Transport and Communications, 2019; Vol. II.
ISSN: 1339-5130
DOI: 10.26552/tac.C.2019.2.7

Organization value building on the basis of intellectual capital

Iwona Tomaszewska[1]

[1]Warsaw University, Faculty of Management, e-mail: tomaszewska.iwona@gmail.com

Abstract A very important part of the theoretical analysis of intellectual capital is the analysis of the organization value building on the basis of intellectual capital. The innovativeness of the organization and its ability to absorb innovations can to be a value of the organization. The investments in the intellectual capital during organization value building should lead to absorption of innovation. So the considerations connected to the organization value building on the basis of intellectual capital raised in this article might be of value for the future empirical work results.

Key words: Intellectual capital, environment, technology, economy

1. Organization value building on the basis of intellectual capital

All the definitions of intellectual capital proposed in the literature seem to have a common basis, but they differ in terms of composition. The nature of intellectual capital and the form it takes for organizations sometimes take a slightly different form. It can be a raw material/resource of the company, as well as manifest itself in the individual characteristics of the employees. Sometimes it includes only the non-physical zone, sometimes also material objects. However, all definitions agree that regardless of its form, intellectual capital is extremely important for the activity of organizations, especially in today's knowledge-based economy.

The aforementioned definitions characterize intellectual capital in different ways describing it both as knowledge, raw material/resource, data, nonphysical values or material values. It proves how complex this notion is and how subjective its perception might be.

Definitely, most often intellectual capital is defined as a resource, raw material or capital, created by knowledge, which is clearly manifested by skills, competences and abilities. It has the attribute of immateriality (non-physicality) assigned to it. This attribute is usually assigned to a company, an enterprise or organization. Less frequently the subject of the issue are people who perform this function mainly in the first definitions of the term. Specialists pay attention to the creative role of intellectual capital and emphasize its potential to generate additional benefits or goods in the form of profits, competitive advantage, additional knowledge, innovation, etc. The most important of these are people who play this role mainly in the first definitions of the concept of intellectual capital.

According to the above conclusions, in the further part of the article we will apply the most complex definition of the intellectual capital: „nonmaterial resources of organization knowledge that might be used in the future to achieve and maintain competitive advantages and increase the innovativeness of the organization".

In the further part of the article we assumed that intellectual capital consists of three elements: human capital, structural capital also known as organizational and social capital, also known as relation or client capital. This attitude is present mostly among the authors dealing with the topics of intellectual capital.

In recent decades, academic circles have become interested in the role of knowledge in business development. The general conclusion from the considerations was that organizational capacity is based on knowledge management, which is a source of organizational stability and competitive advantage [1]. The previously adopted definition of intellectual capital says that it can be used to create competitive advantage and also to increase the organization's value. In common opinion, value refers mostly to monetary valuation, but economists have developed a perception of this issue, so that it can be used in relation to the nonmaterial resources of the organization and in the environment typical for intellectual capital. While the concept of added value of an organization is understandable and means the difference between total income and the cost of expenses, the concept of value creation is no longer so easily definable [2]. P.H. Sullivan describes value as "the measure of the usefulness that owning an item brings to its holder" [3]. .

2. Importance of knowledge in the intellectual capital theory

In today's world, knowledge is seen as a strategic resource, as the fourth factor alongside land, labour and capital. Both knowledge and intellectual capital have been present in people's activities since the dawn of time, but knowledge

has never played such an important role as it does today. In the post-industrial era, in the information technology era, wealth is a product of knowledge. What counts is not only the scientific knowledge gained during studies, but also the knowledge resulting from professional experience, as well as scientific and technical information. Therefore, not only written knowledge, but also multimedia and information provided both orally and in writing are the "raw materials" of modern technology. Nowadays, companies have to learn how to manage their knowledge. Intellectual capital is a tool, knowledge, information, intellectual property and at the same time the basic factor of organization's wealth, it is also the power of the human mind [4].

P. Drucker claimed that we were entering the biggest change in the history of mankind. According to him, the new society will be the society of knowledge, knowledge will be its key resource, and "knowledge workers" will be the dominant group among all employees [5]. The economic challenge for post-capitalist society will be the productivity of knowledge-based work and the productivity of the knowledge worker. Unlike the economic theory of the 19th and 20th centuries, the value will be created by the productivity and innovativeness of knowledge in application to work [6].

I. Nonaka argued that especially in the economy where uncertainty is the only certainty, knowledge may be the only reliable source of a sustainable competitive advantage. In a situation of changing markets, constant appearance of new technologies, proliferation of competitors and aging of products almost overnight, only companies that consistently create new knowledge, disseminate it widely throughout the organization and quickly transform it into new products and technologies have a chance of success. They have been defined as "created by knowledge-creating company", whose only activity is continuous innovation [7].

Stating that the knowledge is an important value for the organization, T. Stewart divided it into three main categories:

- knowledge in the minds of employees – understood as skills, experience or way of performing their tasks,
- knowledge written in documents or other data storage device (video cassettes, software, other ways enabling fast access)
- knowledge that might be the subject to patent protection, property rights, trademarks or trade secrets [8].

The most important category is the knowledge in the minds of employees since only with its help one can create knowledge that is a subject to patent protection and knowledge written in the documents or other storage devices.

Following the steps of P. Drucker A. Toffler claimed that knowledge is not only the completion of power included in money and physical strength but it is a source of high quality strength, a source of power [9]. Toffler points out that the knowledge is the most democratic source of strength as it is flexible, nonfinite and can be used by many people in a continuous way [10].

Looking at the knowledge from the point of view of strategic resource, according to B. Wawrzyniak and M. Staniewski [11], we can distinguish three main research approaches appearing in the research of a knowledge-based organization. These approaches have been presented graphically in Table 1. presented below.

Table. 1. Research approaches concerning knowledge-based organization

Name of the approach	**1.Knowledge -based economy**	**2. Intellectual capital**	**3. Knowledge management**
Core of the approach	Transfer of knowledge and creating of learning processes in the societies	Intellectual capital building – human and structural, focused on creativity and innovativeness	Using or developing knowledge assets in the building and organization strategies' realization processes
Main research questions	What is the connection between knowledge and economy competitiveness and how are the processes in the economic policy organized, taking knowledge as a strategic asset	What is the value of the organization created by intellectual capital and how does it translate into the productivity of the organization?	How and to what degree is knowledge used in the organization from the point of view of organization strategy, including competitive advantage building

The first approach presented in the table above concerns the perspective of a country or a group of countries and refers to a knowledge-based economy. The other two approaches relate to the perspective of the enterprise or other organizations and these are: intellectual capital and knowledge management. The intellectual capital approach focuses on the study of the company's value and share of intellectual capital, while the knowledge management approach mainly refers to the organization's strategy and the use of knowledge as an important resource in the process of building and implementing the strategy.

A specific type of knowledge is knowledge about the links between technologies and needs, knowledge about existing problems and the organization of intermediary networks. It is the knowledge possessed by the employees, the knowledge of connections with their abilities and skills. R. B. Reich has recognized that almost all the resources of a high-value enterprise, together with their use, lose their value. The only exception is the ability of key employees to discover and solve problems. Machines wear out during use, raw materials run out, even patents and copyrights become obsolete. Meanwhile, abilities, skills and talents are not a typical resource, because the more they are used the more value they have. Engineers, mechanics or strategic organizers who have solved many key issues will be better prepared to solve even more complex tasks in the future. The value of these employees and in general the value of human capital increases with the acquired experience. In addition, the growing advantage of the experienced group of people translates into the next generations, because often additional earnings enable investments in education and training of children [12]. Reich notes that the value of intellectual capital as a

DOI: 10.26552/tac.C.2019.2.7

key corporate resource is growing in comparison with physical capital. And because the true value of the organization is in the minds of employees, many assets will disappear with the departure of the most valuable employees. Of course, some assets will remain, for example patents and copyrights, but they will quickly lose value as they protect the discoveries made at a given moment [13]. At the same time, it is worth noting that patents do not cover knowledge about the existence of the market, its problems, or ways of serving it. For this reason, fast and wise followers can often benefit more from the market than brilliant and original inventors. Outdated solutions to old problems are being replaced by newer ones [14].

The so-called resource school, which is important for the development of intellectual capital and is also referred to as a school of resources and competences, is also one of the main concepts of strategic management. It emphasizes the need to develop the company through the use of available resources and its own potential. K. Obłój states that the essence of this approach is assumed that the organization is a collection of skills and assets (or resources), and the competitive advantage is built by skillfully reconfiguring these resources into key competencies of the company. On the other hand, the better an organization performs on the market, the better it defends itself against imitation or substitution by competitors, the more valuable the resources, skills and built key competences it possesses are [15].

Although the considerations concerning knowledge are very broad in the literature on the subject, they constitute almost a separate branch of economy, entering also the macroeconomic scale (for example, the "knowledge-based economy"), but for the purposes of this article the emphasis will be placed on the creation and use of knowledge at the level of enterprises and this particular type of organizations, such as universities. Creation and use of knowledge was the basis for the formation of the theory of human capital, and later also intellectual capital. After reviewing the evolution of the theory of intellectual capital through the use of the importance of knowledge, skills, and qualifications, it is worth moving on to the presentation of differences in the very definition of the term "intellectual capital".

3. Intellectual capital vs. profits achieved

The main objective of companies is to generate future profits. Since the entire functioning of the company is subordinated to this goal, it can also be assumed that the organization creates knowledge with the intention of gaining specific profits from it in the future. Such an approach to intellectual capital allows us to state that its two basic functions in an enterprise are creating and acquiring value (Fig.1) [16].

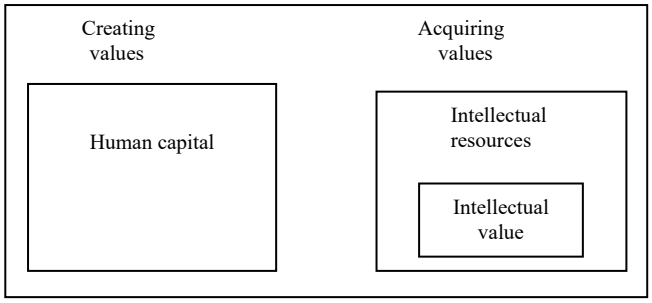

Figure 1. Creating and acquiring values by intellectual capital

As can be seen in Fig. 1. the process of creating values underlies human capital of the company. It is a human being who is a source of knowledge, its creating and sharing [17]. The remaining components of intellectual capital act as tools and take part in the extraction of value.

The role of human capital in its theory is also emphasized by C. Hughes. His theory points out the model "people as technology" (Fig. 2.). According to the theories of many scientists, value is created through technology development or investments in human capital. Hughes combines these two assumptions under the concept of human resources development. This model shows that a company's gaining market advantage consists of a set of specific values [18]:

- position – strength and structure inside the organization,
- use – value created in the workplace,
- maintenance – systems, processes and tools necessary to maintain the technology,
- modification – improvements and smaller or bigger modifications of the technologies,
- time – period necessary for the person or technology to perform particular tasks.

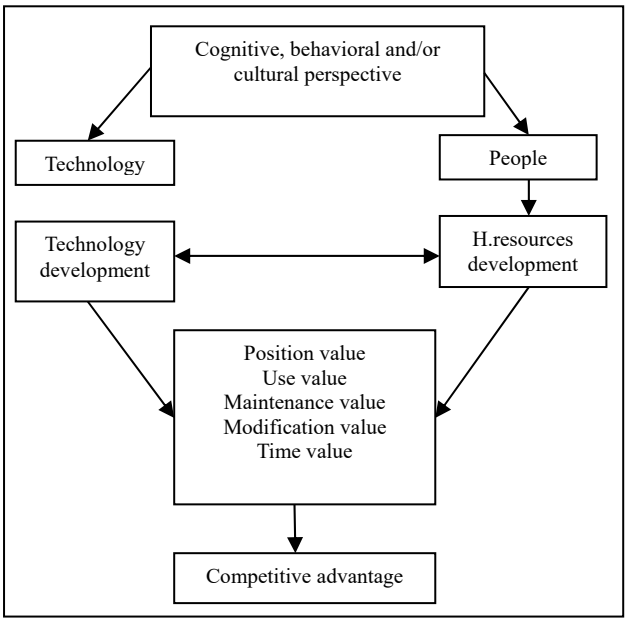

Figure 2. Model „people as technology"

A fundamental problem of traditional business indicators such as revenue, cash flow, profits, market share or tech-

nology leadership is that they do not actually provide information about whether a company generates value for its owners and shareholders or not. Creating value can only be talked about if the company produces more than it has invested in raw materials. For a long time it was commonly believed that the lower the cost, the higher the profit. Modern theories, however, define business activity as added value and prosperity, which is a much more complex approach [19].

As Fig. 3. shows, in order to achieve profits it is necessary to establish close relations with customers. It should also be borne in mind that material forms of value creation (income) depend on non-physical forms. In turn, an increase in nonmaterial assets is possible through efforts to create nonmaterial assets. The key to success lies in creating cause-and-effect relations between these two forms of value creation. In other words, it can be said that the main challenge of an enterprise is to create conditions that will initiate the creation of intangible assets and cause their transformation into physical forms [20].

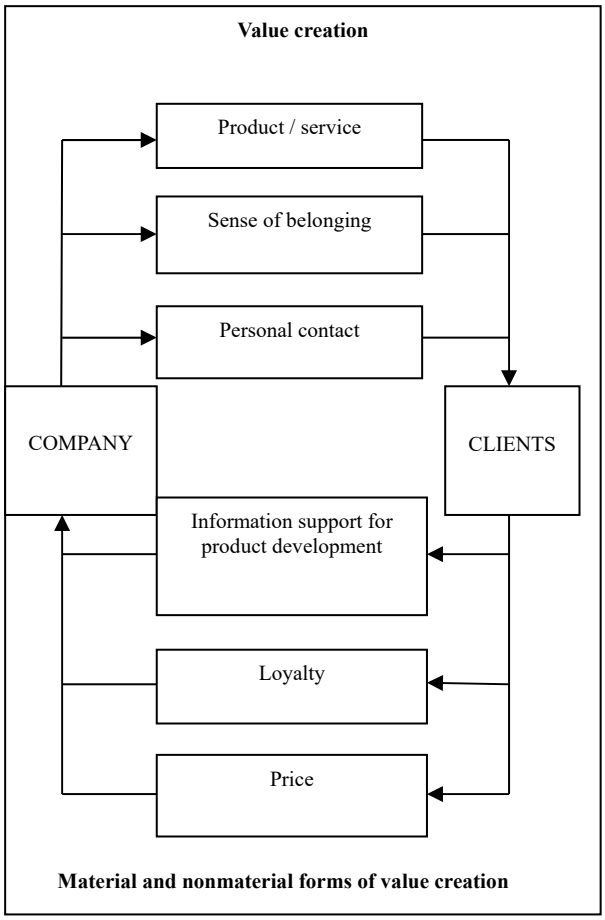

Figure 3. Diagram of value creation in the company

The ability to create value from intellectual resources depends to a large extent on the ways of managing and implementing appropriate business strategies in companies. For example, leading companies have increased the efficiency of their research and development processes by more strongly combining internal research and development with their business strategies and relying on external sources to gain access to full knowledge and complement their technology portfolios [21]. The OECD (Organization for Economic Cooperation and Development) has identified three basic ways in which a company can generate value based on intellectual capital [22]:

1. Increasing consumer surpluses.
2. Increasing producer's surpluses.
3. Increasing a market value of the company.

Particular components of intellectual capital influence creating a value to a different degree. A study carried out by H. Salleh and C. C. Huang among Malesian enterprises allowed for pointing out 10 main elements of the greatest impact (Fig. 4). The results turned out to be in line with similar analyses run by Bukh (2003), or Eccles (2001) [23], among others. The intellectual capital component of the greatest impact on value generating is connected to the human capital which is of key importance for the enterprise [24]. However, another employee-related element (motivation) was only ninth in the ranking. It might be noticed that as many as 6 in 10 factors are connected to client's capital development. This result is consistent with the study by Abdel-Maksoud (2005), who identified timeliness and number of customer complaints as a factor of key importance for the British enterprises [25]. The market shows that it is the knowledge, experience, competence and employees' know-how that is the most important component creating a value for the company. This is an important issue in so far as in the further part of the work the factors influencing the absorption of innovation will be analyzed and perhaps the components creating value for the company will also positively influence its ability to develop and implement new products and services.

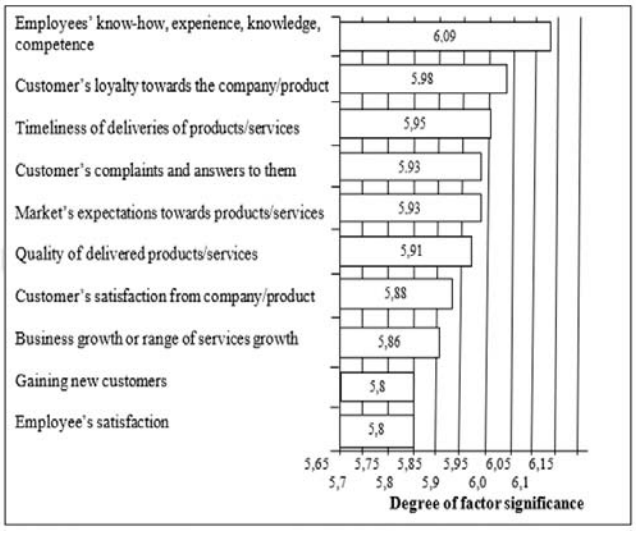

Figure 4. 10 main intellectual capital components creating values for the company.

Following the aforementioned paths of value creation on the basis of intellectual capital, in accordance with the vision

DOI: 10.26552/tac.C.2019.2.7

and strategy of the company, using the available resources and activities, and on the basis of indicators reflecting the current situation of the company, leads to the generation of different values by intellectual capital. (Fig. 5.). A research carried out by S. Harrison and P. H. Sullivan resulted in indicating the most popular values by the entrepreneurs [26]:

1. Profits:
   - Revenue from products and services via:
     - sales,
     - royalty payments,
     - joint venture,
     - strategic alliances;
   - Revenue from the intellectual property itself via:
     - sales,
     - royalty payments,
     - joint venture donations (tax deductions),
     - price premiums,
     - sales increase.
2. Strategic position:
   - Market division,
   - Leadership (innovative, strategic, etc.)
   - Standard setting,
   - Name recognition via:
     - brand,
     - trademarks,
     - reputation.
3. Gaining innovations of others.
4. Customer's loyalty.
5. Costs reductions.
6. Increased productivity.

Companies ascribe certain sets of roles to the intellectual capital in order to acquire certain values from it. While many people imagine profit-generating function as the most conspicuous one, there is a range of other roles that bring different advantages to the enterprises [27].

- Deffensive roles:
  - protection of products and services which are the result of company's intellectual capital innovativeness;
  - freedom of designing;
  - avoiding conflicts.
- Offensive roles:
  - generating of profits:
    - from products and services which are the result of company's innovativeness,
    - from the company's intellectual properties,
    - from the company's intellectual assets,
    - from the company's knowledge and know-how;
  - creating standards on the new markets or for new products and services;
  - gaining access to other technologies;
  - gaining access to new markets;
  - as a basis for business alliances;
  - support for the company's business activities;
  - creating access barriers for new competitors.

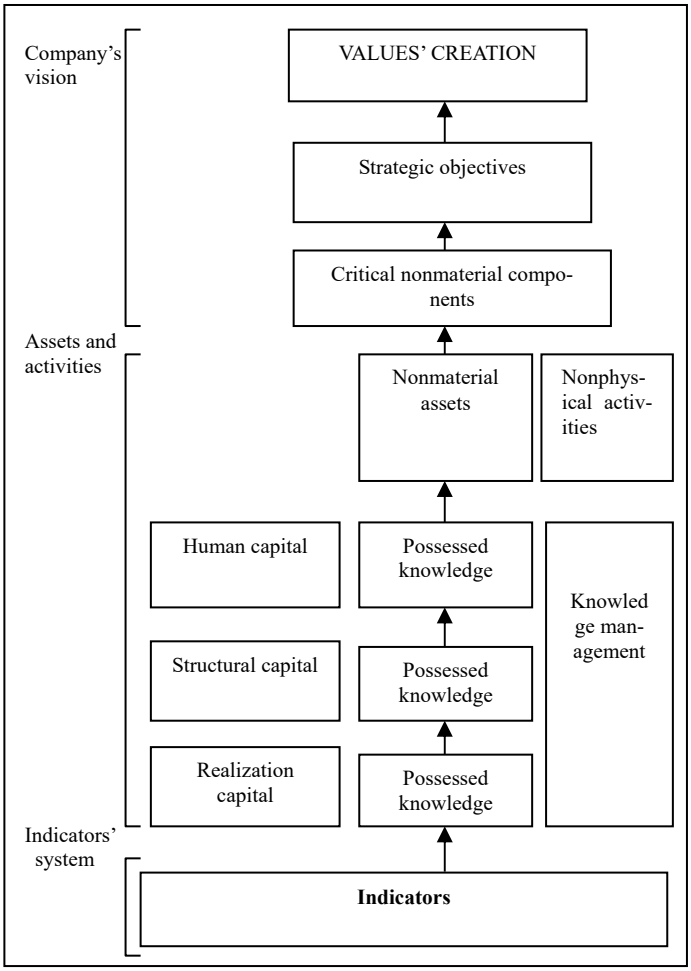

Figure 5. Value creation via intellectual capital

Among the indicated offensive roles is gaining access to other people's technologies, which may translate into the introduction of products and processes that are copies of existing solutions to the company. On the other hand, the above-mentioned creation of standards for new products and services may contribute to the development and implementation of innovative solutions on a national and global scale. Creating and acquiring value through intellectual capital is very much rooted in the philosophy of functioning of every organization. Such orientation of the management concept is a long-term strategy of the organization, whose main goal is to increase the company's ability to generate value in the long term [28]. Intellectual capital has a value that no other asset of the organization can possess. Recognizing the role of intellectual capital as a key factor generating future benefits requires a proper management. Both companies and universities that want to keep their competitive advantage perceive intellectual capital and processes connected to its disposal as a basic components of future value creation [29]. Effective intellectual capital management can also create a value for the organization in form of increasing the ability to absorb innovations [30], it can translate into a higher level of innovativeness of a given organization. Strategies of introducing innovations in the organization influence increasing the value of a given or-

ganization – both commercial company and this specific type of organization which is the university.

REFERENCES

[1]. Chang W. S., Hsieh J. J., Intellectual Capital and Value Creation – Is innovation Capital a Missing Link?, "International Journal of Business and Management", Vol. 6, No. 2 February 2011, s, 3.

[2]. Macerinskiene I., Survilainte S., Campany's Valuae Added and Its Intellectual Capital Coherence, "Business: Theory and Practice", 12(2), 2011, s. 184.

[3]. Harrison S., Sullivan P. H., Profiting from intellectual capital: learning from leading companies, Industrial and Commercial Training, Vol. 32, No 4, 2000, s. 134.

[4]. Durlik I., Postęp technologiczny a ekonomia wiedzy i rola kapitału intelektualnego, s. 19-25, [w:] red. Godziszewski B., Haffer M., Stankiewicz M. J., wiedza jako czynnik międzynarodowej konkurencyjności w gospodarce, Dom Organizatora, Toruń 2005.

[5]. Drucker P. F., The Next Society. A Survey of The New Future, "The Economist", Nov. 3 rd 2001, s. 4.

[6]. Drucker P. F., The post-capitalist executive. Interview by T George Harris, s. 7.

[7]. Nonaka I., The Knowledge-Creating Company, "Harvard Businnss Review", Vol. 69 Issue 6, Nov/Dec 1991, s. 96.

[8]. Stewart T. A., Intellectual Capital, The New Wealht of Organizations, Bantam Doubleday Publishing, New York 1997, s. 278.

[9]. Toffler A., Power Shift: Knowledge. Wealth, and Violence at the Edge of the 21 st Century, Bantam Books, 1990 [za:] Nonaka I., Takeuchi H., The Knowledge-Creating Company: How Japanese Companies Create the Dynamics of Innovation, University of Illinois at Urbana-Champaingn`s Academy for Entrepreneurial Leadership Historical Research Reference in Entrepreneurship, 1995, s. 7.

[10]. Toffler A., The Third Wave, Bantam Books, New York, Toronto, London, Sydney, Auckland 1990, s. 19.

[11]. Wawrzyniak B., Staniewski M. W., Gospodarka oparta na wiedzy – perspektywa przedsiębiorstwa, [w:] red. Kukliński A., Gospodarka oparta na wiedzy. Perspektywy Banku Światowego, Komitet Badań Naukowych, Biuro Banku Światowego w Polsce, Warszawa 2003, s. 165-166.

[12]. Reich R.B., Praca narodów. Przygotowanie się do kapitalizmu XXI wieku, Wydawnictwo Adam Marszałek, Toruń 1996, s. 91-92.

[13]. Ibidem, s.89.

[14]. Ibidem, s.90.

[15]. Obłój K., Strategia organizacji, Polskie Wydawnictwo Ekonomiczne, Warszawa 2007, s. 127-141.

[16]. Mitchell H. J., A Model for Managing Intellectual Capital to Generate Wealth, Massey University, Albany 2010, s.17.

[17]. Cabrita M. S., Vaz J. L., Creating Value from Intellectual Capital: An Approach Based in the Specification of Models, Portuguese Journal of Management Studies, Vol.13, No. 2, 2008, s.223.

[18]. Mačerinskienė I., Survilaitė S., Company's Value Added and Its Intellectual Capital Coherence, "Business: Theory and Practice", 12(2), 2011, s. 185.

[19]. Jelčić K., Intellectual Capital. Handbook of IC Management in Companies, Intellectual Capital Center Croatia, Zagreb 2007, s. 21.

[20]. Ibidem, s. 23.

[21]. OECD, Science, Technology and Industry Outlook, Paris 2002.

[22]. OECD, Intellectual Asets and Volue Creation. Synthesis Report, Paris 2008, s. 28.

[23]. Salleh K., Huang C. C., Value Creation Through Knowledge Management And Intellectual Capital: An Empirical Investigation [w:] Ribiere V., Worasinchai L., Proceedings of the 8th International Conference on Intellectual Capital, Knowledge Management & Organizational Learnining, Vol. 1, The Institute for Knowledge and Innovation, Bangkok 27-28 October, 2011, s. 482.

[24]. Naidenova I., Oskolkova M., International Effects of Intellectual Capital in Company's Value Creation Process Applied Sciences, Helsinki 23-24 April 2012, s. 320.

[25]. Naidenova I., Oskolkova M., International Effects of Intellectual Capital in Company's Value Creation Process Applied Sciences, Helsinki 23-24 April 2012, s. 482.

[26]. Harrison S., Sullivan P. H., Profiting from intellectual capital: learning from leading companies, Industrial and Commercial Training, Vol. 32, No 4, 2000, s. 35-36.

[27]. Harrison S., Sullivan P. H., Profiting from intellectual capital: learning from leading companies, Industrial and Commercial Training, Vol. 32, No 4, 2000, s. 37-38.

[28]. Jelčić K., Intellectual Capital. Handbook of IC Management in Companies, Intellectual Capital Center Croatia, Zagreb 2007, s. 23.

[29]. Mitchell H. J., A Model for Managing Intellectual Capital to Generate Wealth, Massey University, Albany 2010, s. 20-21.

[30]. Różycka A., rozprawa doktorska, Rola kapitału intelektualnego w adsorpcji innowacji w przedsiębiorstwie, Warszawa, 2013.