

## IMPORTANCE AND STATUS OF INTELLECTUAL CAPITAL IN KNOWLEDGE ECONOMY

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### ABSTRACT

In the knowledge-based economy, intellectual capital is used to create value for organization and in today's world; the success of any organization depends on its ability to manage these assets. Today, we witness growing importance of intellectual capital, as an effective tool for enhancing competitiveness of companies. Intellectual capital measurement is necessary to compare different companies, to determine their true value and to improve their controls. In this paper, the status of intellectual capital, including concepts and definitions of intellectual capital, constituent elements and different measurement methods are examined. In the final section, the conclusions are presented.

**Keywords:** *Intellectual Capital, Knowledge Economy, Intangible Assets*

### INTRODUCTION

Intellectual capital is a new topic that has been brought up theoretically in the last few years in global level. But since it is considered a valuable resource for countries and organizations, its development is rapidly becoming the indicator of countries' development. On the other hand, this intangible source has been proposed as a value enhancing resource of companies and a Key capital in entrepreneurial growth. So, today, the need to develop and manage intellectual capital has become as a serious obligation on the national and business arena and moving towards knowledge based economy has led to change dominant paradigm of industrial economy, so that we can witness the emergence of knowledge-based economy, whose foundation is based on intellectual capital. Perhaps, the intellectual capital is a knowledge package that includes a set of intangible and invisible resources, principles, culture, behavior patterns, capabilities, competencies, structures, communications, processes, processes of knowledge. All knowledge is based on subjective perceptions. Entering the knowledge economy, knowledge is more preferable compared to other factors of production such as land, capital, machinery, etc. So that in this economy, knowledge is the most important production factor and it is the most important competitive advantage of organizations (Seetharaman *et al.*, 2002).

With the revolution in information technology, the years after 1990, global economy model changed fundamentally. In today's economy, knowledge is the most important capital and has replaced financial and physical capital (Qilich and Moshabbaki, 2006).

One of the characteristics of knowledge is its intangibility, this means that it is non-tangible and non-sensitive and its measurement is very hard and difficult, while in the past, organizations using accounting methods were able to calculate themselves the value and size of their output, today, these accounting methods do not have necessary performance. In knowledge economy, organizational success depends on the ability to manage intangible assets. For management of assets, firstly, they must be identified and measured and finally they can be managed (San *et al.*, 2000).

Organizations providing significant information on their intellectual capital performance during financial period can use them to be aware of decisions, test and evaluate strategies and manage risks associated with intellectual capital (Marr, 2008).

As previously mentioned, today, most of organization's assets is comprised of intangible assets and accounting procedures are not able to measure them (Sullivan *et al.*, 2000). On the other hand, in knowledge economy, organizational success depends on the ability to manage these intangible assets. Marr et al have enumerated reasons to consider and measure intellectual capital: 1. Help organizations to

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formulate strategies 2. Evaluate the performance of strategies 3. Help to expansion and diversification decisions 4. Use the results of measuring intellectual capital as a basis for service quality 5. Notify these assets to external stakeholder of organizations (Marr *et al.*, 2003).

Organizations are faced with different challenges due to rapid changes in today's world, but organizations are successful that use new opportunities to their advantage through management tools and technologies, intellectual capital is one of these tools.

### **Different Definitions of Intellectual Capital**

Various definitions of intellectual capital are presented that we will refer them below:

1. Intellectual capital is volatile and elusive, but when it is discovered and used, it enables organizations to compete with a new resource in environment (Bontis, 1996).
2. Intellectual capital includes all processes and assets that are not shown traditionally and normally in balance sheet and also includes those intangible assets such as trademarks, brands and patents that modern accounting methods consider them (Ross, 1997).
3. Intellectual capital includes sum of organization members' knowledge and transforming practical application of organization members' knowledge (Ross, 1997).
4. Intellectual capital is the difference between market value of company and replacement cost of company assets (Systarmn *et al.*, 2002).
5. Intellectual capital is a unique collection of tangible and intangible resources of company and refers to the changes of tangible and intangible resources (Gupta *et al.*, 2001).
6. Edwinston and Malone define intellectual capital as "Information and knowledge applied to create value" (Vasly, 2008).
7. The intellectual capital is asset that measures the organization's ability to create wealth. These assets don't have objective and physical nature and are intangible assets that are obtained through using assets related to human resources, organizational performance and external relations. All these features make value because they are purely internal phenomenon and don't have merchantability feature (Ross *et al.*, 2005).

### **Opinions on Intellectual Capital and Knowledge Economy**

Where we are today and where are we going?

Ducker (1993), well known thinker of management says: We're getting into a knowledge society where main resources of economy are not more capital, natural resources and more labor forces and the main resource of economy will be knowledge. 21st-century is knowledge economy century. Industrial economy predominated knowledge economy. In this economy, factors generating economic wealth included a series of physical and tangible assets such as land, labor force and money, machinery and so on. Combining economic factors, wealth was produced. In this economy, using knowledge as a factor of production has had little role, but in knowledge economy, knowledge or intellectual capital is more preferable as a factor of wealth production compared to other tangible and physical assets (Bontis, 1998). In this economy, intellectual assets and especially human capital are considered as the most important asset of organization and potential success of organizations rests on their intellectual capabilities compared to their tangible assets (Flamholtz, 2002). With the growth of knowledge economy or knowledge-based economy we considerably see that company's intangible assets compared to tangible assets are important factors in maintaining and realizing sustainable competitive advantage (Tayles *et al.*, 2002).

Goldfinger (1994) examines knowledge economy along three dimensions:

First dimension: asking for intangible artifacts.

**Second Dimension:** Intangible assets are dominant over production factors, this means that more inputs are intangible assets, in other words, intangible assets play more and more obvious role among production factors.

**Third Dimension:** New rules appear for trade organization, competition and valuations. As a result, business environment changes astonishingly. In business and economics of 21st century, people invest on information, information technology, e-commerce, software, brands, patents, research and innovation and

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www which are all part of intangible assets and intellectual capital and knowledge compared to tangible assets (Seetharaman *et al.*, 2002).

Over the past decade, businesses have recognized the importance of managing their intangible assets and have considered brand development, stakeholder relations, reputation and organizational culture as the most important resources of sustainable businesses advantage. In this economy, the ability to create and use the value of intangible assets creates a main competence for organizations (Kannan *et al.*, 2004).

Today, organizations need to classify their assets again and again and must understand how these assets can support their strategic aims and consider their contribution to the value of organization quantitatively, and compare these assets with their competitors. For this purpose, we provide a new classification of organizational assets in this era (Tayles *et al.*, 2002). Undoubtedly these intangible assets are valuable since when companies are sold; part of their value is named as goodwill and labeled. According to Horibe, goodwill is the difference between actual value and book value of company (Bontis, 2000).

### **Classification of IC Components**

Many models have been proposed so far, in the context of classifying intellectual capital components. These categories are listed below with their team name and a description of components but we must note that there is no universal classification of intellectual capital components like intellectual capital definition.

1- Bontis (1998) firstly referred to three types of human, structural and customer capital and changed his classification in 2000 as human capital, structural capital, and relational capital and intellectual assets or property. The purpose of human capital is individual knowledge that organization's employee possesses it, the knowledge is often implicit. The aim of structural capital includes all organizational capabilities or non human assets that are used to meet the needs of market and purpose of relational capital is all knowledge for organization's relationships with their environment, including customers, suppliers, scientific societies, etc. They believe that the most important component of relational capital is customer capital because the success of an organization depends on client's assets and the purpose of intellectual property is part of intangible assets that are supported and recognized by law, as copyrights, patents (Bontis, 1998).

2. Eustace *et al.*, divide intellectual capital into intangible goods and intangible competencies. Intangible goods are assets that can be merchandise and maintained and served them properly such as copyright, trademarks and designs, technical knowledge and trade secrets and franchises.

He and his colleagues also believe that intangible goods can be more objectively evaluated but intangible competencies refer to are separate and distinct factors of competitive advantage that distinguishes a company from competitors including innovation competencies, structural competencies, market competencies and human resources. These competencies are soft part of business and its valuation is very difficult (Syrstrman *et al.*, 2002).

3. Classification of Edwindon and Malune (1997) they have provided intellectual capital in human capital and structural capital in their Skandia Value Scheme, as follows:

In this classification, Edwindon and Malune (1997) have provided customer capital under structural capital category, that is not done in most other categories and considered two organizational and customer capital for structural capital and raised innovation and process capital for organizational capital. In this classification, organizational capital includes philosophy, policies and systems of organization for using its capabilities. Process capital includes techniques, procedures and programs that are implemented and promotes product delivery and service and innovation capital includes intellectual property and other intangible assets (Kennan, 2004).

4. Chen *et al.*, classification (2004) believes that intellectual capital is composed of following four categories and elements:

1. Human capital    2. Customer capital    3. Innovation capital    4. Structural capital

They believe that structures and components of intellectual capital are very weak and fragile unless they are supported by a series of continuous and connected relations. In fact, they emphasize on the relationship between intellectual capital components compared to its components (Kennan, 2004).

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In another classification by information technology community of European Commission, intellectual capital is intended as a connected capital flow between its capital components and elements (Seetharaman et al., 2002).

#### **Measuring Intellectual Capital**

Measuring intellectual capital and intangible assets is very important (Talkdar, 2008).

We study on the reasons for measuring intellectual capital by companies in the era of knowledge economy (Sanchez et al., 2000).

Merra et al in an article entitled "Why do companies measure their intellectual capital." in 2003, have dealt with the reasons for measuring intellectual capital.

They have provided five basic reasons for why we must measure the intellectual capital through systematic literature review of intellectual capital we have:

1. Help organizations to adjust their strategies.
2. Evaluate implementation of strategies.
3. Help to expansion and diversification decisions.
4. Using results of intellectual capital measurement as a basis for service compensation.
5. Notifying criteria related to intellectual capital to shareholders and external stakeholders.

#### **Benefits of Measuring Intellectual Capital**

1. Identifying and mapping intangible assets
2. Identifying patterns of knowledge flows within organization
3. Prioritizing vital knowledge and crucial issues
4. Catalyzing and accelerating learning patterns within organization
5. Identifying best practices and disseminating throughout the organization
6. Supervising constantly value of assets and finding ways to increase their value
7. Understanding social networks of organization and identifying agents of change
8. Increasing innovation
9. Understanding how knowledge creates some reciprocity.
10. Increasing cooperation activities and knowledge sharing culture as a result of increased awareness of management benefits
11. Knowledge
12. Increasing employees' self perception from their organization and increasing their motivation
13. Creating performance-oriented culture (Kennan et al., 2004).
14. Increasing transparency
15. Decreasing capital cost
16. Rising stock prices
17. using as a marketing tool (Systerman et al., 2002).

Improving policy-making at national level and reducing information gap in financial markets and company's success in implementing its strategies

Examining the role of human resource accounting in knowledge economy:

Today, accounting human resources is very important historically among measurement approaches for intangible assets. Human resource accounting in new economic environment has become a powerful management tool for human resource management decisions. In this approach, individuals are considered as human assets. In past, accounting practices are treated with human resources costs as current expenses that reduce net income of company, but in new vision (human resource accounting) human resource costs are considered as an investment that have a set of benefits and advantages for companies. At this time, human resources are reflected on asset side of balance sheet (Bontis, 1999).

#### **Economic Value Added**

Another measurement tool that is widely used by large companies is economic value added. The method was presented in late 1980 by Stuart. Economic value added is a comprehensive measure that connects capital budgeting, financial planning, goal setting and performance measurement and etc. Although, economic value added is not explicitly related to resource and intangible assets management, it implicitly

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points that effective management of intellectual assets increases economic value added. This approach looks to company as traditional industrial organization not as a knowledge management and focuses only on financial indices assessment (Holtz *et al.*, 2002).

The measurement tool is one of the overall approaches based on value. The approach proposes that value of intellectual assets is equal to differences between market value and book value of a company.

### **Problems with this Approach**

1. The difference between book value and market value cannot be fully attributed to intellectual properties and its individual components and another part of this difference may be related to unrealistic tangible assets in balance sheet of company.

2. Another problem is that share price may fluctuate from day to day and may provide short-term unreliable information about intellectual property measurement (Brennan, 2001).

The difference between intellectual capital and knowledge management and Intangible Management:

In today's modern world, knowledge is regarded as a competitive advantage and is one of the most important production factors among production factors that must be managed. Knowledge is one of the most important intangible components that is used during the organizational mechanisms and processes and makes possible innovation. Measurement of knowledge and other intangible assets is very important in these organizational processes. So, we must have information about the distinction between tangible assets and intellectual capital, intellectual knowledge management, intellectual capital and etc (Sanchez *et al.*, 2000).

The term of intellectual capital is often synonym with intangible assets, but according to the definition provided by Cooperation Organization and Economic Development, there is distinction between them, that is, intellectual capital is a sub-set of intangible assets of business and is not identical to intangible assets.

Historically, the distinction between intangible assets and intellectual capital is ambiguous in the best circumstances. Intangible assets are defined as Goodwill and intellectual capital is also part of goodwill (Petty *et al.*, 2000).

The term of intangible assets is more an accounting term and intellectual capital term is in the realm of human resources, in the case of intangible assets I must say that they are reflected in balance sheet and it is not entirely accurate like goodwill, but intellectual capital is not reflect on traditional balance sheet and it costs only reflected in the cost accounts.

### **Distinction between Knowledge Management and Intellectual Capital**

Distinction between knowledge management and intellectual capital seems vague and indistinct; firstly, we must provide points on knowledge management. As we know, intellectual capital is a key factor (stimulus) for innovation and competitive advantage based on today's knowledge economy. At this time, the knowledge management is considered as a fundamental activity for acquisition, development, preservation of intellectual capital in organizations (Merr, 2003). This means that successful management of intellectual capital depends on knowledge management processes of an organization and this fact induces spontaneously that successful implementation and correct use of knowledge management assure acquisition, growth and retention of intellectual capital (Merr, 2003). Knowledge Management includes the processes to create value, increase and sustain competitive advantage processes that facilitate function and development of intellectual capital in order to create value, increase and maintain competitive advantage.

Merr has identified following processes for knowledge management (Merr, 2003):

1. Production of Knowledge
2. Coding Knowledge
3. Application of Knowledge
4. Saving Knowledge
5. Mapping or navigating Knowledge
6. Sharing Knowledge
7. Transferring Knowledge

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All above processes can be used to manage and develop intellectual capital of an organization. Connection and link between knowledge management and intellectual capital Management of intellectual capital and knowledge management have different objectives, although there are similarities, they differ. But it should be noted that these complement each other. Knowledge management and intellectual capital management are both different aspects of organizational activities and both include a wide range of intellectual activities within organization from knowledge creation to knowledge usage but management of intellectual capital is considered at levels of senior and strategic management of an organization and intellectual capital management focuses more on creating and extracting value. The aim of intellectual capital management is to create and use of intellectual capital and intellectual properties to improve company's value creation capabilities in a strategic perspective. However, knowledge management focuses mainly on operational and tactical implementation of activities related to knowledge within organization and it is more involved in specific activities associated with knowledge, facilitating creation, collection, transfer and application of knowledge. Ultimately, it aims to track and follow a smart organization through creating and maximizing intellectual capital. The important point is that these concepts are structural components or blocks for organizational management in new millennium and must be merged and integrated to increase efficiency and achieve goals (Wiig, 1997).

### **Conclusion**

A lot of companies around the world have found that measurement and management of intellectual capital can provide a competitive advantage for them. The intellectual capital of a company is total human capital, structural capital and relational capital.

Controlling these assets enables the organization to have effective internal governance on the one hand and to have strong external relationships with customers, suppliers and other shareholders, on the other hand. Therefore, it requires the company to manage, control and report intellectual capital. Note that the computed value of intangible assets is not accruing and implementing most of measurement methods in practice will face problems.

As applying them is difficult, they need many parameters and these indices have not been fully explained, as well as good intellectual capital reporting may have effective role in determining the future value of current situation and consolidating its current status in related industry.

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