Intellectual Capital in the Era of Establishment and Development of the Digital Economy

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Abstract. In the digital economy, the intellectual capital of an enterprise is the most important strategic resource at the fundamental level of modern business processes; the human and relational capital of organisations is built in accordance with the innovative potential of the enterprise. The research is devoted to the analysis of theoretical approaches and models for studying the intellectual capital of an enterprise in the era of establishment and development of the digital economy. The research is based on the objective principles of a system approach, economic analysis, logical and comprehensive approaches. The paper used a set of general scientific and special research methods (historical method, method of analysis and synthesis, abstract-logical method, graphical construction, scientific abstraction). The paper considered the conceptual framework proposed by scientists of various scientific areas and disciplines for identifying and substantiating the correlation between the intellectual capital of an enterprise and economic results at the micro-level in systems theory, institutional theory, resource dependence theory, etc., as well as the concept of the intellectual capital of an enterprise. The results of a comparative analysis of the works of Ukrainian and foreign scientists, economists, and experts on the management of intellectual capital of the enterprise are presented. A model of the intellectual capital of an enterprise is proposed, which identifies 19 elements in the structure of human, structural, and relational capital of an organisation. The obtained conclusions of measuring the intellectual capital of an enterprise can be used in the development of organisational methods and to improve the human resource management policy of organisations. The leading vector of further development of intellectual capital of enterprises in the digital economy should be the design of the process of accumulation, classification, measurement and transformation of knowledge capital, as well as the development of tools for changing its elements into materialised and innovative assets of the organisation.

Keywords: intellectual capital, knowledge, information, digital economy

The Problem Statement

In the modern economy, the intellectual capital of an enterprise plays a leading role in the development of long-term competitive advantages of companies, acts as a driver of business development and improvement, a key factor in the development of fundamental value by saving all types of resources and increasing the return on such, contributes to increasing the innovation of the organisation [1-5]. The emergence of new realities of the digital economy also entails new conditions for the development of enterprises, when the physical assets of companies are considered as secondary for entire sectors of the economy and intangible assets (knowledge and information, competency, reputation of the organisation, customer commitment, corporate culture, etc.) "come to the fore" [6-12]. Consequently, the phenomenon of the potential of intellectual capital of an enterprise, as well as the issue of its multiplication, becomes relevant and of practical significance.

Analysis of Recent Research and Publications

The genesis of the theory of intellectual capital is characterised by discussions on various aspects of the problems of development and structuring of the intellectual capital of an enterprise, which were covered in the works of foreign (T.A. Stuart [4], A. Bruking [1], N. Bontis [13], P. Zambon [5], H. Saint-Onge has described intellectual capital in the paper by G.Ye. Mazniev, S.O. Zaika, O.V. Gridin [14], the theory of L. Edwinson is covered in the paper by Ph.K. M’Pherson, S. Pike [15], B. Lev [16] et al) and Ukrainian (O.M. Sobko [7], Suggested Citation:

O.A. Grishnova [17], V. Geiets [18], O.V. Kendiukhov [19], O.S. Litvinov [20], N.L. Gavkalova [21], V.P. Bagov [22] et al. scientists. Economists and scientists emphasise the importance of intangible assets in shaping the value of companies, but the issue of managing the intellectual capital of an enterprise in the context of the transformation of the conventional economy into a digital one remains open.

**Purpose of the Study**

The paper is devoted to the analysis of theoretical approaches and models for the study of intellectual capital of an enterprise, transformation of components of human capital, structural (organisational) capital and relational capital, as well as their elements on the principle of complementarity in the era of establishment and development of the digital economy. To achieve the purposes, the following tasks were set: to consider and analyse the models of intellectual capital of the enterprise of national and foreign researchers and economists; to determine the latest elements of human, structural, and relational capital of the organisation, which are becoming important in increasing the intangible assets of the enterprise in the digital economy; to develop a model of intellectual capital of the enterprise with the latest components of intangible assets of the organisation (human, structural, and relational capital).

**Research Results**

At the end of the last century, in the structure of business resources of the world’s leading companies, intangible assets accounted for about 80%, and it was due to them that enterprises created the latest processes, products, and services [23-25]. According to the analysis, 51% of foreign researchers use IC models of other well-known scientists, 28% develop their own classifications and approaches, and 21% of specialists are guided by the provisions of various concepts simultaneously [13; 26]. The concept of intellectual capital of an enterprise, having become an object of intensive study, especially since the beginning of the 21st century, was enriched with the latest models, which did not disqualify each other since they were used in the research of various scientists and empirical research of economists. According to L.M. Bratchuk, in a narrow sense, intellectual capital should be understood as “...a set of knowledge and abilities that stimulate the emergence of new ideas, technologies, innovations, and can bring economic benefits” [27, p. 264]. Chronological exploration of the actualisation of intellectual capital value of an enterprise over the past decades proves the change in the vector and content of intangible assets or so-called “invisible” resources with the development of information technologies. L. Edwinson and M. Malone in 1997 proposed the following definition of intellectual capital of an enterprise: “non-intangible capital generated from a person (for example, knowledge, skills, experience, and motivation) and from resources (for example, computers, information technologies) to increase the company’s value in the sense of creating a competitive advantage” [28, p. 53]. Less than ten years later, K. Corrado and et al at the beginning of the 21st century suggested that intellectual capital will “...be formed from information obtained from computing systems, innovative property, and economic competence” [29, p. 14].

The monograph of O.V. Kendiukhov proposed the following groups of definitions of intellectual capital: structural, terminological, and functional-structural [19, p. 43]. V. Geiets, O.A. Grishnova, I.P. Moiseenko, and other national researchers state that the intellectual capital of an enterprise is human resources and knowledge in a broad sense, while other economists (O.M. Sobko, O.V. Litvinov, et al.) consider intellectual capital as certain relations that arise in the organisation in the process of using and reproducing knowledge [7, p. 75; 17, p. 39; 18, p. 63; 20, p. 101].

Intangible capital in the economic literature at the enterprise level is structured into elements of intellectual capital of the organisation. The model of intellectual capital of an enterprise, which is conventional and generally recognised in Ukrainian and foreign studies, includes human capital, structural (corresponding to organisational capital) and relational (or client) capital (Fig. 1) [3; 4; 7; 9; 12; 13; 28].

![Figure 1. Enterprise intellectual capital model: new opportunities in the digital economy](image-url)
The intellectual capital of an enterprise is defined as the knowledge, experience and professionalism of employees, the knowledge resources of an enterprise that can be stored in the form of intellectual property of the company, in databases, systems, processes, as well as the culture of the organisation. For a more detailed analysis of this type of capital, it is advisable to apply a model that contains three mutually agreed components: human, structural, and relational capital.

Human capital covers the sphere of knowledge, skills, experience, professionalism of the company's labour collective; structural capital – production processes, business procedures, management; relational capital – relationships with customers, subcontractors, as well as the concept of a brand, trust, reputation, etc. In the digital economy, the increase of human capital is impossible without improving the skills of employees and building new management, which eliminates authoritarian management methods and provides for the growth of the role of social capital of relations; structural capital increasingly covers innovative technologies that should provide all stages of production; issues of increasing relational capital are designed to ensure fundamental changes in the ways of doing business, as well as build the latest business models in modern conditions of global digitalisation. J.S. Coleman, a well-known social capital theorist, believed that information channels (social networks, relationships, and information transmission) in the social structure can bring information advantages. In this regard, in the scientific environment, in particular, in modern papers, R. Kaplan and D. Norton focus more attention on the role of information capital as an important tool for supporting the company's strategy [30, p. 236]. O.M. Sobko believes that information capital covers information flows and is characterised by the ability of ordered, organised, and systematised information at the enterprise [7, p. 87].

The development of the latest communication technologies of the digital economy has contributed to the distribution of considerable volume and speed of data about enterprises that are not generated by the organisations themselves and are not controlled by the latter. Consequently, there is a transformation of emphasis in working with customers and potential consumers. Experts note that “...we can afford to lose money, even a lot of money, but we cannot afford to lose our reputation, even a piece” [31].

Since the end of the 20th century, research on intangible resources of companies has gradually been reoriented, and recently it has been aimed at analysing how the intellectual capital of an enterprise works in organisations, how it manifests itself, as well as how people, processes, and attitudes are mobilised in relation to it [32, p. 314]. I.V. Zhuravlova managed to establish that there is a positive relationship between the processes of functioning of the intellectual capital of an enterprise and the return on assets of the organisation; the influence of the efficiency of using the intellectual capital of an enterprise on the turnover of assets is not unidirectional, but the contribution of the efficiency of the intellectual capital components of business entities to obtaining these results differs by clusters of enterprises [33, p. 124].

To increase the IC of the enterprise, managers of organisations should direct their attention not only to the indicators of material production and the amount of profit but also to the level of human capital development, which in its importance should come to the fore and should be constantly provided with an appropriate level of education in the form of internships, partner exchanges, business tourism, self-education opportunities, etc., providing up-to-date knowledge, information, innovative worldview [34]. It can be concluded that it is the digital underdevelopment of Ukrainian economic entities that causes the main risk for their further development and existence. A common standpoint is of the intellectual capital of an enterprise as a set of knowledge, skills, and abilities that can increase the added value of a good or service through personnel and technological resources [35]. However, today it is not necessary to see the value of the intellectual capital of an enterprise only as a generator of "price" but rather "wealth", which is much more than money and will be in demand in the future.

Conclusions

Thus, at the initial stages of development of the concept of intellectual capital, the structure of intangible assets of organisations was substantiated; then, since the 1980s, it was seen as a source of competitive advantages; in the digital economy, issues of increasing, using, and managing intellectual capital of enterprises are being updated. Notably, at the current stage, the role of relational (client) capital of enterprises is increasing (in particular, there is a need for active implementation of joint and open innovative methods in the context of increasing the competitiveness of enterprises) since companies depend on external stakeholders and especially customers. In the context of globalisation and high competition, innovation, as a complementary component of the intellectual capital of an enterprise, becomes a necessity for every organisation since it ensures the development of new products/services and the improvement of production processes, marketing and management of companies. Notably, the intellectual capital of an enterprise today generates such a competitive advantage that can be achieved “by a specific factor that allows companies to differentiate themselves from other competitors”. The most important strategic resource at the fundamental level of modern business processes will be human capital, which will be formed in the conditions of permanent modifications of many specific factors (which are difficult to predict), but the skills and professionalism of employees should be built in accordance with the innovative potential of the enterprise.

References


Список використаних джерел

Інтелектуальний капітал в епоху становлення та розвитку цифрової економіки

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Анотація. В умовах цифрової економіки інтелектуальний капітал підприємства є найважливішим стратегічним ресурсом на фундаментальному рівні сучасних бізнес-процесів; а людський та реляційний капітали організації вибіруються у відповідності до інноваційного потенціалу підприємства. Дослідження присвячене аналізу теоретичних підходів та моделей з вивчення інтелектуального капіталу підприємства в епоху становлення та розвитку цифрової економіки. Проведена авторами статті розвідка спирається на об’єктивні принципи системного підходу, економічного аналізу, логічного та всебічного підходів. У роботі був використаний набір загальнонаукових та спеціальних методів дослідження (історичний метод, метод аналізу та синтезу, абстрактно-логічний метод, графічної побудови, наукової абстракції). У статті було розглянуто вплив процесів функціонування інтелектуального капіталу на результати діяльності підприємства.

Ключові слова: інтелектуальний капітал, знання, інформація, цифрова економіка