Intellectual capital: The strategic resource of organizations

Sandra Isabel Rodrigues Bailoa

Polytechnic Institute of Beja
School of Technology and Management

Abstract: The increasing investment in intangibles and the growth of markets of goods and services based on knowledge shows that these assets that comprise the intellectual capital are the key to strategic management of organizations in the knowledge economy. In increasingly competitive markets, where it is mandatory to innovate constantly, the value of products and services seems to depend more and more on the percentage of technology, knowledge and intelligence embedded in them. Given this reality, intellectual capital should be considered a strategic resource and the ability to manage it, a key factor for success.

This study intends to address this issue reflectively, showing the importance of intellectual capital and its strategic management as a way of developing sustainable competitive advantage for organizations.

Key words: intellectual capital, knowledge management, intellectual capital management, strategic management, competitive advantage

1. Introduction

The transition from an economy based on tangible goods to an economy based on intangible assets, the so-called knowledge economy, has resulted in research areas such as intellectual capital. Intellectual capital is often defined as a set of intangible assets that create value for organizations and seems to be the determining raw material in the creation of sustained competitive advantages. In increasingly competitive and dynamic markets, where innovation is the watchword, it is important that organizations improve and sustain the ability to strategically manage and maximize the value that derives from their intellectual capital.

Thus, the objective of this paper is to be a reflection on the theme of intellectual capital and mainly about the importance of its strategic management as a mean for organizations to obtain sustained competitive advantages. Since the topic has been the subject of multiple articles and books in the last decades, this work intends to be a review of the state of art. Despite this subject is addressed to several areas, such as ac-

Correspondence to:
Sandra Isabel Rodrigues Bailoa
Edifício da Escola Superior
de Tecnologia e Gestão
Campus do Instituto Politécnico
de Beja
Rua Pedro Soares
7800-295 Beja, Portugal
Tel.: +351 284 314 400
E-mail: sandra.bailoa@ipbeja.pt

counting, human resources and finance, this article intends to provide a framework for strategic management.

This paper is organized as follows. The next section introduces literature review and describes theoretical background of intellectual capital. The third section discusses issues related to strategic management of intellectual capital. The fourth section presents main conclusions.

2. Intellectual capital: The state of art

2.1. Conceptual roots

In recent decades, the emergence of new forms of economic activities based on information and knowledge has been demonstrated by high volumes of business investments related to intangible aspects ranging from business support services, financial institutions, computer industry, biotechnology, aerospace, culture, tourism, telecommunications, social and community services, accounting, juridical services, marketing, among others. So, increasing investment in intangibles and the growth of markets for production of knowledge-based services show the importance of knowledge as a factor of production and led to call it the knowledge economy (Drucker, 1993, p. 34). The knowledge-based economy brought a transition from an economy based on tangible goods (raw material, labour and capital intensive) to an economy based on intangible assets intensive in technology and knowledge, based on information, human capacities, know-how, customer-supplier relationship, brand loyalty, quality of products and services, marketing, among others. Intangible assets as knowledge and intellectual capital (IC) now represent a highly significant share of corporate sustainability, and in many cases have more value than physical and material assets and that is because increased business competitiveness requires greater needs for innovation in products and processes, and higher quality, which are increasingly dependent on knowledge and IC. Therefore, IC is an area of research that comes with the transition to the so-called knowledge economy.

According to Roos et al. (1997, p. 15), theoretical roots of IC come from two different streams of research or currents of thought: the strategic and the measurement (Figure 1). The first focuses on the creation and use of knowledge and the relationship between knowledge and value creation. The second is related to the need to develop a new information system by measuring non-financial variables together with traditional financial variables.

According to Pablos (2003, p. 68), 'The root of the intellectual capital report tradition is in Sweden. Back in 1994, the Swedish insurance company Skandia published the first intellectual capital report in the world.' This report is also referred by Sveiby (2010, p. 4), Martins (2007, p. 827), Ramos (2003, p. 142), Viedma (2000, p. 9) and Rađenović and Krstić (2017, p. 128). Fernández (2007, p. 15) also states that in the early 1990s in Sweden and USA new concepts and tools associated with knowledge and IC management appeared, at the level of business management literature. In fact, modern development of IC research was made mainly by Brooking (1996), Sveiby (1997a; 1997b), Edvinsson and Malone (1997), and Stewart (1997) producing scientific texts and studies with practical application, especially in business area, and whose books published popularized the concept of IC. Despite

this intense research on the 1990s, according to Serrano and Fialho (2003, p. 112) and Khalique et al. (2011, p. 343), the concept of IC was first introduced in 1969 by the economist John Kenneth Galbraith.

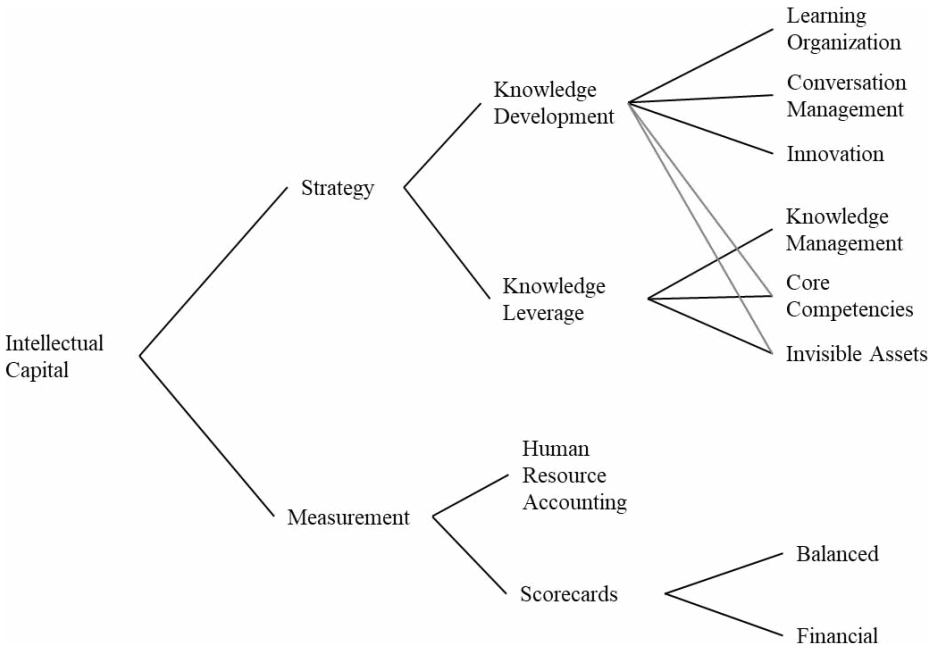

Figure 1. Conceptual roots of IC

S o u r c e: Roos et al., 1997, p. 15.

For Choo and Bontis (2002, p. 15) research on IC has taken different approaches by different areas such as accounting, strategic management, human resources, finance. The different approaches have led to various designations, for example the terms 'intellectual capital' and 'intangible capital' are used interchangeably, 'Economists call them knowledge capital, management experts refer to them as intellectual capital, and accountants call them intangible capital or intellectual capital' (Kavida and Sivakoumar, 2009, p. 56).

There seems to be no single IC definition that can be generally accepted. 'It is difficult to define IC due to its invisible and dynamic nature' (Zhou and Fink, 2003, p. 37). Despite this, many definitions depart from the idea that the IC is based on a set of intangible assets related to the existing knowledge in organizations. Kavida and Sivakoumar (2009, p. 56) corroborate this idea by pointing out that in knowledge-based industries intellectual property is the most valuable capital, so IC is the manifestation of collective knowledge, ideas, innovation and wisdom of a company's employees. They refer that 'Intangible capital is a generic term used in describing the invisible capital of a firm that generates value for it. Intangible capital, in its evolving forms, is commonly referred to as intellectual capital or knowledge capital or intellectual assets' (Kavida and Sivakoumar, 2009, p. 56). Also for Viedma (2000, p. 7) intan-

gible assets have their origin in the knowledge, skills, values and attitudes of people who are a part of a stable core of the company. 'These intangible assets are called intellectual capital and comprise all those tacit or explicit knowledge that generate economic value for the company' (Viedma, 2000, p. 7). Also for Martins (2007, p. 825) 'Intellectual capital is then seen as intellectual material—knowledge, information, intellectual property, experience—that can be used to create wealth.'

Another line of investigation assumes IC as the difference between the company's market value and its book value based on the fact that the reports provided by financial accounting do not fully reflect the reality of companies, since their accounting value is often below their market value because IC is not registered in the financial accounts (Pablos, 2003, p. 63; Zhou and Fink, 2003, p. 37; Fernández, 2007, p. 16; Martins, 2007, p. 823; Joia, 2009, p. 1382).

Thus, the IC concept has numerous definitions and interpretations. However, these have in common the fact that IC is a source of sustained competitive advantage, and that the value of organizations and the creation of value are associated with the use of IC.

2.2. Classification and components of intellectual capital

In the specialized literature there are several classifications of IC and each proposes a specific typology of intangibles, however the most common is a tripartite classification. IC is usually classified in three categories: human capital, relational capital and structural or organizational capital (Ramos, 2003, p. 139). Human capital includes knowledge, qualifications, collective competences, skills, experiences, creativity, capacity for innovation, motivation and professional training of workers in the organization. Relational capital includes value contained in the company's relationship with customers, suppliers, investors and distribution channels. Structural or organizational capital includes organizational processes and procedures, technologies, hardware, software and databases, organizational structure, brands, patents and intellectual property rights.

Ramos (2003, p. 139) also mentions that people (human capital) create the knowledge they share, use and diffuse (relational capital), which is finally institutionalized and codified by companies (structural capital). Among these categories, human and relational capital are transitory in organizations, since they do not have the permanence of structural or organizational capital, namely because they can move easily to other companies, so an important challenge in the management of IC is the transformation of human and relational capital in something more permanent as the structural capital.

Roos et al. (1997, pp. 30–31) divide IC into human capital and structural capital, differentiating them respectively between the 'thinking' and the 'non-thinking' IC, since we cannot use the same management methods for people and structural capital. They also point out that human capital is the part of the IC that is not owned by the company, while with structural capital it is (Roos et al., 1997, pp. 30, 42).

Table 1. Some classifications of IC components

Author	Classification of IC components	Model
Kaplan, Norton (1992)	Customer perspective; Internal business process perspective; Learning and growth perspective	Balanced Score Card
Brooking (1996)	Market assets; Human-centred assets; Intellectual property assets; Infrastructure assets	The Technology Broker
Edvinsson, Malone (1997)	Human capital; Structural capital; Customer capital; Organizational capital; Innovation capital, Process capital	Skandia Navigator
Roos et al. (1997)	Human capital; Competence; Attitude, Intellectual property Structural capital; Relationships, Organization; Renewal and development	The IC distinction tree IC-Index
Stewart (1997)	Human capital; Structural capital; Customer capital	The elements of IC
Sveiby (1997)	Internal structure; External structure; Employee competence	The Intangible Assets Monitor

S o u r c e: Author's own elaboration.

Despite generalization in the tripartite classification, various authors present some differences regarding the classification of IC components, since a generally accepted methodology to classify IC has not yet been reached. However, it is more a matter of terminology or a way of aggregating the elements than proper differences between concepts (Ramos, 2003, p. 140). So despite the different terminologies presented, some parallels can be established. Table 1 presents a comparison of classifications suggested by some of the first and most well-known investigations.

2.3. Models for measuring and managing intellectual capital

Most models that were developed to measure IC and knowledge assets appeared in the business scope, in areas such as accounting, economics, human resources, intellectual property (Malhotra, 2003, p. 6). They assume that financial indicators are necessary but insufficient in analyzing the performance of an organization, so the IC indicators should complement the financial ones, allowing looking for explanations for the present and future results of the organizations. Despite this common assumption, models present differences in the priority given to evaluation and measurement of IC components. Sveiby (2010, p. 3) presents the following four categories of measurement approaches for the classification of the main models:

– D i r e c t I n t e l l e c t u a l C a p i t a l M e t h o d s (DIC)—estimate the monetary value of intangible assets by identifying its various components and, once these components are identified, they can be directly evaluated, either individually or as an aggregated coefficient;
– M a r k e t C a p i t a l i z a t i o n M e t h o d s (MCM)—calculate the difference between the company's market capitalization and its stockholders' equity as the value of its IC or intangible assets;

– Return on Assets Methods (ROA)—average pre-tax earnings of a company for a period of time are divided by the average tangible assets of the company, the result is a company ROA that is then compared with its industry average; then the difference is multiplied by the company's average tangible assets to calculate average annual earnings from the intangibles; then dividing the above-average earnings by the company's average cost of capital or an interest rate, one can obtain an estimate of the value of its intangible assets or IC;
– Scorecard Methods (SC)—the various components of intangible assets or IC are identified and indicators and indices are generated and reported in scorecards or as graphs; these methods are similar to DIC but expecting that no estimate is made of the monetary value of the intangible assets; and a composite index may or may not be produced.

Sveiby (2010, p. 3) also refers that methods offer different advantages, as for example ROA and MCM methods are useful in merger and acquisition situations and for stock market valuations, because they are methods that offer monetary valuations. They can be used in comparisons between companies within the same industry and are good for illustrating the financial value of intangible assets because they are constructed basing on long established accounting rules. Its disadvantages are in the translation of everything in monetary terms, which can make the analysis superficial and insufficient, and in addition some of these methods are of no use for non-profit organizations, internal departments and public sector organizations—such is the case of MCM.

On the other hand, it is also mentioned that the DIC and SC methods can easily be applied at any level in an organization, they can allow a better diagnosis of an organization because of the fact that they do not need to measure in financial terms, makes them useful in non-profit organizations, internal departments and public sector organizations and for environmental and social purposes. Their disadvantages are that the indicators are contextual and have to be customized for each organization and each purpose, which makes comparisons difficult, on the other hand—they are not easily accepted by managers and companies who are used to see everything from a financial perspective (Sveiby, 2010, p. 3).

To Sveiby (2010, p. 4), no method can fulfil all purposes and one must select the method depending on the purpose, situation and audience. In Figure 2 Sveiby (2010, p. 4) presents the main models for measuring intangible assets and IC.

Numerous studies have been conducted in search for methodologies to improve intellectual capital management. The diversity of models developed is due to the very intangible nature of these assets and, especially in each specific business, have its particular combination of key knowledge of success in function of the objectives to be achieved and the market situation (Viedma, 2000, p. 8).

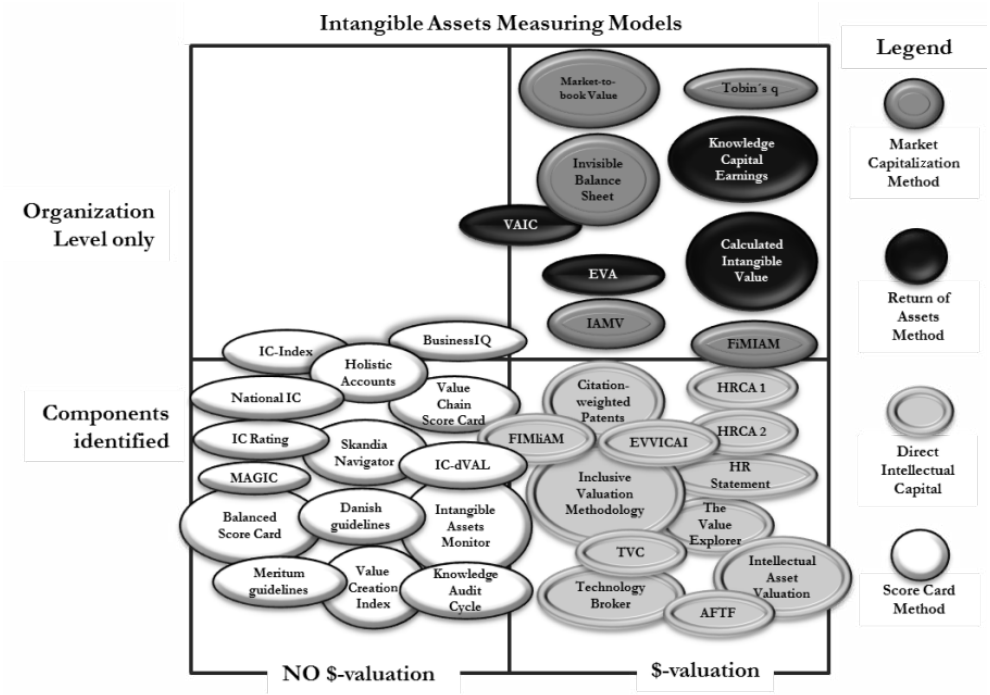

Figure 2. Intangible assets measuring models

S o u r c e: Adapted from Sveiby, 2010, p. 4.

It is possible to find a multiplicity of intellectual capital management methodologies especially coming from the business area where the first models were produced. Some popular models of intellectual capital management are the following examples: Balanced Scorecard (Kaplan and Norton, 1992), Skandia Navigator (Edvinsson and Malone, 1997), The Intangible Assets Monitor (Sveiby, 1997a), among others. However, it is also possible to observe some other research paths with the application of the concept to the public sector management (Cinca et al., 2001; Queiroz, 2003; Queiroz et al., 2005; Hyrkäs et al., 2009; Joia, 2009), to the territories management (Viedma, 2003; Andriessen and Stam, 2004; Bontis, 2004; Sánchez Medina et al., 2007; Rybinski, 2009), and to digital networks management (Tapscott et al., 2000; Terra and Gordon, 2002; Ruta, 2009; Liu, 2009; Liu and Chen, 2009; Chen, 2011; Bailoa, 2015; 2016).

3. The strategic management of intellectual capital

3.1. Intellectual capital and competitive advantage

If we take into account that the current context of more competitive markets requires that businesses have to innovate permanently, then the source of sustained competitive advantage of companies operating in knowledge economy is to achieve a proper management of their

IC. Several authors defend and recognize it as a strategic and decisive resource in the creation of value, as a way to face dynamic environments, and as a source of sustained competitive advantages that allows to differentiate the organization from the rest, among them: Viedma, 2000, p. 8; Pablos, 2003, p. 63; Serrano and Fialho, 2003, p. 113; Zhou and Fink, 2003, p. 38; Kraemer, 2004, p. 1; Nadai and Calado, 2005, p. 1; Souza et al., 2008, p. 6; Matos and Lopes, 2008, p. 234; Kavida and Sivakoumar, 2009, p. 55; Ruta, 2009, p. 562; Liu and Chen, 2009, p. 9416; Chen, 2011, p. 3592; Matos, 2013, p. 339; Gogan, 2014, p. 194; Nuryaman, 2015, p. 297; Todericiu and Şerban, 2015, p. 713; Gogan et al., 2016, p. 194; Rađenović and Krstić, 2017, p. 128, 131.

According to Serrano and Fialho (2003, p. 114), competitive advantage requires respect for the following criteria: add value, scarcity or rarity, difficult or imperfectly imitable and difficult to replace. IC seems to fit perfectly in these criteria. To reinforce this idea, Rađenović and Krstić (2017, p. 131) indicate that the characteristics of IC, as a valuable knowledge-based resource, are: IC is valuable, rare, imperfectly imitable and non-substitutable; IC is communicable to others; and components of IC are both distinctive and comprehensive. These authors consider that because of these characteristics, IC can be transformed in the competitive advantage of the firm (Rađenović and Krstić, 2017, p. 131).

Nonaka and Takeuchi (1995, p. 6) also point out that continuous innovation leads companies to competitive advantage and that focus must be given to knowledge as a competitive resource. IC and knowledge generate economic value when the flow of new ideas is marketed in the form of innovative products, processes, services and forms of organization, and in the ability to maintain this innovation, the sustained competitive advantage. To Rađenović and Krstić (2017, p. 128) a firm to achieve competitive advantage must create superior value for its customers in comparison with its competitors, and the capacity to do that depends on its resources, and the authors also refer that the 'Utilization of knowledge-based resources creates value that can be manifested as human capital, innovations, patents etc.' (Rađenović and Krstić, 2017, p. 129). Edvinsson et al. (2004, p. 42) argue that from a commercial point of view, for shareholders the value is in the company capacity for continuous innovation and the development of new products and services. These authors summarize the innovation formula as the sum of the re-use of existing ideas and knowledge combined with new knowledge as inventions and then market and capitalize those (Edvinsson et al., 2004, p. 42). For Fernández (2007, p. 19) the impact that knowledge has on tangible results is indirect, it is revealed from cause-and-effect relationships, that is, its value only becomes real when it becomes a tangible value. In fact, the utility in managing knowledge and IC is demonstrated when these intangibles become new products, services and processes. 'This means that in all organizational processes it will be necessary to incorporate IC and throughout the organization to make each individual an innovator, and therefore the core of the innovation process, the management of intellectual capital' (Matos and Lopes, 2008, p. 234).

3.2. Knowledge management versus intellectual capital management

In literature the terms: IC, knowledge, intangible assets, among others, are used interchangeably. It is difficult to establish limits for how they are used and defined by the authors

since the distinction between these concepts is not always easy to be done because they have common fields. For Roos et al. (1997, p. 24) while knowledge is a part of IC, this one is much more than just knowledge, for example it should consider brands, patents and external relations that companies hold with distributors, suppliers and customers, dimensions that allow to create value to the organization. In a similar way, in this work, IC can be assumed as a more comprehensive concept where knowledge is included, among other elements.

At the same time, knowledge management (KM) and intellectual capital management (ICM) are concepts that sometimes are confused and whose contents overlap in some way. To Serrano and Fialho (2003, p. 127) and Kraemer (2004, p. 3) KM is a strategy to transform and accumulate intellectual assets that will allow greater productivity, competitiveness and better results. According to Viedma (2000, p. 11), there are essential differences of approach between ICM and KM. ICM focuses on creating, obtaining and effectively managing all the intellectual assets necessary to achieve corporate objectives and successfully developing its strategies; it is intellectual asset management of a strategic point of view. KM refers to the tactical and operational aspects, it is more detailed and focuses on facilitating and managing knowledge-related activities such as their creation, capture, transformation and use, consists of planning, setting in motion, operating and controlling all activities and programmes related to knowledge (Viedma, 2000, p. 11). To Souza et al. (2008, p. 7) KM is not only at the operational level, but at the strategic level, it is a broad function that encompasses a multitude of activities, processes and approaches, in an effort that must begin in the company's strategic managers and must understand the entire structure, culture and practices of the organization.

Also to Zhou and Fink (2003, p. 39), KM and ICM serve different purposes, but have similarities and also complement each other by having important overlaps. KM and ICM present in common the scope of broad action and that covers the whole set of intellectual activities within the organization. They present different objectives because ICM is considered at the top management and strategic management level, focuses on extraction and creation of value, its objective is to create and develop intellectual assets and increase the value of the company by building capacities from a strategic perspective. KM is considered at the tactical and operational level, focusing on activities that facilitate creation, capture, transformation and use of knowledge. It plays an important role in development and exploitation of IC and its elements, creating an environment conducive to its growth and maximization, promoting a smarter organization (Zhou and Fink, 2003, p. 39). According to Zhou and Fink (2003, p. 39), the relationship between IC and KM is of vital importance to an organization (Figure 3). ICM and KM should be linked to achieve added value and must be made to work together by aligning KM processes with individual IC elements because this linkage allows a proper use of IC, becoming the central resource for sustainable competitiveness. Therefore, KM plays an important role in the process of IC development and exploitation, focusing on facilitating and managing knowledge-related activities, and strives to create a knowledge friendly environment in which IC will grow.

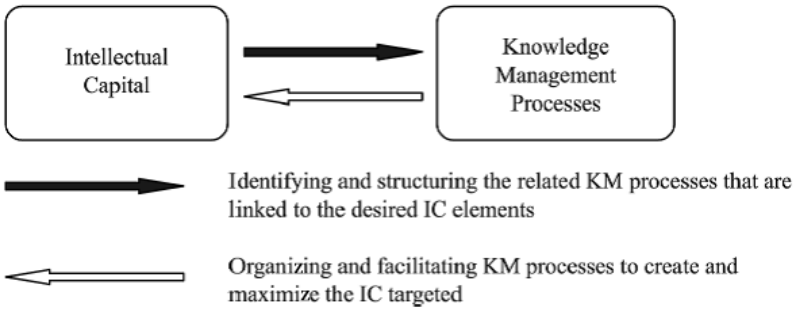

Figure 3. The relationship between IC and KM

S o u r c e: Zhou and Fink, 2003, p. 40.

KM and ICM activities should be defined according to the strategic needs of the company, dependent on their priorities, and should involve the entire organization, thus, linking IC with the strategic organizational objectives ensures that the company derives competitive advantages from IC and KM (Zhou and Fink, 2003, p. 42). Thus, and beyond the conceptual differences, what is retained is that both activities are considered essential tools for strategic management.

3.3. Challenges and directions for strategic intellectual capital management

The context of the knowledge economy has brought new strategic implications and challenges to organizations. Fernández (2007, p. 15) explains that there were times when competitive advantage of organizations came from strategies such as: cost leadership (produce at lower costs than competitors raising sales volume), differentiation (positioning itself in the market with different products from the competition) or segmentation (focusing on a certain market, a certain profile of consumers, etc.). However, today the sustained competitive advantage indicated by most researchers stems from the proper management of IC, assuming a change in the way management and strategies are conceived.

Each author in each temporal context has contributed to a better conception of the strategy. Fernández (2007, p. 22) synthesizes three contemporary paradigms of the strategy referring the passage of the economic paradigm, inspired by the industrial economy, where we find well known authors of the strategic management like Ansoff or Porter, to the information paradigm, where we find for example Nonaka, Drucker and Mintzberg, and later to the systemic or learning paradigm, where stands out Senge and the concept of the Learning Organization. Mintzberg et al. (1998) even come to categorize the different views of strategy in ten schools of strategic thinking. Fernández (2007, p. 22) argues that the most recent research demonstrates the need to use new approaches and tools of strategic direction, then strategies to create value these days must move from managing tangible assets to strategies based on KM, managers must understand the importance of knowledge as the primary source of sustained competitive advantage and must change the way they conceive organizational strategy, incorporating key intangible assets such as skills, organizational learning, customer relationships, and innovation, among others.

Indeed, there are several researches that emphasize the need to adopt a more strategic stance in ICM. According to Viedma (2000, p. 5), the starting point for the formulation of the strategy is to identify and value the capacities and resources that are decisive for the company, classifying the resources in tangible and intangible, corresponding the intangible ones to IC (Figure 4).

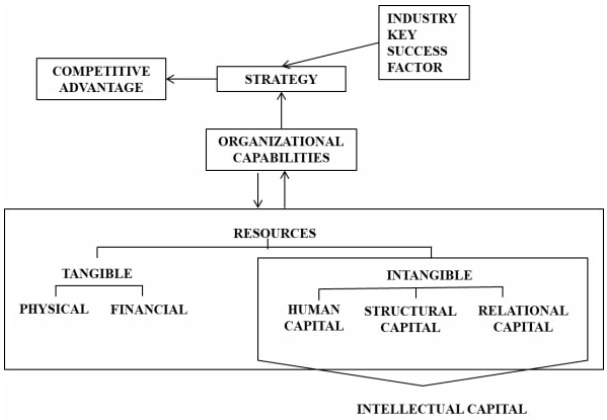

Figure 4. Fundamental relations between resources, capabilities and competitive advantage

S o u r c e: Viedma, 2000, p. 6.

For Roos et al. (1997, p. 62), '… an IC system is good only if it is based on the strategic identity of the company.' Roos et al. (1997, p. 62) developed a measurement and management model of IC (Figure 5) whose basic essence begins in the company's strategy and follows some important phases: understand what the company is and what it wants to be, which means rethinking its mission and translating it into more quantifiable terms; once the identity and long-term objectives are clarified, they should be used as guidelines to identify critical success factors; critical success factors should give rise to indicators; the information flowing from individual measures should then be collected in different IC categories.

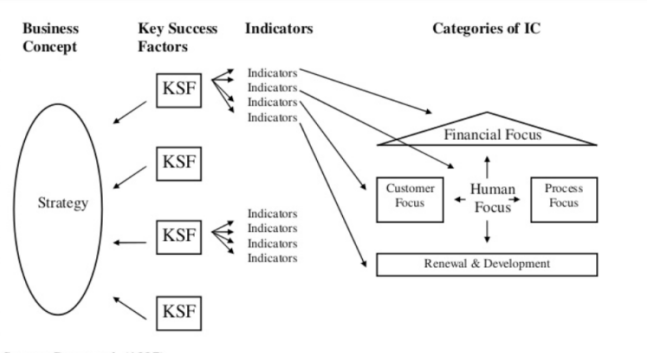

Figure 5. The process model

S o u r c e: Roos et al., 1997, p. 63.

Some authors emphasize the importance of measuring IC to improve its management. Kavida and Sivakoumar (2009, p. 58) state that the key issue for using IC as a strategic tool lies in its measurement because what can be measured can be managed and, therefore, IC measurement is a prerequisite for its management, presenting some reasons that justify its measurement, both externally and internally. At the external level, an IC analysis could provide stakeholders with more realistic information about the company's current situation and its future potential where IC reports should supplement traditional financial reports but for this the indicators should be held somewhat stable and are comparable among different companies (Kavida and Sivakoumar, 2009, p. 58). At the internal level, IC is an important management tool to improve the performance of a company, allowing to add value in assisting in strategic choices, analyzing changes both internally and externally, resource allocation, and motivation of employees. It is something that must be properly incorporated into the philosophy, culture, and vision of the firm, however, it must be realized that not all information can be disclosed (Kavida and Sivakoumar, 2009, p. 59).

Souza et al. (2008, p. 11) point out that measuring knowledge requires clear techniques to identify a set of appropriate indicators that can interconnect people, strategy and performance, providing objective bases for decision making. For Fernández (2007, p. 20) the measurement of intangible assets is a challenge that involves the concentration of efforts in several phases: to determine the variables that must be measured; define correct indicators capable of reflecting the value of the selected variables; determine how they will be presented both internally and externally. Also Kraemer (2004, p. 5) argues that the information that results from the evaluation of IC is useful for managers, since they enable them: systematization of information; identification and measurement of financial and non-financial indicators; get details about the competencies of the professionals, know the revenue generators of the organization; provide help in making decisions about staff, investments, and customers.

For Kaplan and Norton (2001, p. 12) the problem goes beyond measurement, that is, strategies as a sustained way of creating value for organizations are changing, but the tools for managing strategies have lagged behind this evolution. Companies face problems in trying to implement knowledge-based strategies that exploit intangible assets due to the lack of adequate tools. According to Kaplan and Norton (2001, p. 12), an economy where intangible assets have become the main source of competitive advantage requires tools that describe knowledge-based assets and value-creating strategies built from those assets. To these authors, the methodology created by them, the Balanced Scorecard, as an important tool in the definition and implementation of the organizational strategy, is a management system designed to manage the strategy presenting three different dimensions (Kaplan and Norton, 2001, pp. 17–18): 1. Strategy—main item of the organizational agenda; 2. Focus—all the resources and activities of the organization align with the strategy; 3. Organization—mobilization and participation of all elements of the organization.

For Fleury and Oliveira (2001, p. 141) the strategic implications of managing knowledge lie in three main points about the intrinsic nature of knowledge that are relevant to strategic action: 1. The definition of what knowledge is really worth developing by the company; 2. How companies can share the knowledge that will sustain their advantage; 3. The ways in which the knowledge that constitutes the company's advantage can be protected.

Some authors have expressed concern about developing methodologies and frameworks for strategic ICM. Zhou and Fink (2003, p. 42) presented a theoretical model, the *ICW—Intellectual Capital Web*—a systematic way of managing and measuring knowledge processes for the purpose of creating and maximizing IC (Figure 6).

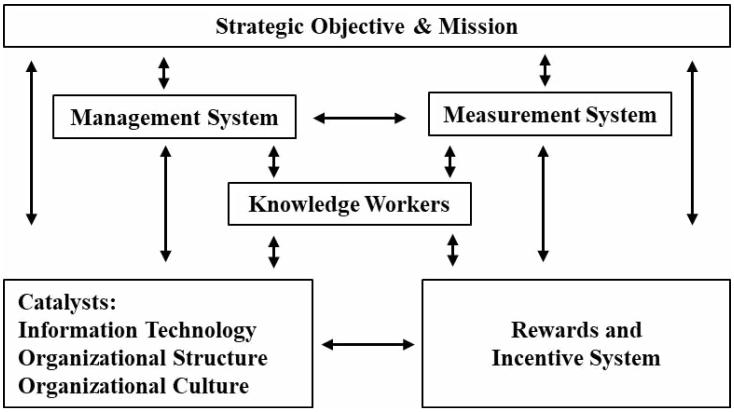

Figure 6. Intellectual capital Web

S o u r c e: Zhou and Fink, 2003, p. 41.

The ICW comprises of six elements: organizational strategic objective, management system, measurement system, knowledge workers, catalysts, and rewards and incentive system. The strategic objective guides the direction of the organization and indicates what kinds of IC are important to develop and maximize for the firm's growth and success. The purpose to link IC with organizational strategic objective is to ensure that the firm gets competitive advantages from its IC. After the IC elements that are crucial to the business have been identified and classified, organizations can then align KM activities with IC elements, that is, the guidelines for the formulation of the KM strategy (Zhou and Fink, 2003, p. 42). At the centre of the model there are the knowledge workers whose management implies stimulating and promoting behaviours of knowledge creation and sharing; KM systems include formal and informal activities and processes for acquiring, encoding, storing and distributing knowledge organized in a network so that they can reach the whole organization; and measurement systems are essential because they provide metrics to measure the effectiveness of management processes, provide feedback for management (Zhou and Fink, 2003, p. 44). The catalysts include information technology, organizational structure and culture, which are tools that facilitate the storage, transfer and sharing of knowledge, they are also the support in the creation of an environment conducive to generation and sharing that allows learning and open communication; and finally, rewards and incentive systems are a key element in motivating behaviours conducive to the creation of a knowledge-sharing culture (Zhou and Fink, 2003, pp. 44–45).

Choo and Bontis (2002, p. 16) also present a framework for strategic management of knowledge and IC consisting of the following elements: 1. Organizational processes of knowledge; 2. Locus of knowing/ learning; 3. Types of IC; 4. Strategic levers. This model can be seen in Figure 7.

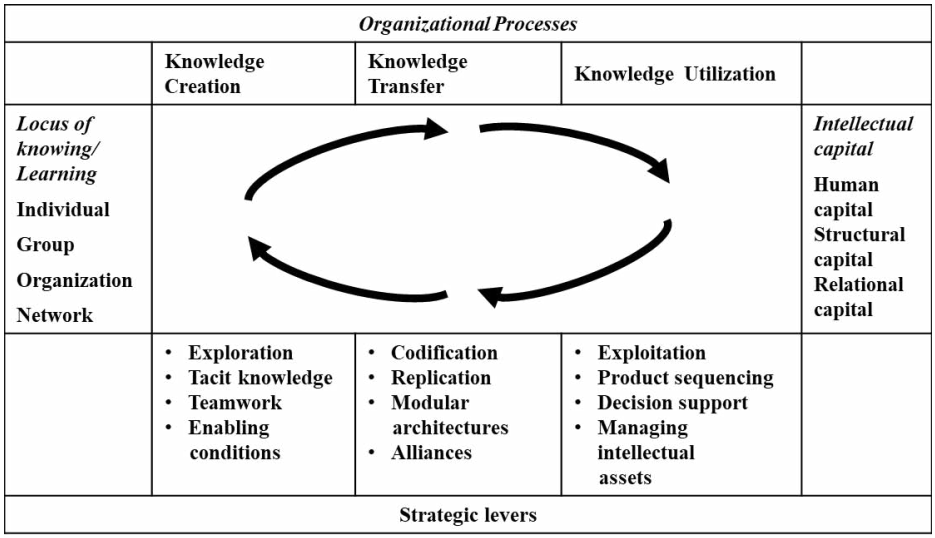

Figure 7. A framework for strategic knowledge management

S o u r c e: Choo and Bontis, 2002, p. 16.

According to Choo and Bontis (2002, p. 16), a company generates value from knowledge through organizational processes that include its creation, transfer and use in the production of goods and services, and also in the production of new knowledge. Over time the company accumulates a stock of knowledge and skills that are unique given their learning and experience which consists of its IC. This includes human, structural, and relational capital that resides in its workers, routines, intellectual property, and relationships with customers, suppliers, distributors, and partners. This stock is continually renewed through new learning at various levels: individual, group work, organization, and network of organizations of which the company is a part.

Choo and Bontis (2002, pp. 17–18) also argue that there is no universal recipe for a company to define a knowledge-based strategy, each organization must design its responsibilities and initiatives based on their aspirations, learning and abilities, conditions molded either by the conditions of the industry, the surrounding general environment, as well as the whole path or the trajectory that the organization has fulfilled. The authors acknowledge that companies to have success need different types of knowledge, sometimes knowledge to develop products, knowledge about customers and competitors to identify markets, knowledge to coordinate and integrate the flow of resources that they use, and knowledge about how to renew their IC and their essential capabilities. They also recognize that a knowledge-based strategy is a responsibility that links the specific characteristics of a company to the contingencies of the environment in which it operates and that in an increasingly dynamic and complex world, companies will need agility and the ability to embrace what would traditionally be seen as opportunities, for example sharing and protecting knowledge, managing stocks and flows of IC (Choo and Bontis, 2002, pp. 17–18).

4. Conclusions

The topic addressed in this article was intended to be a reflection about the importance of strategic management of intangible assets of an organization as a source to obtain sustained competitive advantages. In increasingly competitive environments associated with the current scenario of globalization, where the cycle of life of products and services decreases, and where its demand is increasingly informed, the survival of organizations is associated with continuous innovation. IC creates value and wealth for the organizations when it is transformed and allows new productions including the one of the own knowledge. Thus, the strategic management of IC can allow creating new knowledge, to disseminate it and to quickly incorporate it into new processes and products. For these reasons, in the knowledge economy, IC has become the strategic resource for organizations that compete in dynamic environments.

Despite the fact that the concept of IC has been object of many definitions and interpretations, it is generally associated to a set of unique intangible assets (knowledge, information, creativity, competences and skills of workers, trademarks, customer satisfaction, marketing, and quality, among others) that create value and competitive advantages to organizations. And it is usually classified in three main categories, such as human capital, structural capital and relational capital. On the other hand, the different perspectives and methodologies to manage IC reveal some tension in the approaches and some lack of consensus on how the various components of IC are defined and measured. It is necessary to recognize that indeed there have been efforts coming from several areas of research that aim to contribute to better understand the usefulness of using, measuring and managing knowledge and IC, however, it is verified that there are not yet universally accepted definitions or methodologies.

The fact that IC is not recorded in the financial and accounting reports shows that traditional measurement systems are not designed to deal with the complexity of IC, whose value is difficult to determine and is strongly influenced by the context in which it exists in an organization. Thus, IC often ends up being defined as the difference between the market value of a company and its book value. This difficulty in determining this value, or its importance in an organization, has multiplied the measurement models of this asset, appearing models almost for all tastes, some that transform it even into monetary values, and others that are based on the construction of a set of indicators for its better strategic management, among other perspectives.

Where there seems to be consensus among multiple authors, that is on recognizing that IC is the strategic resource of organizations, the one capable of allowing bringing the desired sustained competitive advantages. It is from this recognition that KM and ICM concepts have emerged. Both concepts seem to complement each other. Some authors associate KM more with tactical and operational management aspects related to the creation, diffusion and sharing of knowledge, and ICM is more associated with strategic management aspects, linked to effectively managing all the intellectual assets essential to achieve the objectives of organizations. ICM seems to be about the ability to extract the maximum value of an organization's IC, that is, in an appropriate and profitable way, stimulating behaviours and environments that foster innovation and the transformation of new ideas into products, services or pro-

cesses in a continued manner that will allow that the competitive advantage can be sustained, that is, lasting. The different perspectives on ICM also reveal that there is no generally accepted recipe. However, there are aspects that most authors argue as to rethink the organization's mission and to clarify long-term goals that allow identifying critical success factors; to identify IC elements that are crucial to the organization's growth and success; to align ICM and KM activities and processes with the key IC elements (activities to maximize the value of IC) and also with strategic needs and strategic objectives; to use ICM tools/ methodologies and appropriate indicators to provide information on the different IC categories; to align the organization with the strategy and make it a participatory process, among other aspects mentioned.

Thus, if, on the one hand, managing IC in an adequately way does not seem to be able to do with traditional models, requiring rethinking and renewing of a whole set of concepts and principles, on the other hand, the multiplicity of methodologies and the fact that there is no generally accepted tool create some difficulties in choosing the procedures to be followed in the definition of an ICM strategy. Anyway, the most important is to realize that priority must be given to the level of IC strategic management and to do that, the formulation, execution and evaluation of the strategy must be based on new tools that allow maximizing the value of IC. Therefore, in the knowledge economy, the strategic management of IC seems to be a very significant challenge for organizations.

As a final note, it is considered that in general the objective of the present work were achieved, the elements that were initially foreseen were developed, and the main aspects in relation to the strategic management of IC were analyzed and discussed. The developed analysis allowed deepening the knowledge and better understanding of the thematics—nevertheless, it must be emphasized that the extension of the theme allows to realize that it has not been exhausted in this reflection.

References

Andriessen, D., Stam, C. (2004). *The intellectual capital of the European Union: Measuring the Lisbon agenda Version 2004* [online, accessed: 2017-10-23]. Centre for Research in Intellectual Capital; Inholland University of professional education; de Baak—Management Centre VNO-NCW. Retrieved from: https://www.bvekennis.nl/Bibliotheek/05-0048_Measuring_Lisbon_agenda.pdf.

Bailoa, S. (2015). Analyzing digital capital of Portuguese local governments websites. *The Małopolska School of Economics in Tarnów Research Papers Collection*, *28* (4), 27–45.

Bailoa, S. (2016). Merging digital capital and digital governance: A framework for local government websites. *The Małopolska School of Economics in Tarnów Research Papers Collection*, *32* (4), 25–43.

Bontis, N. (2004). National intellectual capital index: A United Nations initiative for the Arab region. *Journal of Intellectual Capital*, *5* (1), 13–39.

Brooking, A. (1996). *Intellectual capital: Core assets for the third millennium enterprise*. London: International Thomson Business Press. ISBN 1861524080.

Chen, S. (2011). Exploring digital capital of automated cargo clearance business websites. *Expert Systems with Applications*, *38*, 3590–3599.

Choo, C., Bontis, N. (2002). *The strategic management of intellectual capital and organizational knowledge*. Oxford: Oxford University Press. ISBN 019513866X.

Drucker, P. (1993). *Post-capitalist society*. New York: HarperCollins. ISBN 0887306209.

Edvinsson, L., Malone, M. (1997). *Intellectual capital. Realizing your company's true value by finding its hidden brainpower*. New York: Harper Business. ISBN 0887308414.

Edvinsson, L., Dvir, R., Roth, N., Pasher, E. (2004). Innovations: The new unit of analysis in the knowledge era. The quest and context for innovation efficiency and management of IC. *Journal of Intellectual Capital*, *5* (1), 40–58.

Fernández, R. (2007). La dirección estratégica en la sociedad del conocimiento. Parte I. El cuadro de mando integral como herramienta para la gestión. *ACIMED*, *15* (6). Ciudad de La Habana.

Fleury, M., Oliveira, M. (2001). *Gestão estratégica do conhecimento: integrando aprendizagem, conhecimento e competências*. São Paulo: Editora Atlas. ISBN 9788522429097.

Gogan, M. (2014). An innovative model for measuring intellectual capital. *Procedia. Social and Behavioral Sciences*, *124*, 194–199.

Gogan, M., Artene, A., Sarca, I., Draghici, A. (2016). The impact of intellectual capital on organizational performance. *Procedia. Social and Behavioral Sciences*, *221*, 194–202.

Hyrkäs, E., Kianto, A., Rings M. (2009). IC as a developmental tool for municipalities. *Proceedings of the European Conference on Intellectual Capital*, Inholland University of Applied Sciences, Haarlem, The Netherlands, 28–29 April 2009, pp. 263–270.

Joia, L. (2009). Governo eletrônico e capital intelectual nas organizações públicas. *Revista de Administração Pública*, Rio de Janeiro, *43* (6), 1379–1405.

Khalique, M., Shaari, J., Isa, A. (2011). Intellectual capital and its major components. *International Journal of Current Research*, *33* (6), 343–347.

Kaplan, R., Norton, D. (1992). The balanced scorecard measures that drive performance. *Harvard Business Review*. January–February, 71–79.

Kaplan, R., Norton, D. (2001). *Organização orientada para a estratégia: como as empresas que adoptam o Balanced Scorecard prosperam no novo ambiente de negócios*. Rio de Janeiro: Editora Campus. ISBN 9788535207095.

Kavida, V., Sivakoumar, N. (2009). Intellectual capital: A strategic management perspective. *The IUP Journal of Knowledge Management*, *7* (5–6), 55–69.

Kraemer, M. (2004). *Capital intelectual: A nova vantagem competitiva* [online, accessed: 2017-09-10]. Retrieved from: http://www.gestiopolis.com/recursos3/docs/ger/capintel.htm#mas-autor.

Liu, C. (2009). Developing measures and prioritizing digital capital of real estate websites. *Proceeding of: 2009 WRI World Congress on Computer Science and Information Engineering*, *1*, 508–511.

Liu, C., Chen, S. (2009). Prioritization of digital capital measures in recruiting website for the National Armed Forces. *Expert Systems with Applications*, *36* (5), 9415–9421.

Malhotra, Y. (2003). *Measuring knowledge assets of a nation: Knowledge systems for development* [online, accessed: 2017-10-23]. Research Paper prepared for the Invited Keynote Presentation to be delivered at the United Nations Advisory Meeting of the Department of Economic and Social Affairs Division for Public Administration and Development Management. Retrieved from: http://unpan1.un.org/intradoc/groups/public/documents/un/unpan011601.pdf.

Martins, J. (2007). Capital intelectual, Uma análise exploratória: A realidade Portuguesa. *Ayala Calvo, J. C. y grupo de investigación FEDRA*, pp. 822–837.

Matos, F. (2013). A theoretical model for the report of intellectual capital. *The Electronic Journal of Knowledge Management*, *11* (4), 339–360.

Matos, F., Lopes, A. (2008). Gestão do capital intelectual: A nova vantagem competitiva das organizações. *Comportamento Organizacional E Gestão*, *14* (2), 233–245.

Mintzberg, H., Ahlstrand, B., Lampel, J. (1998). *Strategy Safari: A guided tour through the wilds of strategic management*. London: Prentice Hall. ISBN 0136956777.

Nadai, F., Calado, L. (2005). O conhecimento como recurso estratégico: Caracterizando uma organização intensiva em conhecimento (OIC). *VIII SEMEAD, seminários em Administração FEA_USP*, 11 e 12 Agosto, 2005.

Nonaka, I., Takeuchi, H. (1995). *The knowledge-creating company: How Japanese companies create the dynamics of innovation*. New York and Oxford: Oxford University Press. ISBN 0195092694.

Nuryaman (2015). The influence of intellectual capital on the firm's value with the financial performance as intervening variable. *Procedia. Social and Behavioral Sciences*, *211*, 292–298.

Oliveira, L. (2000). A medida e gestão do capital intelectual: o desafio da era do conhecimento [online, accessed 2017-10-23]. *Comunicación presentada en el I Encuentro Iberoamericano de Contabilidad de Gestión*, Valencia, Noviembre 2000. Retrieved from: http://www.observatorio-iberoamericano.org/pai-

ses/Spain/Art%C3%ADculos%20diversos%20sobre%20Contabilidad%20de%20Gesti%C3%B3n/I%20Encuentro%20Iberoamericano%20Cont.%20Gesti%C3%B3n/Gesti%C3%B3n%20del%20Conocimiento/LidiaCAlves.pdf.

Pablos, P. (2003). Intellectual capital reporting in Spain: A comparative view. *Journal of Intellectual Capital*, *4* (1), 61–81.

Pike, S., Fernström, L., Roos, G. (2005). Intellectual capital: Management approach in ICS Ltd. *Journal of Intellectual Capital*, *6* (4), 489–509.

Queiroz, A. (2003). *La medición del capital intelectual en el sector público*. Zaragoza, 373 p. Tese doutorado, Universidad de Zaragoza, Faculdade de Ciencias Económicas y Empresariales. Orientadora: Lourdes Torres Pradas.

Queiroz, A., Callén, Y., Cinca, C. (2005). Reflexiones en torno a la aplicación del capital intelectual en el sector público. *Revista Española de Financiación y Contabilidad*, *34* (124), 211–245.

Rađenović, T., Krstić, B. (2017). Intellectual capital as the source of competitive advantage: The resource--based view. *Economics and Organization*, *14* (2), 127–137.

Ramos, M. (2003). De la contabilidad de los recursos humanos al capital intelectual y la gestión del conocimiento: una ampliación necesaria. *Revista de dirección, organización y administración de empresas*, *29*, 134–144.

Roos, J., Roos, G., Dragonetti, N., Edvinsson, L. (1997). *Intellectual capital: Navigating in the new business landscape*. Basingstoke: Macmillan Business. ISBN 0333694791.

Ruta, C. (2009). HR portal alignment for the creation and development of intellectual capital. *The International Journal of Human Resource Management*, *20* (3), 562–577.

Rybinski, K. (2009). From quantity to sustainable quality: Increasing intellectual capital. Can this objective guide policy development and can it be measured? *Paper prepared for the conference 'New methods for cohesion policy evaluation: promoting accountability and learning'*. Warsaw.

Sánchez Medina, A., González A., Falcón, J. (2007). Intellectual capital and sustainable development on islands: An application to the case of Gran Canaria. *Regional Studies*, *41* (4), 473–487.

Serrano, A., Fialho, C. (2003). *Gestão do Conhecimento – o novo paradigma das organizações*. Lisboa: FCA--Editora de Informática. ISBN 972-722-353-2.

Souza, E., Lima, E., Costa, S. (2008). A gestão estratégica do conhecimento: Uma abordagem fundamentada no desenvolvimento de medidas de desempenho. *IV congresso nacional de excelência em gestão Responsabilidade Socioambiental das Organizações Brasileiras Niteroi*, RJ, Brasil, 31 de julho, 01 e 02 de agosto de 2008. Retrieved from: http://www.inovarse.org/filebrowser/download/8942.

Stewart, T. (1997). *Intellectual Capital: The new wealth of organizations*. New York: Doubleday/Currency.

Sveiby, K. (1997a). The Intangible Assets Monitor. *Journal of Human Resource Costing and Accounting*, *2* (1), 73–97.

Sveiby, K. (1997b). *The new organizational wealth: Managing and measuring knowledge based assets*. San Francisco: Berrett-Koehler Publishers. ISBN 1576750140.

Sveiby, K. (2010). *Methods for measuring the intangible assets*. [online, accessed: 2017-09-13]. Retreived from: http://www.sveiby.com/files/pdf/intangiblemethods.pdf.

Tapscott, D., Ticoll, D., Lowy, A. (2000). *Digital Capital: Harnessing the power of business webs*. Boston: Harvard Business School Press.

Terra, J., Gordon, C. (2002). *Portais corporativos: A revolução na gestão do conhecimento*. 2ªedição. São Paulo: Negócio Editora. ISBN 8586014842.

Todericiu, R., Şerban, A. (2015). Intellectual Capital and its relationship with universities. *Procedia Economics and Finance*, *27*, 713–717.

Viedma, J. (2000). *La gestión del conocimiento y del capital intelectual* [online, accessed: 2013-09-26]. Fundación Iberoamericana del conocimiento. Retrieved from: http://www.gestiondelconocimiento.com/pdf-art-gc/00162viedma.pdf.

Viedma, J. (2003). CICBS: Cities' intellectual capital benchmarking system. *6th World Congress on the Management of Intellectual Capital and Innovation*, Hamilton, Ontario, Canada, January, 15–17, 2003.

Zhou, A., Fink, D. (2003). The intellectual capital web: A systematic linking of intellectual capital and knowledge management. *Journal of Intellectual Capital*, *4* (1), 34–48.

Kapitał intelektualny – strategiczne zasoby organizacji

Abstrakt: Wzrost inwestycji w zasoby niematerialne oraz rozwój rynku towarów i usług opartych na wiedzy dowodzą, że aktywa, które składają się na kapitał intelektualny, są kluczem do strategicznego zarządzania organizacjami w gospodarce opartej na wiedzy. Na coraz bardziej konkurencyjnych rynkach, gdzie koniecznością staje się ciągłe wprowadzanie innowacji, wartość produktów i usług w coraz większym stopniu zależy od ich zaawansowania technologicznego, wiedzy i inteligencji wykorzystanych do ich tworzenia. Należy zatem uznać kapitał intelektualny za zasób strategiczny organizacji, a zdolność do zarządzania nim – za kluczowy czynnik sukcesu przedsiębiorstwa. W artykule zaprezentowano znaczenie kapitału intelektualnego i zarządzania strategicznego tym kapitałem jako czynnika budującego zrównoważoną przewagę konkurencyjną organizacji.

Słowa kluczowe: kapitał intelektualny, zarządzanie wiedzą, zarządzanie kapitałem intelektualnym, zarządzanie strategiczne, przewaga konkurencyjna