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# **THEORETICAL AND METHODOLOGICAL BACKGROUND OF INTELLECTUAL CAPITAL ACCOUNTING**

**Summary:** Intellectual capital management practices based on actual enterprise's intellectual capital have been proved in the article. The necessity of unique intellectual capital accounting models use has been presented. The main reasons and outcomes of the formed and accumulated intellectual capital's accounting have been analyzed. Correlation between final material products augmentation and intangible elements of intellectual capital have been illustrated. The main methods of intellectual capital development and implementation as a key tool of enterprise growth have been pointed out. Analysis of the main intellectual capital accounting limitations at the present stage of economic schools development which investigate intellectual capital's nature and further development at different levels has been made. The basic classifications of present intellectual capital accounting systems have been presented. The main structural parts of enterprise balance sheet's intangible part have been emphasized. A three level model of knowledge based enterprise's intellectual capital accounting has been proposed. The relevance of intangible assets' control integrated into the enterprise's informational management system has been illustrated.

**Key words:** intellectual capital, intellectual capital accounting, knowledge, knowledge economy, enterprise's management strategy.

## **1. INTRODUCTION**

The transformation of national economies is taking place amid transition to a knowledge economy. This significantly affects the method of manufacturing, as well as management itself. Businesses based on intellectual capital aim to change the ways of its application and management. The reason for changing business paradigm lies in the recognition of knowledge importance at each operational level.

## 2. EXPERIMENTAL

Intellectual capital is a widely used concept that illustrates key benefit of a modern enterprise, which forms its economic value. It is recognized that sustainable competitive advantages of an organization stem from intellectual capital due to its correlation with employees' individual knowledge and organizational knowledge [1]. Most management theories do not contain doctrines related to intellectual capital management, and therefore there is a lack of ways to accurate intellectual capital assessment of an individual enterprise. The necessity of available intellectual capital accounting is explained by business' market value, which is especially important in case of stock market listing, issue of securities, mergers or acquisitions, joining strategic alliances, desire to achieve the required level of management and governance transparency, development of skills and competencies [2, p. 20]. Impact on business' market value should take place by the available intellectual capital diagnosis, its potential verification, assessment and embodiment. Scholars proved significance and benefits of intellectual capital application both theoretically and practically at the level of individual organizations and the state.

The memorandum "Intellectual Capital Accounts. Reporting and managing intellectual capital" issued by the Danish Trade and Industry. Development Council figures out both internal and external advantages of intellectual capital accumulation in national businesses' accounts [3, p. 9]. Studies conducted by [4, p. 3] give grounds to assert the interdependence between the concept of intellectual capital and systems theory. Businesses that focus on actual demand for resources and the effective placement of research projects are most concerned about competitive intangible growth determinants identification. Currently, the processes of creating knowledge-in value chains are characterized by a very low level of transparency, difficulties in intellectual capital reporting and accounting. However, it is recognized that there is augmentation in tangible products by hidden abilities and other intangible components of enterprise's capital. The authors proposed and tested eight steps for the intellectual capital development and implementation as a key tool for business growth strategy, namely: identification of the system and players; development of strategic priorities and goals based on knowledge; collection of impact factors and their grouping; identification of impact factors and their study; impact analysis – causal relations – impact level; network visualization and definition of growth spirals; self-assessment of the status quo between network components (qualitative and quantitative); assessment of optimal application of available resources. As a result, the companies having intellectual capital flow management obtain better performance than others.

[5] Revealed the interdependence between intellectual capital management and strategic management. They proved that an integral part of business strategic management process is intellectual capital management, which is manifested in the active knowledge absorption by competitive businesses. This is the leading internal and external process depending on the applied leadership strategy. For

example, cost leadership strategy is based primarily on organizational knowledge reporting, using built-in databases of explicit knowledge, innovative knowledge activities by combining and externalizing explicit knowledge, and incorporating knowledge into the production process focused on improving their efficiency. In turn, differentiation strategy is focused on the development of employees' individual knowledge, interactive repositories of implicit knowledge; innovative knowledge-based activities are based on the processes of implicit knowledge socialization and internalization, while their practical application is manifested in products' improvement.

Intellectual capital management is closely linked to value creation. It is about how the systematization, improvement and use of intellectual capital structural elements change typical business to highly developed one. Thus, the use of intellectual capital elements is the basis for businesses' further transformation into technological industrial leaders. However, in the short period we should pay attention to the holistic business analysis, value creation, mutual understanding on the formation, multiplication, use and dissemination of intellectual capital, putting into effect the development mechanisms to understand the nature of business resources, create conditions for practical management strategies and transparent determination of the amount of own intellectual capital.

[6] Studies illustrate strong positive correlation between intellectual capital and business fulfilment, caused by knowledge management and structural capital management efforts.

### **3. OBJECTIVES**

The article's objective is to study the relationship between knowledge enterprise activities and the need to incorporate into its management strategy the elements of intangible assets' structural parts accounting, including human, organizational and customer capital.

### **4. RESULTS AND DISCUSSION**

Intellectual capital accounting is assumed as a tool for the available corporate intellectual capital assessment, management and reporting. It reflects the full range of intellectual resources and competencies of an enterprise, as well as the consequences of managers' decisions for the resources management and development. The necessity of intellectual capital accounting was first recognized by ten Danish and Swedish companies. The main benefits of intellectual capital accounting of an enterprise include further businesses growth support based on intellectual capital assessment; attraction of internal and external attention to operational activity; intangible capital investments; gradual intellectual capital inclusion into the leading management strategy; disclosure of long-term

prospects of business development by publishing information about intellectual capital assessment; the importance of employees' human and technological resources improvement as the basis of a long-term development strategy; the ability to provide information on intangible costs and assets, which is especially important for companies specializing in knowledge-intensive goods production; recognition of employees' competencies as the most valuable resource for business development.

Efforts to develop and implement intellectual capital accounting should be built taking into account the activities referring to setting the objectives of intellectual capital assessment and the structure of enterprise's intellectual capital by its market position, potential consumers of intellectual capital, relevant accounting indicators, support strategies introduction of intellectual capital accounting. The specified activities are unique for every organization, which makes it impossible to create a universal accounting model. The listed operations form the information, which becomes an integral part of strategy supporting formation, accumulation and distribution of the reported intellectual capital.

Despite numerous justifications of the relevance of intellectual capital accounting methodologies, the existing systems intellectual capital reporting are not without limitation. One should mention that:

1. modern approaches take into account organization as a whole but not the characteristics of individual departments and employees;
2. the previous programmes of organizational development and forecasting were irrelevant as for the market position in the future; there was the asymmetry between quantitative financial methods and qualitative perceptual, process assessment methods;
3. behavioural dynamics and its impact on organizational economy are not the subject to the assessment;
4. there is lack of system to assess the efficiency of the hidden knowledge transfer within an organization.

The above limitations one can overcome by integrating financial methods of intellectual capital accounting with perceptual, production and system methods. This approach reflects the characteristics of an individual department and an employee involved in value chains functioning, and helps to identify key determinants that affect intellectual capital efficiency or slow down its growth.

Present systems of business intellectual capital accounting can be broadly classified as those that belong mainly to financial, or accounting, or perceptual ones, depending on the school of economic thought. In addition, all non-financial and non-perceptual systems of intellectual capital accounting referred to "other methods of accounting".

Financial evaluation systems relate to the financial component of intellectual capital, i.e. reflect individual production operational costs without connection with other activities, such as marketing, services production. As production used to be the dominant type of business activity, the results of all other activities were

not recorded separately, but were considered as general, indirect costs. Minor changes have occurred due to the introduction of costing methods by type of activity. From now on, individual activity costs could be controlled together with the production process as a whole. However, the existing assessment system based on cost accounting does not meet the needs of a modern organization. Financial reporting methods are not able to evaluate and accurately reflect such significant parts of business as human, organizational and client capital. As a result, neither the company's management nor investors can obtain complete information on the activities regarding intellectual capital development.

Financial reporting system limitations have led to the necessity to find out new ways to evaluate and account enterprise's intellectual capital. The emergence of such approaches was a synthesis of financial and non-financial methods of the assessment of accumulated intellectual capital. The knowledge production function, intangible assets control by K.-E. Sveiby, the system of balanced scores, the value system of Skandia, intellectual capital accounts and the system of knowledge capital indicators are the main among the new accounting models. Each of the methods is fundamental in its own way, specifying the existing financial methodology of intellectual capital accounting.

Thus, the knowledge production function makes it possible to analyze investment in knowledge capital, production costs and economic growth. [7] introduced the concept of knowledge production function, which describes the causal correlation between resources invested in inventive activities added to the economically valuable knowledge, or "inventive product", as well as indicators of expected or obtained benefits of an invention, such as firm's or industry's growth, profitability, productivity or value in the stock market. In the classical theory of the knowledge production function, the efficiency of R&D project depended stochastically on current and previous level of R&D investment. R&D expenditures were external. This caused lack of feedback between profitability and investment in innovation. The idea internal invisibility of an "inventive product" was the feature of the original Pakes-Griliches production function. However, they suggested that patents could mediate the process of R&D transformation into more cost-effective knowledge.

Intangible assets control by K.-E. Sveiby is a method for intangible assets measuring based on a number of simple indicators [8]. The choice of indicators depends on business strategy. The proposed form is especially relevant for companies with large amount of intangible assets that produce knowledge-intensive products. Intangible assets control can be integrated into the management information system. The most important areas of business activity in which K.-E. Sveiby recommends to use intellectual capital control indicators are growth / recovery, efficiency and sustainability. The goal of control is to obtain general idea of business' intellectual capital framework due to the development of several indicators for each category.

The intangible part of enterprise's balance may consist of three components: indicators of individual competencies, internal and external structures. Thus,

individual competencies are the ability of employees to act in different situations, include skills, education, experience, values and social skills. Competences belong exclusively to the bearer of human capital who uses them personally and freely, functional duties assigned to a job, as an employee is a voluntary member of an organization. "Golden parachutes" and pensions as forms of social compensation are the part of enterprises' balance sheet demonstrating competencies inclusion.

The internal structure consists of a wide range of patents, concepts, models, computer and administrative systems. They are created by employees and, thus, "belong" to the organization, alienated from a bearer of human capital. Sometimes they can be obtained from other sources. Moreover, the internal structure includes informal rules, internal social networks and corporate culture.

The external structure is comprised of relationships with customers and suppliers. It includes brand names, trademarks and reputation. The value of such assets, first, depends on the efficiency of company's cooperation with consumers, because the investments are always ambivalent. The external structure, unlike material values, may not be the property of an enterprise. For example, client capital still does not have a generally accepted definition and relevant measurement standards. The presence of such shortcomings does not mean that currently there is no need to take into account all the elements of business' external structure. In the future this task's solution will provide opportunity to compare intangible components of the external structure between enterprises. K.-E. Sveiby emphasized banks' reluctance to investment in intangible assets. This leads to enterprises' intangible assets' development based on self-financing. As a result, knowledge-companies provide external promotion of their employees' competencies to solve consumers problems. Similarly, the less employees' competencies are directed inside the company, the greater the degree of the internal structure destruction.

Perceptual methods for enterprise's intellectual capital accounting are based on the employees' perception of business environment surrounding them and their internal need for the effective knowledge management system. Perceptive measures include staff perception of company's senior management operations, the need for knowledge exchange and knowledge management, perception of the importance of additional knowledge value creation and fair remuneration from the internal and external organizational structure. Supporters of the perceptual approach argue that corporate culture is significant for the formation of additional intangible value. Corporate culture analysis is important for understanding the knowledge flow inside an enterprise. [9] Considers that culture presents common values and practices of employees. Culture is reflected, for example, in the mission of an enterprise, behaviour of its employees, team players' mutual relations and expected actions, perception of other doers' actions. Corporate culture and the relationship between its staff are key determinants of the behaviour aimed at knowledge sharing. For example, the formation of implicit knowledge occurs through employees'

communication sharing the same beliefs. Further externalization of the beliefs transforms implicit knowledge into explicit knowledge, which proves the importance of workers individual knowledge growth, as well as of their ideas and beliefs about added value creation.

Today there is no standard procedure aimed at accounting and assessment of corporate culture impact on the development of company's intellectual capital. [10] points out the need for managers to apply conceptual principles of the relationship between culture and knowledge to develop projects that will form the type of organizational behaviour to support the goals of knowledge management, embedded in organizational strategy. Modern methods of culture assessment have correlative nature; they do not prove causation and, therefore, cannot be considered generalizing. Besides, the perceptual approach focuses on individual levels of analysis, does not correlate with productivity or profit. Self-identification, which underlies the perceptual method of intellectual capital accounting, can lead to subjectivity in its measurement.

Other methods of intellectual capital measuring that cannot be classified as financial or perceptual mechanisms include the attempts to assess social networks, production and systemic instruments. We assume that combination of financial, perceptual and "other" tools can facilitate the formation of such organizational behaviour that will rise the added value, affect the results of organizational efficiency.

We should emphasize that perceptual methods of organizational intellectual capital accounting in addition to these limitations have a number of advantages that allow to determine the potential obstacles to overcome the inefficiency of intellectual capital application. For this purpose the analysis of business' needs, the analysis of cultural environment, and also the analysis of management duties to the personnel are used. Taken together, the comprehensive approach makes it possible to identify company's readiness to use knowledge management strategies, improve its own intellectual capital and increase profits due to its higher efficiency. Needs analysis is a measurement to review and plan the needs of an enterprise in information. Moreover, the formation, use, movement and storage of information, time lags, duplication, costs, and barriers to the effective knowledge transfer both within a company and inside external environment are being identified. Such steps involve, first, determination the perception of knowledge management strategy effectiveness by employees, benefits of knowledge environment of an enterprise, methods of knowledge sharing [11].

[12] Draw attention to the peculiarities of knowledge culture. The analysis of knowledge culture have to reveal cultural barriers limiting effective application of business' intellectual capital. Successful knowledge management projects have to be based on a friendly intangible capital environment. Although the impact of cultural factors on organizational change is underestimated, the gradual use of cultural and behavioural mechanisms proves their effectiveness. The Hawthorne effect remains plausible because there are still no reliable forecasts for the future development of complex knowledge-based enterprises,

and the positive effects of managing strategies based on cultural / behavioural components of intellectual capital are volatile, non-measurable, and often impossible to replicate or accumulate.

The desire to develop intellectual capital and knowledge sharing are essential to the success of any knowledge management strategy. The high level of interest of employees and company's management promotes beneficial use of knowledge. If we define intellectual capital as interest multiplied by competence, it is expedient to emphasize the importance to fulfill obligations by all participants of managerial process for the development of intellectual capital.

The duties accounting of managerial process members' could be made by the following criteria: positive attitude to the project, the model of entities behaviour to meet their obligations, added value growth (initiative, personal contribution to the intellectual product, knowledge exchange, participation in solving complex problems).

Perceptual-production systems of indicators are methods of measurement that combine indicators of the production process with the employees perception of their effectiveness in the workplace. Perceptual-production methods of measuring intellectual capital are broader and more generalized than traditional perceptual methods. They can be used as diagnostic tools, but it is best to apply them to assess improvements in production. Varieties of perceptual-production systems of indicators are the paradigm of the target surveys, utility statistics, value added based on knowledge of businesses' human capital.

## 5. CONCLUSIONS

Thus, intellectual capital accounting systems can be used for business management. They give managers the opportunity to understand correlation between subjects of human and intellectual capital and business performance. Now intangible assets accounting is a priority of enterprises that have already been integrated into the knowledge economy (high-tech companies, service companies and entities providing professional services). They are pioneers in integrating modernized individual methods of measuring intellectual capital into business management system, taking into account the type of an organization, its development strategy, its significant values. The inclusion of intellectual capital accounting issue into business' management strategy provides the basis for considering issues of organizational growth and competitive success. Defining business' intellectual capital as an economic value, which consists of several types of intangible assets, such as organizational, human, client capital and the ability to use various methods of accounting provides three-level strategy for intellectual capital measuring. The main steps are the identification and staff awareness, systems and initial instruments application, application of final indicators of material financial results. Within the strategic knowledge management framework the awareness of the company's staff as a whole is measured, the degree of employees and manage-



ment involvement in the process of formation and intellectual capital growth are determined, key competencies of intellectual capital bearers are identified, the importance of knowledge for production is established. The first step also includes cultural audit. System and production indicators are accounted for to determine their effectiveness (use of the target survey paradigm, utility statistics), further correction or replacement. The defined production and system accounting indicators further correspond to the standards of efficiency, financial and social results of business activity. These systems of indicators can be presented at the project level and at the global organizational level, include measures to assess the return on invested capital, return on assets, calculation of knowledge production function, learning curves, etc.

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## TEORETYCZNE I METODOLOGICZNE PODSTAWY INTELKTUALNEJ RACHUNKOWOŚCI KAPITAŁOWEJ

**Streszczenie:** W artykule wskazano na znaczenie zarządzania kapitałem intelektualnym w oparciu o rzeczywisty kapitał intelektualny przedsiębiorstwa. Przedstawiono konieczność stosowania unikalnych modeli rachunkowości kapitału intelektualnego. Przeanalizowano główne przyczyny i skutki powstającego i nagromadzonego księgowania kapitału intelektualnego. Zilustrowano współzależność między zwiększeniem finalnych produktów materialnych a niematerialnymi elementami kapitału intelektualnego. Wskazano na główne metody rozwoju i wdrażania kapitału intelektualnego jako kluczowego narzędzia wzrostu przedsiębiorstw. Dokonano analizy głównych ograniczeń rachunkowości kapitału intelektualnego na obecnym etapie rozwoju szkół ekonomicznych, które badają naturę kapitału intelektualnego i jego dalszy rozwój na różnych poziomach. Przedstawiono podstawowe klasyfikacje obecnych systemów rachunkowości kapitału intelektualnego. W artykule wskazano na duże znaczenie składników niematerialnych w bilansie przedsiębiorstwa. Zaproponowano trójpoziomowy model księgowania kapitału intelektualnego przedsiębiorstwa oparty na wiedzy. Zilustrowano znaczenie kontroli wartości niematerialnych zintegrowanej z systemem zarządzania informacją przedsiębiorstwa.

**Słowa kluczowe:** kapitał intelektualny, rachunkowość kapitału intelektualnego, wiedza, gospodarka oparta na wiedzy, strategia zarządzania przedsiębiorstwem.

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