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

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

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

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.*

Statement of the problem. Transformation conditions for 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 processes 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 programs of development, although the future success of the enterprise in the area of its own potential realization depends on the quality of its implementation. So, the problems connected with forming such mechanism of controlling that provides the implementation of the program of the innovative development of the 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]), the 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 the 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 the consideration of the enterprise potential through: the ability to achieve strategic or operational objectives [9, p. 88] (the system of controlling here provides the 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 external conditions [12, p. 24] (controlling as overcoming the strategic gaps). However, the majority of these sources are 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. The basis of the goals implementation the hypothesis is assigned that the establishment of the mechanism of controlling for innovation development of the enterprise potential should be based on the basis of determining the enterprise susceptibility for transformational changes and innovations. Such innovations have to use the resources available in 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 the 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 to correlate 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 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 take 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], "the 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, the susceptibility of potential and EMTB to innovation transformations should be considered. Accordingly, focused on O. M. Yastremska's findings [20], let's consider the innovative susceptibility of the 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 to identify a number of areas of such evaluation. The corresponding list of indicators is presented in table 1.

Table 1

The indicators to determine the innovative susceptibility of enterprise [23]

Group	The structure of indicators and calculation features	Characteristic
EIS1j – the sufficiency of financial support for innovation activity	EIS11 – a 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 – the system-wide susceptibility	EIS21 – the diversification of production; EIS22 – the 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 the enterprise culture; EIS26 – focus on implementation of strategies for permanent improvements; EIS27 – the level of competitiveness of innovative products in domestic and foreign markets; ICPI28 – 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 – the 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 the products; EIS38 – variability of the 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 production structures.
EIS4j – the 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 – the staff turnover in the innovation sphere; EIS46 – the level of training for the employees of innovation sphere; EIS47 –the 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).

<p>EIS5j – the enterprise information susceptibility</p>	<p>EIS51 – readiness of the personnel regularly collect, study and use obtained information; EIS52 – the 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 the other enterprises; EIS56 – the 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.</p>	<p>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.</p>
<p>EIS6j – the development of creative potential (innovation ability)</p>	<p>EIS61 – the amount of obtained patents; EIS62 – the amount of rational proposals (innovative ideas) received from employees; EIS63 – the 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 – an 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 the other companies.</p>	<p>Reflects the parameters to ensure maximum recovery rate of product innovation and technology through skills, knowledge and skills of the enterprise personnel</p>
<p>EIS7j – structural susceptibility to transformation</p>	<p>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.</p>	<p>Openness of organizational structure to innovative transformation (openness is not required the significant modifications of the other parts of the system.</p>

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.

Table 2

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

Group of indicator	The group structure and the features of calculation	Characteristic
IPU1j – the overall of availability and efficiency of using the innovative potential	IPU11 – the share of the innovative products in total sales; IPU12 – the additional income from sales of the 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.	The parameters of innovations as a key resource that provides competitive advantage and allows to occupy the leading position in the market
IPU2j – the 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 – the 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 – the 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.	The ability for organizational restructuring to maximize the effect of introducing innovations
IPU4j – the efficiency of using the potential in terms of implementation of social changes	IPU41 – the efficiency from 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 – the efficiency impact from spending on motivation.	The parameter of institutional development. The efficiency of standards and rules of commercialization of new knowledge

<p>IPU5j – the efficiency of using potential in terms of implementation of economic changes</p>	<p>IPU51 – the financial result from selling innovations; IPU52 – innovation investment return and IPU53 – discounted value (NPV) by realized and planned projects of transformation; IPU54 – the dynamics of net cash flow; IPU55 – the ratio of self-financing of investment</p>	<p>The combination of resources that can be involved and used to expand the reproduction of production factors</p>
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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 in the enterprise. Structure of optional indicators is determined by the parameters of the enterprise strategic behaviour according to table 3.

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 logic to select the optional controlled indicators for monitoring

The areas to control the development processes	<i>ISP – low IPU – low</i>	<i>ISP – high IPU – low</i>	<i>ISP – low IPU – high</i>	<i>ISP – high IPU – high</i>
Control on the efficiency of potential using (choosing among {IPU})	The efficiency to disclosure the social component of the EMTB	The indicators of efficiency to ground economic changes	The efficiency to disclosure the organizational component of the EMTB	Innovative potential using and technological changes
Control on the capabilities to react to changes (choosing among {IPU})	Personnel's susceptibility to the program of changes	The development of creative potential in MMDMTB operation	Structural susceptibility of the enterprise	Sufficient support for innovation activity

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 the development of the potential of EMTB.

Table 4

Generalization of approaches to organizational and structural MMDMTB construction

The 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	The 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

contin. Table 4

Separating and empowering one of the departments represented in the structure of the enterprise	The complexity to coordinate guiding influences (the 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 the 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
The project or matrix structure, which implements functions	The union of competent employees in accordance with the priority of certain aspects of development the existing potential.	Creative competitive behaviour

Conclusions. The article presents guidelines as for the formation of the mechanism of controlling 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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