

Intellectual Capital: Part of a Modern Business Enterprise of the Future

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With their practical and organizational experiences, working habits, interpersonal relations and motivation, people influence a company's business performance and activities. It is very difficult though to measure the influence of knowledge, i. e. to quantify and express it in figures. The thought that knowledge and work, that is the skills of workers in the work process, are the most important factors of development, is widespread.

The aim of intellectual capital is to explain the difference between the books and the market value of a company. So, a company's value can be determined more precisely, and that could be important for investors. Measuring intellectual capital has another very significant dimension that enables a better business management. Only if we know the basic values of a company, we will be able to manage them and to maximize their growth as the greatest values of the business activities are not always visible in financial reports. Intellectual capital can be considered as a liabilities item in the balance sheet showing the origin of some intangible property items such as goodwill, competence, expertise, wisdom, skills, talent, ability, technology, etc.

In the world, the research on intellectual capital began in the 1990's, while Serbia and Montenegro is at the very beginning.

INTRODUCTION

Managing in the global economy is generally known today and it is the most important phenomenon that influences both business flows and business activities. Such trend has changed the market and competition forces, requesting from managers changes in the way they react and solve problems. Today's managers are more and more aware of the fact that a company's advantage mainly depends on what does a company know, how will that knowledge be used, and how quickly can a company learn something new.

The uncertainty of the environment becomes larger every day, and unadapting means lagging behind the developing process, stagnating and

collapsing. Today's changes will bring not just new challenges and new knowledge, but also new people who will answer these challenges.

Usually, a market value of a company is much higher than its book value. There is a debit entry, 'goodwill', that sometimes exists in financial reports and describes the difference between these values, but does not speak about its nature. The mission of the concept of intellectual capital is to provide a systematic description and evaluation of the difference between market and book values of a company, and has a significant role in intellectually intense industrial branches.

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Discussions about knowledge have become important when it was clear that the company's future to a great extent depends on the ability to successfully manage its intangible assets. There are estimates that between 50% and 95% of knowledge (explicit and tacit, the so called *empirical knowledge*) is transmitted by oral communication. An empirical knowledge is often transmitted in a direct face-to-face communication. In that way, a huge part of knowledge is being lost (quiet or hidden, or the so called *latent* knowledge), and that loss could be harmful for the whole company. And modern companies cannot bear such of loss.

A human potential surpasses all other manufacturing factors such as natural resources, investments, technical progress and technology transfer. It is known and has been confirmed throughout the years that people with their knowledge and education, professional and organising experience, working habits, interpersonal relations and motivation mostly influence a company's success. The biggest problem is how to measure the influence of knowledge, that is how to quantify it and numerically express it. There is a viewpoint of great significance that knowledge and work, that is a skill of people in the work processes, are the most essential development factors.

There are estimates that companies use only 20% of their total organizational knowledge. Companies must know how to discover that knowledge and transform it into intellectual capital. A systematic collection and use of knowledge can be attained only by making the appropriate surrounding that will induce its distribution and transfer. It is necessary to provide knowledge collection and make it attainable for the media. It is very important that companies create a synergy between information technology capabilities and creative and innovative abilities of its staff, and of all other employees working in organizations which make the value chain.

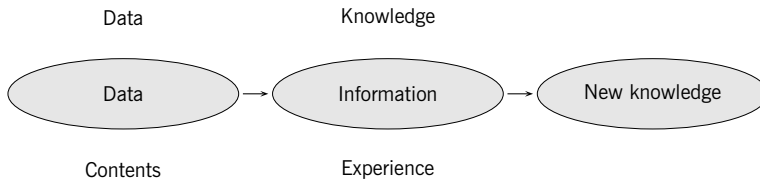


FIGURE 1 Data, information and knowledge

The demand for products and services based on knowledge is increasing on a daily basis, changing the global economy structure. The role of knowledge in attaining competitive advantage has become the main problem of management in all sectors. Although experts rarely agree about what knowledge really is, most of them accept that ‘knowledge is a basic competing factor in business today’ (Dzinkowski 2000, 32).

Knowledge represents a compact combination of experience, information and experts’ intuition. Knowledge can be also presented as a final product in the chain in which several types of data are combined and transformed into information. That information combined with experience and knowledge acquired in the past is used to create new knowledge. This case is illustrated in fig. 1.

The knowledge manager is interested in this process in the opposite direction. He has to identify new knowledge, the information that builds that knowledge, and finally, the data which should be implemented in the relevant information.

Common for the leading authors in this field (Nonaka, Sveiby, Stewart, Edvinsson, and Polanyi) and for their research is the division of knowledge into the following categories:

1. Tacit or latent (hidden) knowledge – subjectively, practically or analogously
2. Explicit knowledge – objectively, theoretically and digitally

and into the following types of knowledge:

1. Knowledge integrated in products and processes
2. Knowledge inside/outside a company
3. Knowledge dependent on / not dependent on the knowledge performer

According to Sveiby knowledge has four characteristics (Sveiby 1997):

- Knowledge is tacit
- Knowledge is directed to the action

TABLE 1 The relationship between explicit/tacit knowledge and individual/organizational knowledge

	Individual	Organisational
Explicit	Information Facts Science	Databases Systems & procedures Intellectual property
Tacit	Skills Intuition Experience	Organisational abilities

- Knowledge is supported by rules
- Knowledge is always changing

Sveiby divides knowledge on other criteria, separating know-how, which is in close relation to tacit knowledge, from know-what, which is in the relation to explicit knowledge.

The relationship between explicit/tacit knowledge and individual/organizational knowledge is shown in table 1 (Vukšić 2000).

In a transformation process, knowledge has an eminent place, and it is impossible to join modern development trends without it. The world is in a constant change. The economy is not threatened by the uncertainty of that change, but by the fact that it is managed by obsolete knowledge.

In that new type of manufacturing and social production skills, knowledge, creativity, and innovations become main generators of the human and intellectual capital, and these are more important than physical and financial capital mentioned earlier.

THE SIGNIFICANCE OF INTELLECTUAL CAPITAL

It is the right time for a detailed research on intellectual capital. Its acceptance was a result of serious earlier discussions and academic research. The significance of intellectual capital is evident from many conferences, books, works and newspaper articles about this theme, and many consulting companies that offer services in close connections to intellectual capital. However, the most important was the first step – a development of intellectual capital in a form known today. The primary efforts focused on the activities that would emphasize the importance of intellectual capital in creating and controlling competing advantages on the market. The aim of the first phase was to make this importance visible by inducing debates in which everyone could participate. This task was successfully accomplished.

The challenge for researchers was the second phase – making this research legitimate, and gathering the facts that would support the development of intellectual capital.

The Notion and Definition of Intellectual Capital

Milačić (1999) defines intellectual capital as one's product, and one is its primary owner. One is using his knowledge, experience, skills and ideas to generate intellectual capital that enables him to satisfy his needs and wishes.

The term *intellectual capital* has many complex connotations and is often used as a synonym for intellectual property, intellectual assets and knowledge assets. As such, intellectual capital can be both the end result of a knowledge transformation process or the knowledge itself that is transformed into intellectual property or intellectual assets of the company. Intellectual property is legally defined and represents property rights to such things as patents, trademarks and copyrights. These assets are the only form of intellectual capital that is regularly recognized for accounting purposes. Trademarks, copyrights and other intellectual property rights are more often accounted as a registration expense rather than its potential market value.

Definitions of intellectual assets and knowledge-based assets are typically less concrete and they refer to a potentially broader range of intangible assets than those captured under the umbrella of intellectual property. The Society of Management Accountants of Canada (SMAC) defines intellectual assets as follows: *In balance sheet terms, intellectual assets are those knowledge-based items, which the company owns which will produce a future stream of benefits for the company* (SMAC 1998). This can include technology, management and consulting processes as well as patented intellectual property.

Some authors (Stewart, Edvinsson) have been trying to explain the difference between a company's market value and its book value (fig. 2).

Intellectual capital includes those values of a company that are not entered in the balance sheet or at best are entered as *goodwill*. The following example will be a good illustration of this case. A company can be compared to a living organism such as a plant. Leaves, branches and stalk are branches or areas of the company's dealing, visible through its financial reports, the plant's fruit is the company's profit, but the plant's main energy and strength are located in its root. The understanding of processes in the root is the best way to understand the processes in the whole plant.

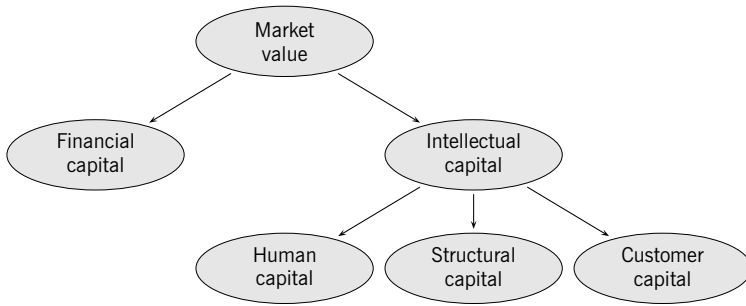


FIGURE 2 Company's market value and intellectual capital

If proper care is provided to the root, the plant (company) will bloom. Studying a company's intellectual capital means studying its main (root) values.

The aim of intellectual capital is to explain the origin of the differences between the market value of a company and its book value. In that way, a company's value can be illustrated much more precisely, which is an important fact for investors. Intellectual capital measurement has one more important dimension, which is to provide a better managing. Only if we know the real value of a company, we will be able to manage the increase of this value. The most significant values of a company are not always visible in its financial reports.

Microsoft is used as an excellent example for a great non-material value of its assets that are not evidenced. In 1996 the value of Microsoft on the market was 11.5 times greater than the value of its tangible assets. This 'missing value' represents the market's estimation of Microsoft's stock of intellectual capital that is not captured in its financial reports. A good question would be: 'Does this mean that accounting does not serve its purpose?' No, it does not but nevertheless, it does mean that today's accounting practice has to be readjusted, and that would be the main goal of intellectual capital. Intellectual capital is a non-financial capital that is a hidden gap between a company's market value and its book value. Intellectual capital also presents an addition to the existing financial data. It is crucial to say that intellectual capital can be considered as a liabilities item in a balance sheet, which would retrieve the origin of property items, such as goodwill, technology and expertise.

Some authors (J. Roos, G. Roos, Dragonetti and Edvinsson) think that intellectual capital could be related to other areas such as corporate strat-

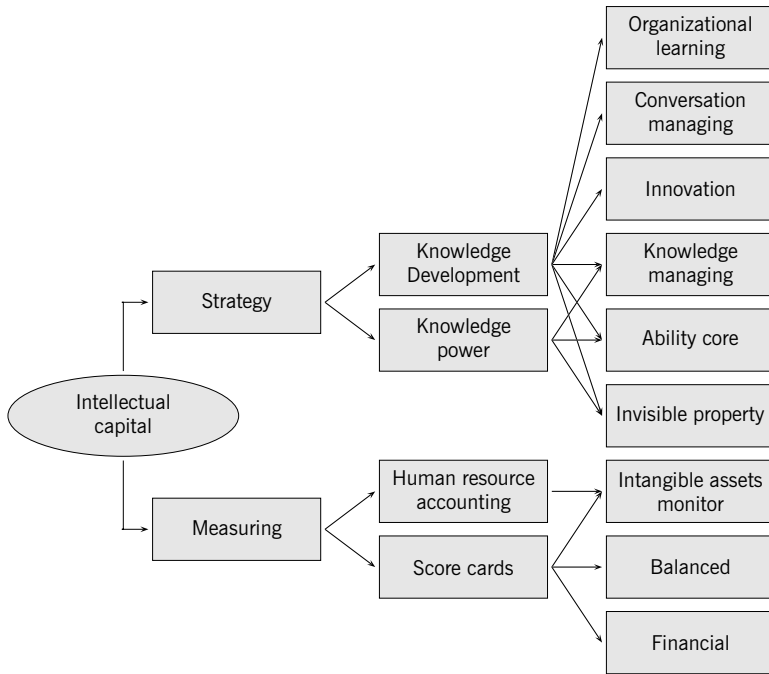


FIGURE 3 Model showing how intellectual capital can be positioned (Roos et al. 1998, 15)

egy and the creation of intellectual capital measurements (Roos et al. 1998). From a strategic perspective, intellectual capital is used to create and use knowledge to increase the value of a company. On the other hand, the *measuring* perspective focuses on the need to provide the necessary mechanism to determine the non-financial value of intellectual capital and express it in a similar way like other traditional financial values do. A modified figure which positions intellectual capital in the right way is fig. 3. This view is partly focused on estimating the levels to which intellectual capital is contained in the development processes of a company, and stressing its importance in those processes. However, the main aim is to increase the confidence in intellectual capital by including explicit actions in annual financial reports of companies for management internal needs.

The History of Intellectual Capital Development: Theory and Practice

It is a fact that intellectual capital has deep roots in practice. The development of intellectual capital reports started with an idea to define an indi-

TABLE 2 A chronological review of significant contributions to the identification, measurement and reporting of intellectual capital

Period	Progress
Early 1980s	General notion of intangible value (often generically, labeled goodwill).
Mid-1980s	The 'information age' takes hold and the gap between book value and market value widens noticeably for many companies.
Late 1980s	Early attempts by practitioner consultants to construct statements/accounts that measure intellectual capital (Sveiby 1988)
Early 1990s	<p>Initiatives to systematically measure and report on company stock of intellectual capital to external parties (e.g. Celemi and Skandia; sCSI 1995).</p> <p>In 1990 Skandia AFS appoints Leif Edvinsson 'Director of Intellectual Capital'. This is the first time that the role of managing intellectual capital is elevated to a position of formal status and given an air of corporate legitimacy.</p> <p>Kaplan and Norton introduce the concept of a balanced scorecard (1992). The scorecard evolved around the premise that 'what you measure is what you get'.</p>

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vidual operating system inside a company to improve the understanding of these reports, to understand what does business value consist of, in order to achieve a more efficient managing of assets that create value.

The review in table 2 shows some of the important research results and practical conclusions about intellectual capital. The table also shows to which level are theory and research guided by practice.

The Structure of Intellectual Capital

A market value (market capital) of a company is often regarded as identical to its actual value, although this is not always true. A market value consists of financial capital, which is expressed in usual financial reports, and of intellectual capital.

Intellectual capital is a system made of three elements:

1. Human capital
2. Structural capital
3. Customer capital

Human capital represents individual abilities, knowledge, skills and experience of all employees in a company, including managers, which are

TABLE 2 (continued)

Mid-1990s	<p>Nonaka and Takeuchi (1995) present their highly influential work on 'the knowledge creating company'. Although the book concentrates on 'knowledge', the distinction between knowledge and intellectual capital is sufficient to make the book relevant to those who focus purely on intellectual capital.</p> <p>Celemi's Tango simulation tool is launched in 1994. Tango is the first widely marketed product to enable executive education on the importance of intangibles.</p> <p>In 1994 a supplement to Skandia's annual report is produced which focuses on presenting an evaluation of the company's stock of intellectual capital. 'Visualizing intellectual capital' generates a great deal of interest from other companies seeking to follow Skandia's lead (Edvinsson 1997).</p> <p>Another sensation is caused in 1995 when Celemi uses a 'knowledge audit' to offer a detailed assessment of the state of its intellectual capital.</p> <p>Pioneers of the intellectual capital movement publish best-selling books on the topic (Kaplan and Norton 1996; Edvinsson and Malone 1997; Sveiby 1997). Edvinsson and Malone's work, in particular, is very much about the process of measuring intellectual capital.</p>
Late 1990s	<p>Intellectual capital becomes popular thanks to researches and academic conferences, working papers, and other publications on this topic.</p> <p>An increasing number of large-scale projects (e.g. the MERITUM project, Danish; Stockholm) commenced with the aim to introduce some academic rigor into research on intellectual capital.</p> <p>In 1999 the OECD convened an international symposium in Amsterdam on intellectual capital.</p>

Source: Petty and Guthrie 2000.

necessary to offer a complete product or service to a customer. Human capital cannot become property of a company, because it is individual, owned by people who create a significant added value, and hard to replace.

Structural capital contains organizing capabilities of a company necessary to satisfy market requirements. It consists of work processes, databases, organizational structure, information systems, patents, trademarks and all other kinds of organizational abilities, which support the productivity of employees. Structural capital is entirely owned by a company, can be reproduced, and is used to convert knowledge into value.

Customer capital is the value of the relationship with customers, buyers, suppliers and partners – strength, loyalty and satisfaction.

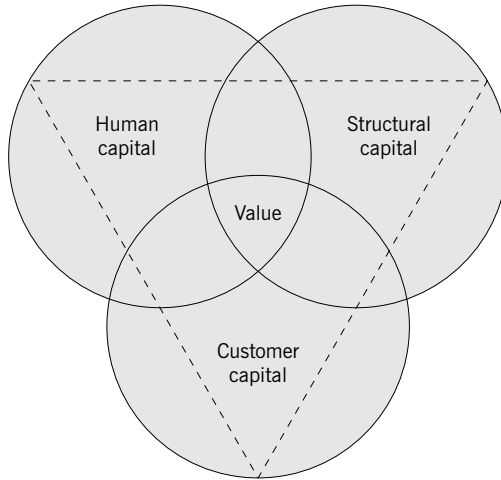


FIGURE 4 Intellectual capital: Value platform. A combination of these three types of capital gives the expected outcome – an organization of a company focused on value. The dashed triangle depicts knowledge flow (Edvinsson and Malone 1997).

Intellectual capital can be shown by a model called ‘value platform’ and describes three main components, which are related to the form value (fig. 4).

Value creation happens when there is an exchange between knowledge and three intellectual capital elements. That exchange facilitates faster learning and a systematic development of major organizational capabilities. A company makes value when employees interact with customers and with the company’s structural capital. The quality of these interactions increases or decreases customer capital.

Measuring Intellectual Capital

The term intellectual capital is not new, it has been used for many years in a ‘common sense’. For example, investors on the stock market measure intellectual capital of a company using different information that is not contained in financial reports. It is easy to accept a claim that the value of intellectual capital is equal to future conversion of intangible assets into financial profit of a company. The question is how to quantify this value. According to a well-known statement of Peter Drucker what cannot be measured, cannot be managed.

Intellectual capital can affect and be affected by the unique culture of the organization and the distinct processes and relationships within

it. This propensity for complexity suggests that a rigorous approach to managing, measuring and reporting on intellectual capital within the company would require a number of measures to evaluate the intellectual capital of the company. Some possible measures are presented in the review in table 3 (SMAC 1998).

Methods for measuring intellectual capital are improving every day. They are divided into two groups: those which measure intellectual capital with financial/quantitative indicators (Market-to-Book Ratio, Tobin's q , Calculated Intangible Value, The Value Explorer™) and those which measure intellectual capital with non-financial indicators (A Structural Model of Intellectual Capital, Intellectual Capital Navigator, Intangible Assets Monitor, Balanced Scorecard, Squander Navigator, The IC Index, The Intellectual Capital Method, Intellectual Capital Report, Value Chain Scoreboard™, WissensBilanz – Knowledge-Related Balance Sheet; Mertins et al. 2003).

The relation between financial/quantitative and non-financial/qualitative based approach could be in a direct causality with accounting perspectives of a company, regarding external reporting or internal controlling. That is the main reason why financially-oriented approaches are mostly used for determining a company's value, while non-monetary criteria are mostly used for internal controlling (for example, for development of intellectual capital).

CONCLUSION

With their practical and organizational experiences, working habits, interpersonal relations and motivation, people influence a company's business performance and activities. It is very difficult though to measure the influence of knowledge, i. e. to quantify and express it in figures. The thought that knowledge and work, that is the skills of workers in the work process, are the most important factors of development, is widespread.

The aim of intellectual capital is to explain the difference between the book and market value of a company. In that way, a company's value can be determined more precisely, that could be important for investors. The measurement of intellectual capital has the another very significant dimension that enables better business managing. Only if we know a company's basic values, we will be able to manage them and to maximize their growth as the greatest values of the business activities are not always visible in financial reports. Intellectual capital can be considered as a liabilities' balance sheet item showing the origin of some intangible

TABLE 3 Measurements for managing intellectual capital

Human capital indicators

- Reputation of company employees within head-hunters
- Years of experience in profession
- Rookie ratio (percentage of employees with less than two years experience)
- Employees satisfaction
- Proportion of employees making new suggestions (proportion implemented)
- Value added per employee
- Value added per salary dollar

Organizational capital indicators

- Number of patents
- Income per R&D expense
- Cost of patent maintenance
- Project lifecycle cost per dollar of sales
- Number of individual computer links to the database
- Number of times the database has been consulted
- Contributions to the database
- Upgrades of the database
- Volume of IS use and connections
- Cost of IS per sales dollar
- Income per dollar of IS expense
- Satisfaction with IS service
- Ratio of new ideas generated to new ideas implemented
- Number of new product introductions
- New product introductions per employee
- Number of multi-functional project teams
- Proportion of income from new product introductions
- Five year trend of product life cycle
- Average length of time for product design and development
- Value of new ideas (money saved, money earned)

Customer and relational capital indicators

- Growth in business volume
- Proportion of sales to repeat customers
- Brand loyalty
- Customer satisfaction
- Customer complaints
- Product returns as a proportion of sales
- Number of supplier/customer alliances and their value
- Proportion of a customer's (supplier's) business that your product represents

Source: Developed from SMAC 1998.

property items such as goodwill competence, expertise, wiseness, skill, talent, ability, technology, etc.

In the world, a research on intellectual capital begun in the 1990's, while in Serbia and Montenegro, we are at the very beginning.

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