

UDC 330.356

DOI: 10.31891/2307-5740-2021-294-3-11

NINA DUCHYNSKA

ORCID ID: 000-0001-8296-0424

e-mail: nduchinska@i.ua

Oles Honchar Dnipro National University

THEORETICAL AND METODOLOGICAL ASPECTS OF INTELLECTUAL CAPITAL ASSESSMENT

It has been pointed out in the article that intellectual capital has become a key component of the competitiveness of economic entities and national economies in the last quarter of the twentieth century. Economic globalization caused its transformation into businesses' intangible asset. Enterprises began to consider it when calculating their market value, as well as of equity offering, their participation in stock exchange trading. It has been stressed that these processes have proved the need to analyze the nature, structure and evaluation of intellectual capital.

The study of intellectual capital assessment makes it possible to note that managers aimed at the efficient management and business development strategies' implementation need to focus on the relevance of intellectual capital's formation, accumulation, use and evaluation.

The article finds out that perceptual methods of intellectual capital assessment are mainly used. It is noted that current methods do not provide for monetary assessment of intellectual capital. They help to solve managerial tasks and allow to diagnose intangible resources of an enterprises.

Local problems and attempts to assess intellectual capital have been highlighted. It has been made a conclusion about the need to intensify governmental role in legal framework development for comprehensive system of national intellectual capital assessment.

Key words: intellectual capital, intellectual capital assessment, perceptual methods.

ДУЧИНСЬКА Н. І.

Дніпровський національний університет імені Олеся Гончара

ТЕОРЕТИКО МЕТОДОЛОГІЧНІ АСПЕКТИ ОЦІНКИ ІНТЕЛЕКТУАЛЬНОГО КАПІТАЛУ

У статті зазначено, що інтелектуальний капітал став вагомим складовою конкурентоспроможності економічних суб'єктів і держав в останній чверті ХХ ст. Глобалізація економіки сприяла перетворенню його у нематеріальний актив підприємств, який став враховуватись при встановленні ринкової вартості підприємств, випуску акцій, їх участі в торгах на фондових біржах. Відмічено, що ці процеси актуалізували необхідність аналізу суті, структури та оцінки інтелектуального капіталу. Дослідження оцінки інтелектуального капіталу дає можливість зазначити, що менеджерам підприємств з метою ефективного управління та реалізації стратегій розвитку підприємства потрібно акцентувати увагу на актуальності формування, нагромадження, використання і оцінці інтелектуального капіталу.

У статті з'ясовано, що застосовуються, в основному, перцепційні методи оцінки інтелектуального капіталу. Відмічено, що діючі методики не передбачають грошової оцінки інтелектуального капіталу. Вони допомагають розв'язати управлінські задачі і дають здійснити діагностику нематеріальних ресурсів підприємств.

Виокремлено вітчизняні проблеми і спроби оцінки інтелектуального капіталу, зроблено висновок про необхідність активізації ролі держави щодо розробки законодавчої бази стосовно комплексної системи оцінки інтелектуального капіталу суспільства.

Ключові слова: інтелектуальний капітал, оцінка інтелектуального капіталу, перцепційні методи.

Problem statement

National intellectual capital forms the strategy of socio-economic development, its potential in the world community and competitiveness in world markets, etc. In this regard, the country is interested in accounting, evaluation and regulation of the formation, accumulation and distribution of intellectual capital and its intangible vehicles.

Recent research and publications analysis

The studies of Bazylevych V.D., Butynets F.F., Grishnova O.A., Zhurakovskaya I.V., Kireitsev G.G., Sveiby K-E. and other famous scholars are devoted to these aspects' analysis. The issues of personnel intellectual level evaluation, objective information about its application's potential opportunities and its improvement aimed at maximum business performance are relevant. The importance of the study is also due to the lack of national legislation regarding comprehensive system of intellectual capital assessment. It requires state measures aimed at its development organization and implementation.

«Today, there is no doubt that intellectual capital is becoming not only the most powerful independent economic asset, but also a necessary condition for the effective use of all other economic assets. At the same time, to provide strategic management and efficient application of intellectual capital, it is necessary to have reliable, comprehensive estimates of its volume and dynamics, as well as of its components» [1, p. 3; 2].

Objective of the article is theoretical and methodological study of intellectual capital aspects and opportunities of their practical application.

The main material of the research

The macroeconomic analysis of innovation activity based on intellectual capital is made in Ukraine. For instance, in 2019 the analytical report was compiled including comprehensive analysis of innovation position and dynamics based on international indices, State Statistics Service of Ukraine data and main budget funds' managers [3].

Six international rankings are used to evaluate innovativeness of national economies. According to the research, the Global Innovation Index and the Innovation Efficiency Index have improved Ukraine's rank in the world due to its high scores on knowledge creation, patents and utility models relative to GDP, computer software costs, and ICT services export. However, Ukraine has lost two positions in its traditionally high ranks as for the quality of human capital and research outcomes. Ukraine's weaknesses for innovation activity in international indices are: "environmental sustainability", institutions, protection of intellectual property rights, development of clusters, development of broadband Internet and innovative environment [3, p.78]. Lower education, science and innovation funding, fewer scholars, innovative enterprises as % of total enterprises and failure of enterprises to retain competent employees, etc. are among the named problems.

Intellectual capital plays an important role in determining the enterprise's value and shapes its competitiveness in global markets. It guarantees company's sustainable competitive advantages due to close ties with staff individual knowledge and organizational knowledge [2]. Owners, managers and employees with their accumulated knowledge, skills, experience, management and marketing system, social system participate in intellectual capital formation. It is represented by intangible assets: inventions, patents, licenses, know-how, trademarks, information support, electronic systems, etc., which form intellectual property.

Grishnova O., Kozlovskiy A. define intellectual capital of a society as «a set of human, structural, consumer, organizational, process, innovative and cultural qualities of a society acquired through learning, skills, experience used in intellectual activity by each member of a society individually or in a team and increase its work efficiency». They distinguish the following main elements of intellectual capital: human, structural (client, organizational, innovative and process), consumer, market, updated, cultural and information capital [1, p. 4].

Intellectual capital affects enterprise's sustainability in the context of market instability in terms of its ability to develop, manufacture and bring to market quality products that meet changes in consumer demand. Application of all intellectual capital elements is the basis for enterprises' further transformation into technological industrial leaders.

Scholars point out the necessity to account for and evaluate available intellectual capital, which should consider enterprise's market value; it is especially important while stock exchange listing, as well as for securities issue, merger or acquisition, joining strategic alliances, the desire to achieve the required transparency level in its activities and management, development of skills and competencies [4; 5, p.20].

Perceptual methods of intellectual capital accounting prevail in the scientific studies (from the Latin *percipere* – perception). They are based on business environment perception by employees and the internal need for an effective knowledge management system. Perceptual methods include staff perception of senior management performance degree, the need for knowledge management and exchange, the perception of the importance of knowledge value added creation and fair remuneration from the internal and external organization structure.

Corporate culture is significant in the formation of intangible value added, admit the proponents of the perceptual approach. Its analysis is important for understanding of business' knowledge flow. According to Shein H.E., culture is like common values, practices of people in an organization. Culture is reflected in the mission of an enterprise, its employees' behaviour, relationships in a team and the expected actions, and the perception of the actions of other actors [6]. Corporate culture and the relationship between company's staff are key factors that determine the behaviour aimed at sharing knowledge. For example, the formation of implicit knowledge occurs through staff communication who share common views. Further views externalization transforms implicit knowledge into explicit knowledge, which proves the importance of workers' individual knowledge augmenting, their ideas and beliefs about added value creation.

Nowadays there is lack of standard procedure to determine and evaluate corporate culture impact on the development of an enterprise's intellectual capital. D.W. De Long notes that managers need the conceptual basis of the relationship between culture and knowledge to develop projects to create the type of organizational behaviour to support knowledge management tasks, set in corporate strategy [5]. Modern methods of culture evaluation are correlative-biased. Thus, they do not substantiate causal relationships and, therefore, cannot be considered generalizing. Moreover the perceptual approach focuses on certain levels of analysis, does not correlate with productivity or profit. Self-identification, which underlies the perceptual method of intellectual capital accounting, can cause subjectivity in its evaluation.

T. Davenport and L. Prusak draw attention to the need to consider the peculiarities of knowledge culture [6]. Knowledge culture analysis can reveal cultural barriers limiting businesses' intellectual capital effective application. The formation of a favourable environment for the available intangible capital forms is the key to successful managerial projects. The impact of cultural factors on organizational change is underestimated though. Gradual application of cultural and behavioural instruments proves their effectiveness. The Hawthorne effect is plausible, as there are still no reliable forecasts for the knowledge-biased innovative enterprises development, as well as positive consequences of management strategies based on cultural (behavioural) components of intellectual capital remain unstable, non-measurable, and sometimes impossible to accumulate.

The desire to develop intellectual capital and knowledge sharing are essential to the successful knowledge management strategy. High level of workers' and management's interest leads to more favourable use of knowledge. If we define intellectual capital as an interest multiplied by competence, it is expedient to emphasize the importance of meeting their commitments by all the participants of management process and its impact on the development of intellectual capital.

Sveiby K.-E., on his personal website, studied twenty-five available methods of intellectual capital assessment and identified four main groups of it (Sveiby K.-E., 2004): direct intellectual capital methods of intangible assets and components of intellectual capital; 2) market capitalization methods as the difference between company's market capitalization and its stockholders' equity; 3) return on assets methods of company's intangibles in comparison with a company that does not own these assets; 4) scorecard methods of calculating scores based on indicators, indices, expert assessments, etc.

Sveiby's intangible assets' control is a method for measuring intangibles based on simple indicators [7]. The choice of indicators depends on business' strategy. The proposed model is especially relevant for companies having huge intangible assets that produce knowledge-intensive product. Intangibles control could be integrated into the management information system. Sveiby points out that the most important areas of business activity to use indicators of intellectual capital control are growth and recovery, efficiency and sustainability.

Intangible part of a business' balance sheet may consist of three components: indicators of individual competencies, internal structure and external structures. Thus, individual competencies are the employees' ability to act in different situations, include skills, education, experience, values and social skills. Competences belong exclusively to the owners of human capital, are used personally and freely when performing functional roles as an employee is a voluntary member of an organization. Competencies' integration into a balance sheet of an enterprise is reflected as benefits, such as "golden parachutes" and pensions.

The internal structure consists of a wide range of patents, concepts, models, computer and administrative systems created by employees and, thus, "belong" to the organization, alienated from the human capital owner. Decision-making regarding the development or investment in the assets has certain degree of confidence because the work is performed within an enterprise or purchased from third parties. In addition, internal structure includes informal rules, internal social networks and corporate culture.

The external structure consists of relationships with customers and suppliers. It includes brand names, trademarks and reputation. The value of the assets, first of all, depends on the efficiency of company's cooperation with its consumers, because these investment has always an element of uncertainty. 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 shortcomings do not mean that currently there is no need to take into account all elements of business' external structure [7].

The methodology presented by Lin C.Y.-Y. is used for comprehensive assessment of intellectual capital of forty countries [8]. According to it, the intellectual capital index for a country is calculated on the basis of five indicators: human capital, market capital, process capital, renewal capital and financial capital, i.e. if to compare with international organizations' methodology it takes into account many more determinants.

Human capital is assessed by determining country's citizens participation and takes into account such qualitative indicators as the level of public awareness of important events in socio-political life, regulatory environment and compliance with the law, trust and corruption.

Market capital is characterized by favourable conditions for doing business and investment, especially in the field of attracting foreign direct and portfolio foreign investment, participation of foreign investors in investment process and country's ability to share scientific achievements with other countries within global economic system.

Process capital is a national source of knowledge accumulated during its history. This capital assesses market environment competitiveness, government efficiency, the protection of intellectual property, number of computers per person and the speed and ease of starting a new business.

Renewal capital assessment is based on potential intellectual well-being of a society, its propensity to innovation in business, services, and household life. Its indicators include research and development expenditure, the share of the expenditure in gross domestic product (GDP), number of researchers, level of cooperation between universities and enterprises, scientific publications and number of patents registered with the US and European Patent Offices.

Financial capital is defined as GDP per capita (purchasing power parity).

Grishnova O. and Kozlovskiy A. applied the methodology proposed by Lin C.Y.-Y. They ranked the index of intellectual capital of Ukraine and compared it with the indices of Finland, Norway, Germany, France, Russia and Poland [1; 8].

Each of the five elements of intellectual capital is calculated on the basis of a ten-point scale comparing factors that form the index. The overall country's intellectual capital index is calculated as the sum of all five pre-calculated indicators of the respective types of capital.

A

mong these countries, Ukraine occupies the last position (its index is 22.14, while Finland ranks 39.03, Norway – 35.45, Germany – 33.48, France – 31.24 and Russia – 23.65, respectively). At the same time, as the authors

note, Ukraine is ahead of India, Argentina, and the Philippines, ranking 38th among forty countries in the world [1, p.9].

The issue of close relationship between scientific research, manufacturing and business remains unresolved. National scientists sell their work abroad, often illegally through the Internet, as it is profitable. The Ukrainian economy has always suffered from protracted bureaucratic processes for innovations and scientific inventions.

The main obstacles for modern enterprises to introduce innovations are the imperfect national regulatory framework, i.e. gaps in tax, customs, social, credit and antitrust regulation of innovation introduction and development, the need to strengthen intellectual property rights protection, administrative and criminal liability for law violation. To eliminate these problems the country needs a system of regulatory state measures to support and protect at the legislative level of domestic businesses' innovation activity, for example, by providing appropriate tax and credit, investment benefits, government orders for innovation programmes and development of innovation projects.

The study of intellectual capital assessment makes it possible to note that managers aimed at efficient running and business development strategies implementation need to focus on the relevance of intellectual capital formation, accumulation, use and evaluation. However, the application of these methodologies does not involve monetary evaluation of intellectual capital, although it helps to solve management problems and makes it possible to diagnose intangible resources of an enterprise.

According to the analytical report prepared in Ukraine referring to innovation and technology transfer, the main determinants of innovation activity in our country, are not only financing, but also capital investments in intangible assets, growth of patent activity of Ukrainian researchers and intensification of high-tech innovation. Factors hindering innovation and its contribution to the economic growth are a significant share of technology transfer in the form of know-how, agreements on technology acquisition (transfer), which limits broad introduction of new technologies, lack of funding for the most promising prioritized technological areas of development [3, 80].

Conclusions

Based on the abovementioned, the state should focus its efforts on changing the negative impact. It is necessary to encourage researchers to develop a legal framework for comprehensive intellectual capital evaluation system of a society in general and of an enterprise in particular. It is also necessary to develop economic and administrative mechanisms to stimulate intellectual capital accumulation and its application in business. This will be possible due to sufficient state funding and control over the application of funds, preferential taxation, granting credits to innovative enterprises, implementation of state innovation programmes and public procurement of innovative products, and more.

Література

1. Грішнова О., Козловський А. Інтелектуальний капітал України: інтегральна оцінка і порівняльний аналіз / О.Грішнова, А. Козловський // Україна: аспекти праці. 2014. №1. С. 3 – 10.
2. Венгерук Н.П., Меленчук Л.Г. Оцінка інтелектуального капіталу в обліку / Н.П.Венгерук, Л.Г.Меленчук // Інвестиції: практика та досвід. 2016. № 23. С.50-52
3. Стан інноваційної діяльності та діяльності у сфері трансферу технологій в Україні у 2018 році: аналітична довідка / Т.В. Писаренко, Т.К. Кваша та ін. – К.: УкрІНТЕІ, 2019. – 80 с.
4. Beer, M., Barnes, N. (2003) "The assessment of intellectual capital (IC) in the South African context – a qualitative approach". SA Journal of Human Resource Management, vol. 1 (1), pp. 17-24. URL: www.sajhrm.co.za/index.php/sajhrm/article/.../4 (accessed 05.04.2021)
5. Prahalad, S.K., Hamel, G. (2003) "Corporation key competences". Vestnik SpbGT, part 8, vol. 3, pp. 18-41. (accessed 30.05.2021).
6. Shein, H.E. (1996) "Three cultures of management: the key to organizational learning". Sloan Management Review, vol. 38. URL: [available at: cmapspublic.ihmc.us/.../Three%20cultures%...](http://cmapspublic.ihmc.us/.../Three%20cultures%...) (accessed 14.05.2021).
7. Sveiby K-E. Measuring Intangibles and Intellectual Capital – An Emerging First Standard [Electronic resource]. – Aug 5, 1998. URL: <http://www.sveiby.com/articles/emergingstandard.html> (accessed 30.05.2021).
8. Lin, C.Y.-Y. (2011). National Intellectual Capital: A Comparison of 40 Countries. New York: Springer, 392 pp.

References

1. Hrishnova, O., Kozlovskyi, A. (2014) "Intelektualnyi kapital Ukrainy: intehrlna otsinka i porivnialnyi analiz". Ukraina: aspekty pratsi, №1, ss. 3-10.
2. Venheruk, N.P., Melenchuk, L.H. (2016) "Otsinka intelektualnoho kapitalu v obliku". Investytsii: praktyka ta dosvid, № 23, ss.50-52.
3. Stan innovatsiinoi diialnosti ta diialnosti u sferi transferu tekhnolohii v Ukraini u 2018 rotsi: analitychna dovidka (2019). K.: UkrINTEI, 80 s.
4. Beer, M., Barnes, N. (2003) "The assessment of intellectual capital (IC) in the South African context – a qualitative approach". SA Journal of Human Resource Management, vol. 1 (1), pp. 17-24. URL: www.sajhrm.co.za/index.php/sajhrm/article/.../4 (accessed 05.04.2021)
5. Prahalad, S.K., Hamel, G. (2003) "Corporation key competences". Vestnik SpbGT, part 8, vol. 3, pp. 18-41. (accessed 30.05.2021).

6. Shein, H.E. (1996) "Three cultures of management: the key to organizational learning". Sloan Management Review, vol. 38. URL: available at: cmapspublic.ihmc.us/.../Three%20cultures%20... (accessed 14.05.2021).
7. Sveiby K-E. Measuring Intangibles and Intellectual Capital – An Emerging First Standard [Electronic resource]. – Aug 5, 1998. URL: <http://www.sveiby.com/articles/emergingstandard.html> (accessed 30.05.2021).
8. Lin, C.Y.-Y. (2011). National Intellectual Capital: A Comparison of 40 Countries. New York: Springer, 392 pp.

Paper received : 29.01.2021

Printed : 10.03.2021