

IMPACT OF EDUCATION AND TRAINING ON THE DEVELOPMENT OF AN ORGANIZATION'S INTELLECTUAL CAPITAL IN THE DIGITAL ECONOMY

IMPACTO DA EDUCAÇÃO E DA FORMAÇÃO NO DESENVOLVIMENTO DO CAPITAL INTELECTUAL DE UMA ORGANIZAÇÃO NA ECONOMIA DIGITAL

IMPACTO DE LA EDUCACIÓN Y LA FORMACIÓN EN EL DESARROLLO DEL CAPITAL INTELECTUAL DE UNA ORGANIZACIÓN EN LA ECONOMÍA DIGITAL

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ABSTRACT: An urgent contemporary trend in the development of the economic system is the development of digital technologies, which has intensified due to the coronavirus pandemic. At this stage, the role of intellectual capital as the main system-forming factor of the digital economy is increasing, which makes it necessary to improve the tools for its formation and development. The purpose of this work was to consider changes in the elements of an organization's intellectual capital in the context of the digital economy compared with the traditional one. The conducted research allowed concluding about the change in the content of the intellectual capital elements, as well as about the shift in emphasis both within the elements and between them. The results can be used as a guideline when making managerial decisions aimed at forming and developing the organization's intellectual capital considering the specifics of the processes of the economy digitalization.

KEYWORDS: Digital economy. Elements of intellectual capital. Intellectual capital. Traditional economy.

RESUMO: *Uma tendência contemporânea urgente no desenvolvimento do sistema econômico é o desenvolvimento de tecnologias digitais, que se intensificou devido à pandemia de coronavírus. Nessa fase, o papel do capital intelectual como principal fator de formação do sistema da economia digital está aumentando, o que torna necessário melhorar as ferramentas para sua formação e desenvolvimento. O objetivo deste trabalho foi considerar mudanças nos elementos do capital intelectual de uma organização no contexto da economia digital, em comparação com a economia tradicional. A pesquisa conduzida permitiu concluir sobre a mudança no conteúdo dos elementos do capital intelectual, bem como sobre a mudança de ênfase tanto dentro dos elementos como entre eles. Os resultados podem ser usados como uma diretriz na tomada de decisões gerenciais destinadas a formar e*

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desenvolver o capital intelectual da organização, considerando as especificidades dos processos de digitalização da economia.

PALAVRAS-CHAVE: *Economia digital. Elementos do capital intelectual. Capital intelectual. Economia tradicional.*

RESUMEN: *Una tendencia contemporánea urgente en el desarrollo del sistema económico es el desarrollo de las tecnologías digitales, que se ha intensificado debido a la pandemia del coronavirus. El papel del capital intelectual como principal factor de formación de la economía digital es cada vez mayor, lo que hace necesario mejorar las herramientas para su formación y desarrollo. Este trabajo analizó los cambios en los elementos del capital intelectual de una organización en el contexto de la economía digital en comparación con la tradicional. La investigación realizada permitió concluir sobre el cambio en el contenido de los elementos del capital y en el énfasis dentro de los elementos y entre ellos. Los resultados pueden servir de orientación a la hora de tomar decisiones de gestión encaminadas a formar y desarrollar el capital intelectual de la organización teniendo en cuenta las particularidades de los procesos de digitalización de la economía.*

PALABRAS CLAVE: *Economía digital. Elementos del capital intelectual. Capital intelectual. Economía tradicional.*

Introduction

Today, with the development of socioeconomic systems, the issue of economic processes digitalization is becoming the most urgent. Contemporary technologies are used in all business areas and economic sectors. Digitalization has an impact on all areas of the business environment and society in general. Digital technologies have become a development driver for the evolution of socioeconomic systems transition into the digital economy (PECHATKIN, 2020).

A particularly pronounced enhancement in these phenomena occurred during 2020 when the whole world was forced to transform processes by converting them into an online format due to the coronavirus pandemic. Despite the improvement of the situation in 2021, online formats continued developing. Many companies have deliberately continued to improve this trend to reduce their costs.

In the context of digitalization, enterprises and corporations are trying to remain competitive in the market, which leads to the need to participate in the race of technological progress to remain sustainable in the course of today's changes. In this situation, the main task of the organization becomes the active involvement of intangible factors of production—its intellectual capital—into these processes. Organization's employees are carriers of intellectual capital. They have also adapted to changing conditions and supported the





advantages of a remote work format and corporate communication, which, without a doubt, poses certain challenges in managing them.

Developing the concept of intellectual capital is associated with the emergence of the assumption that, in addition to material factors of production, there are also nonsubstantial, immaterial factors. Their existence was initially associated exclusively with the human resources of the organization. The classics of political economy (MILL, 2004; PETTY, 1940; SMITH, 1977) used the category of human capital to denote the influence of the quality of the human factor on the efficiency of the economy. American economists Schultz (1971) and Becker (1993) developed this research area, becoming the founders of the theory of human capital. They contrasted this notion with the material factors of production and singled out as its main features a productive character, the tendency of accumulating and reproducing on an updatable basis.

Later, the phenomenon of nonmaterial production factors ceased to be associated exclusively with the human resources of the organization and received other concepts. In particular, Friedman (1963) singled out humanitarian capital as part of the enterprise's assets, noting, as the main feature, the complexity of its cost measurement, which is due to the dependence of the future income on humanitarian capital of the corporate employees. Toffler (1990) forms the concept of *symbolic capital*, which is based on knowledge and highlights its characteristics of inexhaustibility and accessibility to an infinite number of users without limitation. Fortune uses the naming *intellectual factors of production*, which assumes the sum of all the knowledge of the company's employees, providing competitive advantages of this company in the market. Klein and Prusak (1999) propose to designate this notion by naming *intellectual material*.

The term *intellectual capital* was first used in 1969 by economist J. Galbraith in a letter to M. Kalecki, and the detailed justification of the term was given by T. Stewart, who published in 1991 the article *The power of intelligence: How intellectual capital becomes America's most valuable asset* (STEWART, 1991). The concept of intellectual capital was developed in the works of Western scholars and practitioners, such as Kendrick (1976), Saint-Onge (1996), Edvinsson and Sullivan (1996), Albert and Bradley (1996), etc., as well as Russian scientists Efremov (1999), Zinov (2007), Inozemtsev (1995), and others.

The main approach in studying intellectual capital is based on a systematic approach. In particular, Edvinsson and Malone (2012) consider the intellectual capital of an organization as a combination of human and structural capital. Ruus, Pike and Fernstrom (2004)





distinguish human resources, relational resources, and organizational resources as part of the intellectual capital elements. In general, a similar viewpoint is held by Stewart, who designated human, structural, and consumer capital as part of the intellectual capital elements. According to E. Brooking, intellectual capital is a combination of human assets, intellectual property, infrastructure, and market assets (PETTY, 1940). Leontiev believes that the main components in forming intellectual capital are intangible assets and knowledge bases belonging to an organization, combined with specific relationships with other economic entities (RAZUMOV; SIZIKOV, 2005). Zinov attributes to intellectual capital the knowledge, experience, and key competencies of the corporation's employees, as well as the corporation's relations with partner organizations and customers, collectively ensuring the formation of added value and specific competitive advantages of the organization (TARASOVA, 2009). Meshcheryakova defines intellectual capital as the unification of the corporate brand, its relationships with representatives of the external environment (partners and customers), as well as the intellectual potential of its employees (BABKIN, 2017).

Nevertheless, the considered scientific articles do not reflect the conditions and factors that determine the possible trajectories of forming and developing intellectual capital, considering current challenges. Thus, the study of the intellectual capital phenomenon in the context of using it to form the digital economy is a subject of research interest and is relevant within the framework of the chosen research area.

The purpose of the research is to study the transformation of the intellectual capital elements in the current context, considering the challenges of the digital environment.

The research objectives include the following points:

1. to define the concept of the digital economy and characterize its features;
2. to compare the intellectual capital elements in the traditional and digital economies;
3. to offer recommendations on more effective development of the intellectual capital elements, considering the specifics of the processes of the economy digitalization.

The concept of the digital economy was laid at the end of the 20th century by F. Mahlup, G. Stigler, S. Kuznets, K. Arrow, N. Negroponte, and others.

There is still no unified approach to understanding what the digital economy is, what its specifics are, what specifically complicates decision-making aimed at the effective development of an organization's intellectual capital in the digital economy.

Due to the challenges of the current situation, the term digital economy is becoming the most widely used in contemporary scientific literature. The term digital economy was first

coined by D. Tapscott in 1994 in his book *Digital Economy*. It was he who described this system (KOCHKINA; GAZIZOVA, 2018).

In 2001, the American statistician Mesenburg identified five main components of the digital economy that can be quantified. In his works, the author identified the features of forming a digital economy, the scope of application of this concept, and outlined the concepts of public policy aimed at implementing this process. However, the exact approaches to studying this phenomenon have not been identified.

In Russia, the key approach to understanding the digital economy is presented in the *Strategy for the Development of the Information Society in the Russian Federation for 2017–2030*, where the definition of this concept is given as: “economic activity in which the key factor of production is data in digital form, whose processing large volumes and using the results of analysis, compared with traditional forms of economic management, can significantly increase the efficiency of various types of production, technologies, equipment, storage, sale, delivery of goods and services” (RUSSIA, 2017, our translation).

The digital economy of Russia is those market segments where the value-added chain is created using digital (information) technologies (KHARCHENKO; KONYUKHOV, 2017; KOMAROV; MUKHAMETSHIN, 2013; ERMAYKOVA, 2007).

Studying the scientific literature, one can conclude that this concept is considered more broadly. Formulating the main idea, the authors often focus on the implementation of information and communication technology (ICT) systems into the main production processes, process automation, and the transition to computer technology.

Thus, Kleiner (2018, our translation) gives the following definition of the concept of the digital economy:

An economy in which the production, distribution, exchange, and consumption processes, including all related communications, are carried out based on digital technologies; real economic processes, objects, projects, and environments are replaced by their computer (digital) models during communications.

Yakovleva refers to a digital economy all economic processes which change under the impact of ICT, indicating that these trends will be the priority in the near future.

Under the concept of the digital economy, Kolyadenko understands the processes of distribution, exchange, production, and delivery through a computer network and technology, and distribution via the Internet.

Veretyuk, in his works, considers the digital economy model as the transformation of processes in all economic sectors into information resources and knowledge based on computer platforms.

Electronic economy (or digital economy) is an economic activity built based on e-commerce, as well as electronic money exchange. As a rule, these terms mean the operation of electronic services focused on the sale of electronic goods and services, often with the exchange of electronic money between participants in electronic transactions (KOSOLAPOVA; SVOBODIN, 2019).

Kosolapova and Svobodin (2019) give the following definition of this concept: The digital economy is a model reflection of the economic relations of production, distribution, exchange, and consumption (reproduction process) based on ICT. Thus, the digital economy is an electronic element expressing the methodological provisions of the system economy and, accordingly, its continuation (KOVALEV; GOLOVENCHIK, 2018).

The digital economy is an economic activity in which the key factor of production is big data presented in digital form, whose processing and using the results of the analysis can significantly increase the efficiency of various types of production, technologies, equipment, storage, sale, delivery of goods and services in comparison with traditional forms of management (PYATKIN; KOLCHIN, 2018).

The digital economy is just a synonym for the electronic (web, Internet) economy, that is, economic activity based on digital technologies related to e-business and e-commerce, and the electronic goods and services produced and sold by them (KONCHAKOVA; SHAVINA, 2018).

The digital economy includes a variety of economic activities in which the use of digital information and knowledge plays the role of a key factor of production. Modern information networks are becoming an important area of activity, and the effective use of ICT is an important driver for improving efficiency and optimizing the structure of the economy (NEDOLUZHKO; OSLOPOVA, 2019). In this case, the elements forming intellectual capital will also be transformed under the influence of digital technologies.

Thus, forming an idea of what changes are taking place in the intellectual capital elements allows carrying out effective managerial influence aimed at reducing or increasing influence to obtain the best result.

Materials and methods

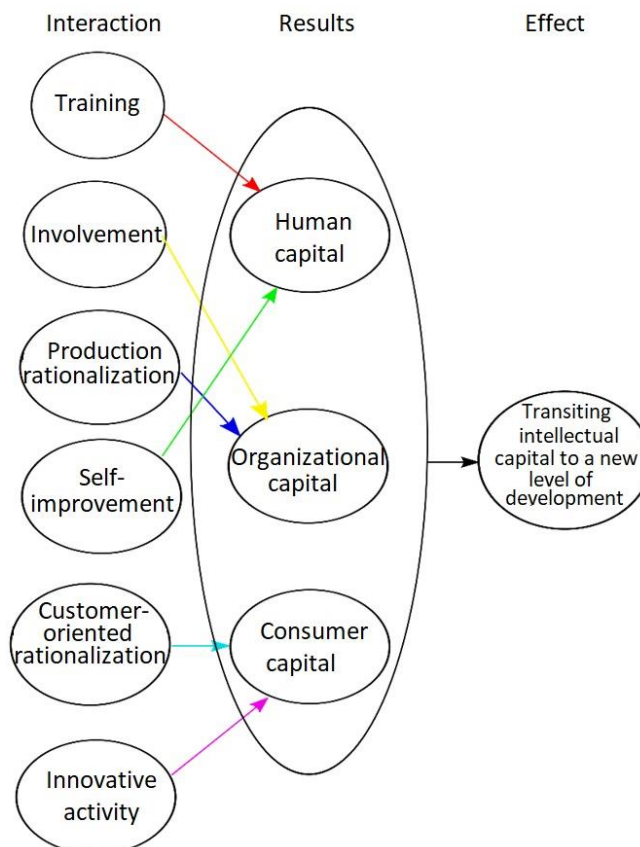
This article is an overview, aimed at studying the contemporary approach to forming intellectual capital elements in the context of the digital economy. Respectively, the main research methods included theoretical analysis and generalization of scientific literature, as well as content analysis.

In the course of the research, general scientific methods were employed, such as system analysis, comparison, description, generalization, systematization, and formalization, as well as special and other methods of scientific research, namely, source analysis and expert assessments methods.

Results

The organization's intellectual capital elements are formed in a certain sequence, shown in Figure 1 (NEDOLUZHKO; OSLOPOVA, 2019).

Figure 1 – The sequence of formation of the intellectual capital elements of the organization



Source: Elaborated by the authors



Training: This type of activity is initiated mainly by the employer and aimed at improving the professional level of employees within the framework of the organization's performance. The employee learns the skills required for professional activity without fundamental changes but considering modern trends of improvement and changing requirements.

Involvement: This type of activity is characterized by the professional concern of the employee in the organization. Often, the level of involvement shows the level of development of corporate culture in the organization, the commitment of employees to the organization's values and norms. A high level of involvement allows enhancing the efficiency of the organization's activities since the higher is the level of corporate culture, the better employees work for this company, and root for the results of their activities.

Production rationalization is aimed at improving the ways of doing business, improving production processes, more efficient use of resources (material, temporary, and labor).

Self-improvement: In contrast to training, this process reflects the level of activity, which involves the improvement of the employee's skills, regardless of the wishes of the employer, aimed at improving the efficiency of the employee. While learning is a mandatory element, then self-improvement is more driven by initiative.

Customer-oriented rationalization is aimed at improving the efficiency of interaction with the client base, improving the external image of the organization, and expanding sales markets. It represents the activity of an organization in foreign markets resulting from forming mechanisms of inter-organizational interaction.

Innovative activity is a cross-cutting element, presented as a result of the processes taking place at the previous five stages that result in obtaining additional income from the implemented changes (ABDULSAMEDOV, 2020; MAKAREVICH, 2020; MYNBAEVA; TOLESHOVA, 2020; NEDOLUZHKO, 2016)

Table 1 shows the changes in the intellectual capital elements caused by the development of the digital economy.

Table 1 – Comparative characteristics of intellectual capital elements in traditional and digital economies

| Process | Traditional economy | Digital economy |
|----------------------------|--|--|
| Training | <ul style="list-style-type: none"> - internal training programs implemented by the employer in training centers; - sharing experience from more experienced employees to newcomers; - external training programs (advanced training courses, professional retraining) implemented based on other organizations, including educational ones. | <ul style="list-style-type: none"> - using open educational platforms; - using distance training courses; - attending online training events using messengers and social networks. |
| Involvement | <ul style="list-style-type: none"> - holding meetings of the workforce; - holding festive events on key dates; - conducting team building events. | <ul style="list-style-type: none"> - holding meetings of the workforce using remote technologies; - using flexible working conditions (schedule, possibility of remote work); - attracting freelancers and self-employed specialists on a routine basis; - implementing remote team building activities. |
| Production rationalization | <ul style="list-style-type: none"> - providing automation of production processes; - implementing systems for recording working hours and monitoring the presence of employees in the workplace; - implementing internal electronic document management. | <ul style="list-style-type: none"> - using the corporate information environment; - using virtualization technology to organize remote access to the workplace; - implementing external electronic document management using an electronic digital signature (EDS). |

| | | |
|-----------------------------------|---|---|
| Self-improvement | <ul style="list-style-type: none"> - implementing the key performance indicator (KPI); - implementing the system of performance indicators of the structural unit; - participation of employees in professional exhibitions. | <ul style="list-style-type: none"> - participating voluntarily in online courses to expand the scope of professional activity of the employee; - participating in vocational online conferences. |
| Customer-oriented rationalization | <ul style="list-style-type: none"> - conducting business meetings to present the product (service); - working with focus groups; - participation of employees in professional exhibitions. | <ul style="list-style-type: none"> - expanding the customer base by holding business meetings in an online format; - increasing the representativeness of the sample by expanding the focus group; - providing additional opportunities to present products through the use of online platforms. |

Source: Elaborated by the authors

Discussion

Let us consider the main changes in the implementation of the intellectual capital components that have occurred in connection with the development of the digital economy. The traditional approach to training assumed personal interaction between the student and the teacher, the use of a purposeful trajectory when the initiator of training is the employer. In this case, the quality of the result obtained was determined by the level of development of the knowledge and skills of the teacher and the physical availability of training programs. The implementation of digital technologies allowed shifting the focus from the educator to the student and solved the problem of accessibility of high-quality educational programs.

Traditionally, the employee engagement process was defined as employees' participation in offline events held in the company (workforce meetings and festive events). This format was often inconvenient for employees since it took them away from solving personal issues in their spare time. Using digital technologies has provided a change in the format of holding such events. The involvement and development of corporate culture began to be evidenced by the involvement in various events on the regular basis of freelance specialists, engaged in the terms of outsourcing of physical entities.



Production rationalization in the traditional economy was based on two main pillars: process automation and increasing the efficiency of using working time within the labor schedule. However, as the experience of 2020 has shown, even the transition of employees to a freer timeframe often does not affect negatively the efficiency of the company. Thus, the emphasis is shifting to providing working conditions for remote workers and developing flexible forms of interaction with the employer without considering the time worked. Besides, digitalization allowed using the advantages of various digital tools, including reducing the cost of renting office space, time spent on external document management, which undoubtedly affected the increase in the speed and quality of production processes.

Enterprises face another problem—the desire for self-improvement of the most promising personnel. The employer is no longer a key customer of the employee’s educational trajectory, which allows the employee to independently determine within what framework they want to develop, and therefore, often increases their mobility in the labor market (more and more often employees move from one field of activity to another). While earlier the self-improvement goals in the company were more focused on the contribution of the company’s employees, and the effectiveness of units, now it is more focused on a specific person, their individual professional development.

In the traditional economy, working with clients was largely limited to geographical locations and the development of transport links. Currently, this problem has been removed. The online tools used make it possible to expand the customer base through online platforms, including social networks. The organization acquired the opportunity to attract additional customers by holding events in an online format (presenting products on Instagram, holding business meetings using Zoom, etc.). Contemporary technologies allow understanding more clearly the ways of product improvement by increasing feedback speed and quality.

The innovation activity element is not considered separately, since it is end-to-end for the other elements and, as in the traditional economy, provides additional income due to the changes being made.

Final considerations

Thus, the research conducted on the intellectual capital elements, considering the specifics of the processes taking place in the economy, and its digitalization, allowed drawing the following conclusions:



The development of the intellectual capital of employees took place mainly within the framework of training since the initiative and resource provision was implemented primarily by the organization. The development of digital technologies allowed shifting the focus towards strengthening the individual role of the employee, allowing them to independently determine the scope and areas of obtaining knowledge and skills that ensure their professional growth. Thus, this leads to the strengthening of the element of self-improvement.

The changes that have occurred have led to an increase in the relevance of the element of involvement, since the employee is becoming aware that they have great opportunities for growth, including by changing the field of activity. Therefore, the employer needs to take measures to maintain the employee's interest in preserving the current place of work due to flexible working conditions.

The handling rate of incoming orders and the mobility of obtaining information is currently increasing due to the development of digital technologies. The role of feedback through using messengers and social networks as the main tools of communication with consumers is increasing. This causes a need for the preservation of the virtual image of the organization. The above-mentioned trends entail the need for more active work with the customer-oriented rationalization, as one of the important elements.

The obtained results can be used in making managerial decisions to develop and improve the efficiency of using the intellectual capital of the organization, which is one of the main tools for its development.

Further research in this area can be aimed at developing indicators for the quantitative measurement of intellectual capital in the digital economy since existing studies do not take into account the impact of the digitalization of the economy.

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