments and indicators that provide functioning as the mechanism of controlling, so the MMDEMTB is updated. Hereby it is necessary to consider the transformational nature of development processes.

Unfortunately, there are quite many interpretations of the enterprise innovation susceptibility. EIS is considered as "preparedness to adopt technology" [17], "ability to implement innovative projects" [18], "ability to increase innovative features of products" [19]. These definitions are mainly focused on the enterprise as a whole. According to the purpose of the study, potential and EMTB susceptibility to innovation transformations should be considered. Accordingly, focused on O. M. Yastremska's findings [20], let's consider the innovative susceptibility of MMDMTB in terms of cycles as "readiness and capability of the enterprise to transform EMTB parameters and conditions to use through innovation".

Analysis of the literature on issues of the innovative development [17, 21, 22], allows identifying a number of areas of such an evaluation. The corresponding list of indicators is presented in table 1.

On the other hand it is necessary to consider that the defining characteristic of the capability to implement innovations is innovation potential of the enterprise. Herewith, MMDMTB during its operation has to use the level of innovative potential usage (IPU) and the definition of its shares which accounts for the elements of EMTB. This capability is based on the scorecard formed on the basis of papers [19, 23, 24] in the table 2.

So, the MMDMTB work should determine the level of using the innovative potential of EMTB. Hereby we should provide the whole modification of the indicators given in table 2. Moreover, to the number of enterprises MMDMTB has to consider not innovative susceptibility but only the ability of the enterprise to transformations. It also requires modification of parameters from the tab. 1.

While establishing the information support of MMDMTB work, the structure of quality indicators forming elements of EMTB according to criterion for the possibility of obtaining such elements from contractors must be differentiated. In this case, the work of MMDMTB needs some changes to establish its information support.

The author's proposal hereby is, firstly, the differentiation of indicators for monitoring depending on the parameters of the enterprises' strategic behaviour and the level of EMTB potential. In this case, it is proposed to divide the indicators controlled by the controlling mechanism and MMDMTB into two groups: compulsory and optional. The structure of compulsory indicators corresponds to the structure of quality indicators of processes development accepted at the enterprise. Structure of optional indicators is determined by the parameters of the enterprise strategic behaviour according to table 3.

Table 2

Indicators of evaluation of the efficiency of using the innovations and disclosure of the enterprise innovative potential (published in [23])

Group of indicator	Group structure and the features of calculation	Characteristic
IPU1j – overall of availability and efficiency of using the innovative potential	IPU11 – the share of innovative products in total sales; IPU12 –additional income from sales of a new product; IPU13 – added value provided to the consumers through innovation; IPU14 – reduction of production costs from innovations' implementation; IPU15 – additional revenue from taking new market segments with innovative product.	Parameters of innovations as a key resource that provides competitive advantage and allows occupying the leading position in the market
IPU2j – efficiency of using the potential in terms of implementing changes of technological character	IPU21 – the share of parameters of technological system and IPU22 – logistics chain covered with innovations; IPU23 –indicators of fixed assets conditions (rate of wear and update); IPU24 – return on investments; IPU25 – volume of IP.	Existing and hidden opportunities to attract and produce ideas in technological renewal and development
IPU3j – efficiency of using the potential in terms of implementation of organizational changes	IPU31 – income and expenses to create conditions of perception innovation; IPU32 – the degree of scientific and technical experts' needs satisfaction in the required information; IPU33 – the degree of compliance with existing information funds and innovation objectives of the enterprise.	Ability for organizational restructuring to maximize the effect of introducing innovations
IPU4j – efficiency of using the potential in terms of implementation of social changes	IPU41 – efficiency of spending on social development; IPU42 – productivity; IPU43 – the amount of innovative ideas, suggested by employees; IPU44 – capital-labour; IPU45 – the share of realized innovative ideas; IPU46 – efficiency impact of spending on motivation.	Parameter of institutional development. Efficiency of standards and rules of new knowledge commercialization
IPU5j – efficiency of using potential in terms of implementation of economic changes	IPU51 – financial result from selling innovations; IPU52 – innovation investment return and IPU53 – discounted value (NPV) of realized and planned projects of transformation; IPU54 – dynamics of net cash flow; IPU55 – the ratio of self-financing of investment	Combination of resources that can be involved and used to expand the reproduction of production factors

Table 3

Logic to select the optional controlled indicators for monitoring

Areas to control development processes	*ISP – low* *IPU – low*	*ISP – high* *IPU – low*	*ISP – low* *IPU – high*	*ISP – high* *IPU – high*
Control over efficiency of potential using (choosing among {IPU})	Efficiency to disclosure the social component of the EMTB	Indicators of efficiency to ground economic changes	Efficiency to disclosure the organizational component of the EMTB	Innovative potential using and technological changes
Control over capabilities to react to changes (choosing among {IPU})	Personnel's susceptibility to the program of changes	Development of creative potential in MMDMTB operation	Structural susceptibility of the enterprise	Sufficient support for innovation activity

Table 4

Generalization of approaches to organizational and structural MMDMTB construction

Type of organizational MMDMTB construction	Characteristic, possible disadvantages and features of implementing the types of organizational construction of the managing mechanism of the development of EMTB	Competitive behaviour of the enterprise in the area of implementation of the existing potential
Trust department to coordinate horizontal links joining the objects of labour	Complexity to perform integrating function and impossibility to solve the whole range of management tasks for transformational changes in MMDMTB	Providing or creative strategic behaviour regarding to the potential implementation
Separating and empowering one of the departments represented in the structure of the enterprise	Complexity to coordinate guiding influences (department can be competent, for example, in the issues to develop means of labour and interpret incorrectly the technological requirements)	Providing or adaptive strategic behaviour in the area of potential implementation
Creating a special department to manage the development of EMTB	All the advantages and disadvantages of a centralized approach. Improving coordination to switch to the new coordination of potential elements	Adaptive competitive behaviour
"Master" (in terms of ISO 9000) one of the processes gets the authority to manage the development of EMTB	Decentralization of EMTB development within individual processes. As a rule, it is used for address implementation of innovations. Limited coverage for development processes.	Providing or creative strategic behaviour regarding to the potential implementation
Project or matrix structure, which implements functions	Union of competent employees in accordance with the priority of certain aspects of development the existing potential.	Creative competitive behaviour

As it is possible to see from tab. 3, it regulates involving in the system of information support for MMDMTB operation. The advantage of this proposal is to minimize MMDMTB operational costs.

The integration of indicators to the mechanism of controlling allows creating the contours of the management of innovative development of the enterprise potential. However, the mechanism of controlling and joining mechanism of managing the development of the enterprise material and technical base require the organizational design. Generalization of the existing studies allows determining the structure of MMDMTB. They are described in the aggregated form in the table 4. The difference between the proposals is contained in the introduction of conditions to choose the type of MMDMTB structure and connect these conditions with the parameters of the strategic behaviour of the enterprise in the area of implementation of the development of EMTB potential.

Conclusions. The article presents guidelines as for the formation of the controlling mechanism in activation cycles of the enterprise innovation activities. It is grounded the understanding of the enterprise potential development. However, it is necessary to continue the further research to develop specific indicators within the groups of controlled parameters involved in the mechanism of controlling.

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