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NAS RK is pleased to announce that Bulletin of NAS RK scientific journal has been accepted for indexing in the Emerging Sources Citation Index, a new edition of Web of Science. Content in this index is under consideration by Clarivate Analytics to be accepted in the Science Citation Index Expanded, the Social Sciences Citation Index, and the Arts & Humanities Citation Index. The quality and depth of content Web of Science offers to researchers, authors, publishers, and institutions sets it apart from other research databases. The inclusion of Bulletin of NAS RK in the Emerging Sources Citation Index demonstrates our dedication to providing the most relevant and influential multidiscipline content to our community.

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НАН РК сообщает, что научный журнал «Вестник НАН РК» был принят для индексирования в Emerging Sources Citation Index, обновленной версии Web of Science. Содержание в этом индексировании находится в стадии рассмотрения компанией Clarivate Analytics для дальнейшего принятия журнала в the Science Citation Index Expanded, the Social Sciences Citation Index и the Arts & Humanities Citation Index. Web of Science предлагает качество и глубину контента для исследователей, авторов, издателей и учреждений. Включение Вестника НАН РК в Emerging Sources Citation Index демонстрирует нашу приверженность к наиболее актуальному и влиятельному мультидисциплинарному контенту для нашего сообщества.

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MANAGEMENT ASPECTS OF CAPITALIZATION IN MODERN CONDITIONS OF ENTERPRISE ACTIVITIES

Abstract. The article presents the results of a critical analysis of scientific positions on the interpretation of the content of capitalization, which were streamlined in the following approaches: process, resource, value, analytical, relational, cognitive. Based on the integration of various research aspects of the definition of capitalization, the authors logic of interpreting its managerial nature has been formed, which is disclosed on the basis of the interrelationship of the set of processes (turning the capabilities of the external environment into enterprise resources, activating resources, productive use of resources, turning cost flows into capital) and objects (organizational abilities, resources, assets), the priority impact on which ensures the growth of business value. The value aspects of capitalization are investigated on the basis of the fundamental value approach, which made it possible to determine systems of critical points and monitoring indicators that signal the state of capital management of enterprises. The results of the implementation of the proposed analytical model of capitalization in the practice of the engineering enterprises of Ukraine are presented. On the basis of assessments of critical points of the strategic level of analysis, the main reasons affecting the dynamics of changes in the value of the studied enterprises are determined. Taking into account the specifics of the development of the business environment in the modern conditions of activity of machine-building enterprises, it was concluded that the value level of capital formation depends on the level of intellectualization and digitalization of production. Within the framework of the new technological paradigm, it is appropriate to develop the machine-building production according to the principles of the Industry 4.0 concept. In accordance with it, changes in the transformation of the way business processes are organized into digital factories are updated, which leads to the acquisition by enterprises of such characteristics as: the rate of customization of reactions to market demands; digital certification; organization of activities on the principles of system engineering, etc.

Keywords: capitalization, fundamental value, machine-building enterprises, VBM-models, economic profit, assets, resources, opportunities, organizational skills.

Relevance. Enterprises capitalization is one of the most popular areas of modern economic study, and its substantive nature is multidimensional and is characterized with interdisciplinary study. The fundamental principles of an enterprise capitalization theory are formed at the intersection of the theories of value, capital and economic growth, and its modern specificity of interpretation is due to transformational changes that occur in the context of post-industrial economy development.

The theoretical basis for the study of the economic nature of capitalization was laid in the scientific works of R. Hilferding [1], K. Marx [2], J. Keynes [3], J. Tobin [4] and further developed in the studies of A. Hrytsenko [5], M. Kozoryz [6], N. Kozyr [7], T. Malova [8], I. Khrystoforova [9] and others. Features of the definition and evaluation of capitalization in modern conditions of enterprise development are presented in the works of I. Bulieiev and N. Briukhovetska [10], V. Bukhanets [11, 12], M. Dedkova [13], I. Smirnova [14], N. Shevchuk [15, 16] and others. The constructive analysis of scientific results in this subject area makes it possible to conclude that the existing theoretical and methodological scientific developments are fundamental and significant. At the same time, the rapid dynamic development of the business environment expands the substantive boundaries of capitalization study, which, in the framework of this article, will be worked out from the point of view of defining its managerial specifics.

Main points. The consolidation of analysis findings of modern scientific and economic publications on the capitalization of enterprises details makes it possible to distinguish the following subject areas of its study:

- capital formation;
- capital formation relations system;
- process of transformation of income into capital;
- process of value formation;
- process of transformation of different types of resources into capital;
- market valuation of an enterprise.

A wide range of substantive contexts in which multidimensional specifics of enterprise capitalization manifest themselves determined the streamlining of existing scientific positions, which are conventionally combined into the following scientific approaches to its study:

– process [10–16], in accordance with which the content of capitalization is considered in the relationship of processes that ensure the transformation of resources into capital, its formation and the increase in the cost of capital;

– resource [5, 17], which considers capitalization as “... a set of multi-level institutional processes and managerial influences that ensure the effective interconnection of economic resources in order to upgrade the reproduction processes” [17]. Such an understanding of capitalization does not change its essence as a process of transformation of resources into capital, but only expands the areas of study and the mechanisms for its growth securing;

– value [5–17]. Unites aspects of studying capitalization as an enterprise value. Under this approach, two areas of study are being developed, where capitalization is considered as a market [20–24] and as a fundamental value [21–25] of enterprise. The commonality of these two areas is manifested in the fact that capitalization has temporal and spatial parameters. The difference is in its content, target setting, mechanisms and forms of realization. That is, we can talk about the contradictions of the content and form of manifestation, their non-identity. However, we are talking about different phenomena: the first is related to the market valuation of fictitious capital, the second is the result of real capital formation;

– the analytical approach is expedient to be distinguished in terms of capitalization definition as a method of valuing the assets of an enterprise “...through income, which is obtained as a result of production and economic activity” [26, p. 89]. Capitalization is also considered as a method of assessing the value of a business based on the income approach;

– the relational approach to capitalization study is associated with the presence of developed institutional mechanisms (the stock market, the banking sector, credit and monetary institutions and public-private partnership institutions) that ensure effective self-regulation of market-type business processes. Besides, the topical issue in this aspect is the study of relations that are associated with the ownership of capital and the appropriation of newly created value, the contradiction between the social nature of production and the private form of appropriating its results;

– cognitive approach to capitalization study is associated with intellectualization of public production trend, which is based on incorporating of knowledge to the processes of transformation of resources, which leads to the replacement of the labour theory of value to the theory of “knowledge value” [27]. The accumulation of intellectual capital becomes a priority in the formation of economic results, which is realized on the basis of the synergistic interconnection between the intellectual component and other types of capital (social, financial, etc.). That is, an intellectualization of all capitalization processes takes place, actualizing the need for their study based on knowledge and anthropocentric models of economic development.

Thus, within the meaningful boundaries of the selected approaches to the study of enterprises capitalization, contextual interpretation of capital is implemented, which is carried out on an interdisciplinary basis and combines methodologies of various areas of economic theory. Synthetic use of the above approaches allows substantiating the author's logic of studying the enterprise capitalization in a managerial aspect, which provides for a continuous targeted impact on capital formation processes and objects, in order to ensure the achievement of an economic result in the form of enterprise value increase.

Based on the generalization of the modern provisions of the theory of enterprise capitalization, its main processes are defined as [5, 11, 13, 28]: transformation of business environment capabilities into enterprise resources, activation of resources, productive use of resources; conversion of value flows into capital flows. Following this logic of capitalization processes, it is advisable to single out the main objects of managerial focus: organizational capabilities, resources and assets of an enterprise.

The focus of managerial influences is directly related to the definition and formalization of economic results, which it is logical to consider as an enterprise value in the aspect of capitalization. But not a market enterprise value, which is traditionally accepted as a criterion for making managerial decisions by Western researchers, but fundamental one. This is due to the fact that the fundamental value is the basis for the formation of the market value, that is its part which is controlled by the actions of the management of enterprises and does not depend on the factors of market pricing.

Fundamental and value approach to managing of enterprise capitalization can be characterized from the point of view of subject-object relations. As a subject of economic relations, an enterprise produces and sells economic benefits, that is, as a form of organization of capital, it is a source of formation and growth of its intrinsic value. As an object, an enterprise is characterized with investment attractiveness for capital investment by other market process participants, which leads to accumulation and, consequently, to an increase in its cost value. From such positions, the subject aspect of fundamental and value management of capitalization is determined by the level of development of organizational abilities, resource asymmetry, and asset performance; the object aspect – by the level of investment attractiveness of an enterprise. The scientific issue of capitalization evaluation in terms of the fundamental and value approach is one of those issues that are not sufficiently and ambiguously covered in modern financial and economic literature. The scientists and practitioners traditionally choose the market value as a criterion of managerial decisions effectiveness in all areas of the enterprise. At the same time, from the point of view of both the content put in the interpretation of the results and the choice of evaluation methods, they usually focus on the fundamental one.

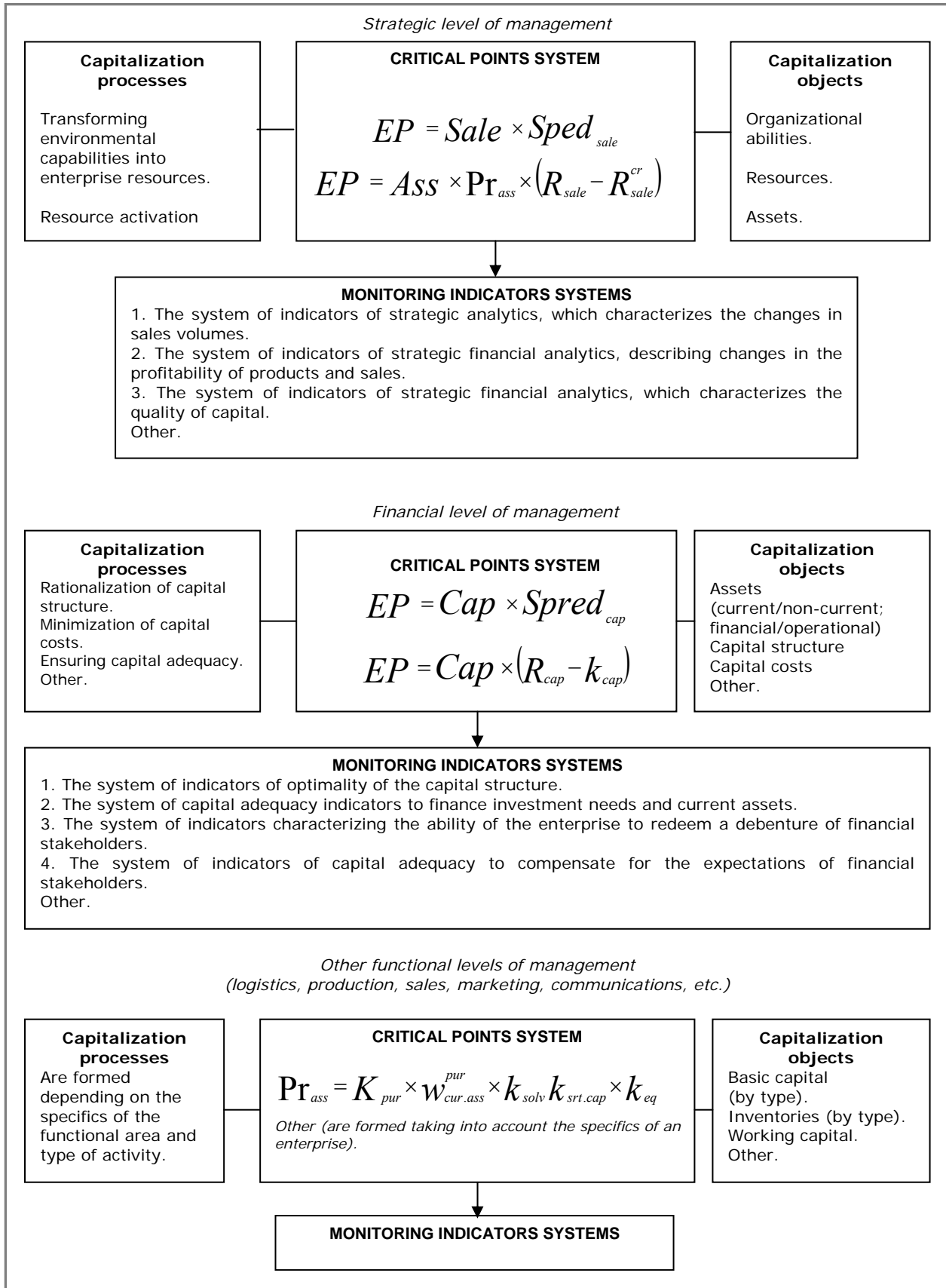
Methodologically, the evaluation of an enterprise fundamental value is carried out on the basis of either the concept of discounting cash flows, or economic profit. Taking into account the possibilities of multi-factor interpretation of the results, the concept of economic profit has a higher analytical potential, is the basis for its choice as a methodological basis for building a managerial business analytics in the substantive framework of this study. In this formulation, the evaluation of an enterprise fundamental value, as a result of capitalization, can be formalized in the following form (formula 1):

$$V_{fund} = NA_{bal} + \sum_{t=1}^n \frac{EP_t}{(1+k)^t}, \quad (1)$$

where V_{fund} is fundamental value; NA_{bal} is net assets balance cost; EP_t is economic profit in the t period; k is discount rate.

The choice of the economic profit measurement model is made by the analyst, based on the availability of a reliable information base and the final needs of the analysis. The main types of analytical value based models (VBM) that can be used in the proposed analytical design (formula 1) are [29–34]: models based on balance sheet values and indicators of Residual Income (RI); Economic Value Added (EVA); cash flow added (CVA) models based on cash flow (Cash Value Added, CVA). The factor interpretation of economic profit makes it possible for the management to determine control critical points and systems of monitoring indicators that are informative from the point of view of implementation of timely, adequate managerial actions aimed at ensuring the growth of the fundamental value of an enterprise. The formalization of the author's logic on capitalization in the system of fundamental value management of an enterprise is presented in figure.

The implementation of the proposed analytical capitalization model was made for machine-building enterprises of Ukraine (machine-building industry-wide as well as for the leaders of Ukrainian machine-building (PJSC Turboatom, PrJSC Novokramatorsk Machine-Building Plant (PrJSC NKMZ)), whose activities are characterized as export-oriented, and the products are known in many countries of the world).



Analytical model of enterprise capitalization: managerial aspect

The machine-building industry is traditionally called the locomotive of the national economy development in Ukraine, while the trends characterizing the functioning of the machine-building industry enterprises are negative. Despite the fact that machine-building has the third ranking position among the total volume of industrial products, the trend of its changes makes it possible to characterize the situation as critical (the corresponding figure was 30.5% in 1990, 10.0% in 2011, 6.1% in 2016). To put this in perspective, in economically developed countries this figure ranges from 30% to 55% [35]). Since 2013, the indicator of the fundamental capitalization of machine-building enterprises has been characterized by a decay dynamic, indicators of equity return spread and sales yield spread have negative values (see table), and the main topical issue, which this situation is connected with, is the competitiveness of Ukrainian machine-building.

Critical points of the strategic level of capitalization of machine-building enterprises of Ukraine in 2011–2016*

Indicators	2011	2012	2013	2014	2015	2016
1. Growth rate (+/-) of fundamental value, % of the previous year						
Machine-building of Ukraine	20.66	12.95	-7.36	-30.93	-38.39	-13.63
PJSC Turboatom	x	22.43	13.98	27.78	46.87	26.94
PrJSC NKMZ	x	0.06	1.97	2.72	26.59	7.51
2. Capital productivity spread, %						
Machine-building of Ukraine	-4.46	-5.27	-9.00	-18.66	-11.34	-3.84
PJSC Turboatom	-1.94	-5.43	-1.29	-3.21	11.12	1.47
PrJSC NKMZ	-22.32	-22.33	-20.10	-17.19	-8.71	-17.43
3. Sales yield spread, %						
Machine-building of Ukraine	-5.73	-6.42	-13.92	-34.20	-19.76	-6.28
PJSC Turboatom	-17.98	-3.64	-13.54	-2.77	-6.99	19.88
PrJSC NKMZ	-18.58	-33.34	-40.85	-32.22	-34.59	-16.13
4. The ratio of the actual level profit margins to the critical ones						
Machine-building of Ukraine	0.62	0.57	0.25	0.00	0.00	0.24
PJSC Turboatom	0.53	0.90	0.64	0.92	0.83	1.49
PrJSC NKMZ	0.43	0.17	0.09	0.21	0.28	0.67
5. Growth rate (+/-) of asset performance, % of the previous year						
Machine-building of Ukraine	23.65	5.49	-21.28	-15.54	5.19	6.57
PJSC Turboatom	-5.40	-24.78	16.79	-1.95	21.95	-18.27
PrJSC NKMZ	-17.63	-18.35	14.09	-20.32	8.71	-3.28
*All indicators are calculated based on the Residual Operating Income model (<i>ReIO</i> -model); x – no data to calculate the indicator.						

Thus, in the sale structure of machine-building products by Ukrainian manufacturers, the products of the third technological mode prevail, which is produced on morally and physically worn-out equipment (physical wear is estimated at 60–80%, and the moral one is over 50 years) [35]. Machine-building production is characterized by a high proportion of production mechanization and critically low innovation-level indicators. The share of research expenditure in the machine-building industry of Ukraine hardly reaches 0.1% of GDP (in the USA; 2.0 - 2.5% of GDP, in EU countries, 3% of GDP). A significant problem for the Ukrainian machine-building enterprises is the loss of the Russian sales market, the dependence on which until 2014 was very high (in 2012, 52% of machine-building products sales (worth \$6.8 billion) were exported to Russia).

A positive trend in changes in fundamental value was characteristic for the leaders of the Ukrainian machine-building, PJSC Turboatom and PrJSC NKMZ, during 2011 – 2016. And although these enterprises generated negative value-added flows due to their profitable activities, net assets balance cost had a dynamic increase, which in general had a positive effect on the resulting value indicator. The ratio of the

actual level profits margin of the implementation to a critical level for PJSC Turboatom was characterized by relatively high values, and in 2016 the company reached a positive value of economic profit. The peculiarity of PJSC Turboatom activity is that it is one of the largest enterprises in the field of manufacturing turbines in the world, and its products are represented in 45 countries. Almost 2/3 of the enterprise's products are exported to Europe, Asia, and America. PJSC Turboatom is a carrier of cutting-edge technologies, know-how, and developments that outperform the technological level of many competitors.

PrJSC NKMZ is one of the largest Ukrainian specialized manufacturers of machinery and equipment for the mining and smelting enterprise. Low rates of investment development of Ukrainian metal producers adversely affect domestic demand for the corresponding machine-building products, which leads to the need of searching for sales markets abroad. At the same time, the global trends in the development of metallurgical production are also downward, which directly affects the demand and the nature of competition for the investment engineering products for metallurgical purposes. In this context, although the enterprise provides profitable activities based on the existing innovation and technological potential, the sales yield indicators and their critical values make it possible to acknowledge that there are serious problems of a strategic level. The quality parameters of PrJSC NKMZ potential do not correspond to those satisfying the demand for high-tech products. That is, the long-term capitalization growth is determined by the presence of such a strategy, which would ensure the development of intelligent engineering production with a focus on the parameters of the vision of the future.

Those parameters are summarized and described in the concept of "Industry 4.0", and their main content is reduced to the fact that the activities of future engineering productions will be organized in the form of "Factory of Tomorrow", which are the systems of comprehensive technological solutions that provide design and manufacture of globally competitive new generation products in the shortest possible time. Even today, the development of digital technologies sets the prototype for the immediate future, which is characterized by a high concentration of smart devices in digital machine-building factories and beyond, capable of performing routine operations without human involvement. In this context, the relevant changes in the transformation of the way business processes are organized into a "Digital Factory" form, which leads to the acquisition by machine-building enterprises of such characteristics as the speed of customization of the response to market or customer requests; digital certification based on thousands of virtual tests of both individual components and the system as a whole; organization of activities on the systems engineering principles; the formation of a multi-level matrix of target indicators and constraints as the basis for a new design, characterized by a significant reduction in risks, scope of field tests and the work related to "coupling samples and products based on tests"; ensuring a high level of adequacy of mathematical models to real objects and processes ("smart models"); ensuring permanent change management throughout the product life cycle, etc.

Thus, the post-industrial specificity recalibrates the development of the enterprise capitalization theory. Thus, financial criteria for capitalization are modified to maximize capitalization "...in an absolute competitive market environment" [36, p. 462], which, in turn, causes the transformation of relevant mechanisms in enterprises and the transition from the financial and investment model, when the value of enterprises was determined based on expectations of income receivable, into a strategically oriented one, the peculiarity of which is intellectualization and digitization of capital formation processes. In a competitive environment, such objects as tangible forms of capital lose their priority, and intellectual and technological factors become the development keynote. The struggle between the subjects of economic relations for limited resources is transformed into a strategic interaction, which involves the synchronization of the pace of development and the trajectories of their evolution, but not their acquisition or merger. The dominance of intellectual capital means the transition from unpredictable behaviour of business entities to their movement along predetermined invariant trajectories, which makes it possible to shape and achieve goals set by economic target subjects in the process of their coherently competitive interaction.

Conclusions. Drawing together the results of the study of the managerial peculiarities of capitalization of an enterprise's activity in the modern conditions brings us to certain key accents from the point of view of the development of this research area:

– The economic nature of capitalization is complex and ambiguous, generating a need for the appropriate logical ordering of existing scientific positions. It is necessary to emphasize that the contextual

interpretation of capital, that is, capital processes, relationships, results are explored on an interdisciplinary basis and integrates methodologies of various trends in economics, within the meaningful limits of the selected thematic areas of capitalization research, and their accumulation makes for the multidimensional research of the general market form of capital flow in the context of business entities' economic relations;

– managerial aspects of enterprise capitalization are a kind of symbiosis of certain selected thematic approaches to its study, which determine the content of capitalization in terms of the specificities of the characteristics, which form the basis for the study of this phenomenon. Under these conditions, the level of capital's ability to be used productively, to accumulate and create value becomes dependent on organizational abilities (both dynamic and static) to turn the capabilities of the external environment into its resources, which, in turn, leads to a substantial expansion of the essence of capitalization and the need to introduce a strategic aspect into the study of modern capital formation processes;

– the analytical interpretation of capitalization is based on the concept of fundamental value. The change in the priority of managerial focusing from the market value to a fundamental one is justified by the fact that the latter is controlled by the management from the point of view of managerial influences on the factors ensuring its growth. According to the factor interpretation of economic profit, which can be measured on the basis of a set of VBM models, critical points and monitoring indicators systems are formed at all levels of the management hierarchy, and their informativeness and adequacy to managerial needs is confirmed according to machine-building enterprises of Ukraine;

– ensuring the long-term industrial enterprises growth becomes dependent on the level of technological development, which, according to the authors, it is advisable to determine in accordance with the principles and parameters of the “Industry 4.0” concept. Within the framework of the new technological paradigm, the modern engineering production becomes digital, more automated and robotic, waste-free, customized and more geographically spread. Commitment to these parameters is the basis for ensuring the quality of capital formation processes in enterprises and, as a result, the sustainable of growth of their fundamental value in the long run.

Legend:

EP	economic profit	$Spred_{cap}$	equity return spread
$Sale$	sales volumes in terms of value	R_{cap}	return on equity
$Spred_{sale}$	sales yield spread	k_{cap}	capital costs
Ass	assets	K_{pur}	supplies turnover ratio
Pr_{ass}	asset performance	$W_{cur.ass}^{pur}$	the share of supplies in total current assets
R_{sale}	profitability of sales	k_{solv}	solvency ratio
R_{sale}^{cr}	critical profit margins	$k_{str.cap}$	capital ratio
Cap	amount of capital	k_{eq}	autonomy ratio

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**КӘСПОРЫНДАР ҚЫЗМЕТІНІҢ ЗАМАНАУИ ЖАҒДАЙЫНДА
КАПИТАЛИЗАЦИЯНЫҢ БАСҚАРУШЫЛЫҚ АСПЕКТІЛЕРІ**

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УПРАВЛЕНЧЕСКИЕ АСПЕКТЫ КАПИТАЛИЗАЦИИ В СОВРЕМЕННЫХ УСЛОВИЯХ ДЕЯТЕЛЬНОСТИ ПРЕДПРИЯТИЙ

Аннотация. В статье представлены результаты критического анализа научных позиций относительно содержания капитализации, которые были упорядочены в следующие подходы: процессный, ресурсный, стоимостный, аналитический, реляционный, когнитивный. На основе интегрирования разных исследовательских аспектов определения капитализации сформирована авторская логика интерпретации её управленческой природы, которую раскрыто на основе взаимосвязи совокупности процессов (трансформации возможностей внешней среды в ресурсы предприятия, активация ресурсов, продуктивное использование ресурсов, превращение стоимостных потоков в капитальные) и объектов (организационные способности, ресурсы, активы), приоритетное влияние на которые обеспечивает рост стоимости бизнеса. Стоимостные аспекты капитализации исследованы на основе фундаментально-стоимостного подхода, что позволило определить системы критических точек и мониторинговых показателей, сигнализирующих о состоянии управления капитализацией предприятий. Представлены результаты имплементации предложенной аналитической модели капитализации в практику деятельности машиностроительных предприятий Украины. На основе оценок критических точек стратегического уровня анализа определены основные причины, влияющие на динамику изменений стоимости исследованных предприятий. Учитывая специфику развития бизнес-среды в современных условиях деятельности машиностроительных предприятий, сделан вывод о высоком уровне зависимости стоимостных результатов капиталобразования от уровня интеллектуализации и цифровизации производства. В рамках новой технологической парадигмы современное машиностроительное производство целесообразно развивать на основе принципов концепции «Индустрия 4.0», в соответствии с которой актуализируются изменения в трансформации способа организации бизнес-процессов в форму цифровых фабрик, что обеспечивает такие параметры деятельности как скорость кастомизации реакций на запросы рынка; цифровая сертификация; организация деятельности по принципам системного инжиниринга и т.д.

Ключевые слова: капитализация, фундаментальная стоимость, машиностроительные предприятия, VBM-модели, экономическая прибыль, активы, ресурсы, возможности, организаторские способности.

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