

# HOW TO MEASURE INTELLECTUAL CAPITAL?

Liviu CRĂCIUN, Associate Professor, PhD.  
University of Craiova  
Adriana SCRIOȘTEANU, Associate Professor, PhD.  
University of Craiova

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**Abstract:** Converting knowledge or intellectual capital into long-term business value is, in practice, a far more difficult process than in theory. While developing and implementing knowledge or intellectual capital philosophy's in management processes, companies experience difficulties in measuring the contribution of their intangibles to business results and, what is more critical, companies fail in their efforts to reproduce the conditions and the processes that have unlocked the value creation potential of their intangibles. The challenge for corporations in the coming years is to identify all the elements of their value creation cycle (their strategically important tangible and intangible resources) and how these must flow, interact and contribute to sustain the organic development of the organization and significantly enhance its value creation capabilities. Without a method and instruments to identify the inter-relationships and the conversion process between intangible assets – knowledge, competencies, partnerships – and all the situations and contexts to which they add value, performance measurement systems will not be able to reveal the true performance of a company or reveal the patterns of value creation. The concepts and methods that we will describe in this paper propose a critical and practical point in designing and implementing a performance measurement of intellectual capital.

At the transition from the industrial society to the information and knowledge society, the corporate and societal growth basis gradually changes. OECD's report suggests that knowledge is a significant source of social and economic development in societies of today. It suggests that the public and corporate investments in the development of human capital - here especially education and training - will become a crucial engine for growth, particularly in a world marked by knowledge-intensive activities. The growth basis is not as much influenced by investments in physical machinery, buildings etc. as by knowledge which is a pivotal factor for production of goods and services. Knowledge is a new factor of production. Knowledge as a factor of production and change as a code word for modern society and modern companies are inseparable. Change means that society and business life must always be prepared to adapt themselves to new markets and technological conditions and to develop new organizations in support of development and learning. Knowledge will help prepare society and organizations to handle new challenges and ever-changing conditions as regards demand and technology.

Three questions are posed in this paper:

- I. Why does the company want to measure intellectual capital?
- II. How is the intellectual capital measured?
- III. What are the problems with developing a system for measurement of intellectual capital?

I. Interest in the measurement of intangible assets is rising for a number of reasons:

a) the amount being invested in them has grown relative to tangible assets;

b) market cap and book value are increasingly out of whack;

c) from strategical viewpoint, a firm's intellectual capital was the key to its competitive advantage.

Business has always relied on its intangible resources, along with tangible and capital resources, to create value and achieve the organization's goals. Business performance and success depend on how well an organization manages its resources. Formerly, business resources comprised 80 percent of tangible and capital resources, with intangible assets making up around 20 percent. Gradually, this changed with intangible assets reaching 80 percent of the assets of most organizations by 1999. Leonard Nakamura estimated the corporate sector investment in intangible assets in 2000 was about \$1 trillion - comparable to that sector's investment in property, plant and equipment. Half of this was related to the intangibles of research and development, and of software. The balance was other intangibles, such as brands, human resources, and organizational processes [Holtham, Clive, Youngman, Richard, 2000, p.2].

The 80 percent figure is calculated by considering the divergence between the market and book values of an organization, known as market capitalization. Though market capitalization is not a phenomenon specific to the knowledge economy, it has escalated in the knowledge economy to reach unprecedented multiples of the book value. Market and book values are never identical, but in the knowledge economy staggering market capitalization figures sent many researchers in search for the hidden resource that is creating such huge market values. Book values of publicly traded companies mainly reflect the value of tangible and capital assets of the company. Sometimes the book value reflects some of the intangible assets of the company under the heading of goodwill. This is hardly an accurate reflection of the value of intangible assets as it is created to balance the books following an acquisition. The market value of the company reflects the value of a hidden resource that is recognized and valued by the market, including but not limited to the company's reputation, innovativeness, technological prowess, and brand equity. Market capitalization only reflects such resources that can create value (i.e., the company's intellectual capital). Baruch Lev's research shows that on average 85% of a firm's market capitalization is based on intangibles rather than hard assets [10, p.17].

Studying market capitalization rates by reference to industry in 1995, Sveiby found that industries heavily dependent on intellectual capital like companies in the pharmaceutical and business services industries are valued at multiples of their book value. In contrast, companies that mainly manage tangible assets like those in traditional manufacturing and real estate industries have market values that are close to their book values. Interestingly, the best-performing companies in any industry still display high market capitalization rates regardless of their industry [Sveiby, K-E., 1997, pp. 6-7].

Intellectual capital is thus strategic. This connection between intellectual capital and corporate strategy is pivotal as knowledge-intensive companies often make their intellectual capital work through organizational procedures rootable in various places, e.g. information systems, branded goods, patents, research, just-in-time production methods, extensive cooperative relations with customers and suppliers, internal training systems, quality management systems etc. Intellectual capital must be managed in a long-term perspective. It takes a long time to develop organizational competencies

because they represent experiences in combining intangible and tangible assets gained over time. It is developed and embodied over time. The intangible capital is tied up in organizational processes where the various types of tangible and intangible capital have “gained experience” in cooperating. This also means that intellectual capital as opposed to tangible capital increases in value when used. It is not exhausted from being used - on the contrary. It becomes stronger by being used.

II. For an adequate management of the development and acquaintances’ application process, managers need a set of indicators in order to develop/monitor the way in which the intellectual capital evolves as a structure and how it influences the value creation process.

According to Bernard Marr and Karim Moustaghfir, intellectual capital is made up of three main components: human capital, customer capital and structural capital [Marr, B., Moustaghfir, K., 2005, pp.1120-1121]. The first represents employee knowledge, competency and brainpower. Customer capital represents relations with customers, suppliers, and distributors. Organizational managers need to come to recognize that they do not need to operate as a self-sufficient island, but instead they can tap into a wealth of knowledge from their network of clients and suppliers to more effectively achieve the goals of their enterprises. Clients and suppliers can test products, give continuous feedback on organizational practices, suggest new ideas and perspectives to explore, co-create new products and services, refer new clients, and operate as sensors for developments in the field and actions of competitors. Structural capital designates the organizational systems, culture, practices, routines and processes. Structural capital is related to the value of the company’s infrastructure and the kind of knowledge which is stored in manuals, method guides, product concepts, information systems, goodwill etc [Chatzkel, J., 2002, p. 11].

Generally speaking, business performance in any industry is affected by an organization’s business processes, the capability of its employees, and its understanding of customers’ needs. The knowledge intensity of these three pillars of business performance, however, proliferates in the knowledge economy to such an extent that an organization that neglects managing knowledge and other forms of intellectual capital risks dissipating its most valuable business resources and assets. The fact that these resources are intangible raises the question whether they can be managed under the traditional management approaches, which evolved for managing tangible and capital resources. How do you measure something that is invisible, contained inside the human brain, databases, processes, culture, and products?

The goal of intellectual capital measurement is not to determine how much knowledge or intellectual capital has the firm by counting the number of computers or key employees, but how effective the organization is in creating value from it.

The role of measurement is to provide a framework to focus attention on the thing you intend to monitor. As such, measurement offers management a powerful tool that can influence organizational behaviour and action. The axiom “what gets measured gets managed” is slightly skewed. The truth is what gets measured gets noticed by top and senior management and, as a result, something gets done about it. Therefore, it is important that only the key success enablers get monitored and measured.

Management has been dissatisfied with the use of financial measures per se to monitor business future performance. Financial measures (e.g., ROI) are too general to indicate the areas that management should focus on to drive future competitive performance. Because financial measures are retrospective in nature, they also fail as

predictors of current problems the organization is facing. Since the beginning of the industrial revolution, management recognized that financial reporting offers too little, too late and developed performance measures. The oldest are found in the manufacturing industry. Its “units per hour” indicator measured production performance. Hotels used bed occupancy rate, while universities reported their graduate employment rate.

Confirming previous studies, a study by Ernst & reveals that the present-day capital market is indeed interested in the types of non-financial key figures reported by the intellectual capital. The Ernst & Young study emphasizes the role of such non-financial key indicators in improving the preciseness of the financial analysts’ forecasts: The Ernst & Young study mentions the following eight factors: the quality of the management, the efficiency of the product development, the strength of the market position, the strength of the company culture, pay policy in connection with senior management, the quality of communication with investors, the quality of products and services, customer satisfaction. Non-financial factors can be used as leading indicators of future financial performance.

To measure intellectual capital without focus is an impossible, though theoretically attractive, endeavour. Focus is introduced by first identifying, and later monitoring, factors that are critical for the organization to meet its strategic goals. The intellectual capital measurement systems become a tool to implement strategy and convert the organization’s vision into action by zeroing in on what needs to be done and how to accomplish it.

Performance measurement can be divided into three main phases which are designing, implementing and using performance measures [Neely ş.a., 2000, p.1143]. Sometimes updating the measurement system is considered as a fourth phase. Designing refers to choosing what to measure and defining the performance measures [Bourne ş.a., 2000, p.757].Implementing refers to putting the measures in practice by, e.g., educating employees and developing information systems [Bourne ş.a., 2000, p. 758]. Performance measurement research has focused most on designing, almost as much on implementing and least on using performance measurement [Liebowitz, J., Suen, C.,2000].

Consequently, the process for choosing indicators or metrics used by the measurement systems is similar and follows these general steps:

1. Use one of the intellectual capital structures.
2. Identify the assets that will be monitored under each of the classes by determining the desired outcomes.
3. Determine the key success factors (KSFs) that will enable the attainment of the desired outcomes, and link them to financial performance.
4. Design indicators that monitor the KSFs.
5. Measure and track the indicators over a defined period of time.
6. Review and adjust.

The measurement of intellectual capital is possible by means of four categories forms:

- Human resources. This category covers statements about the composition, management and satisfaction of the human resources.
- Customers. This category covers statements about the composition, management and satisfaction of the customers.
- Technology. This category typically covers statements about the scope, function and application of the IT system.

- Processes. This category typically covers statements about the scope, equipment and efficiency of the business activities.

The following table indicates how the management of the company measured the development of the company’s intellectual capital.

**Table 1**

**Indicators for capital intellectual evaluation**

<b>Categoria</b>	<b>Indicatori</b>
Human resources	Employee satisfaction Human resource turnover, % of employees with development plan, Number of development days per employee
Customers	Customer satisfaction, Repeat purchase , Customer with long-term relations, Customers per employee, Reputation of the company
Technology	Total IT investments , PC’s per employee, IT expenses per employee, IT literacy
Processes	Human resource distribution by processes Product development time, Lead time, Error rate, Waiting time,Quality , ,Investments in R&D and infrastructure

III.Despite the attraction of these various indicators in providing a high degree of transparency as to the organization’s operations, intellectual wealth and its management goals and procedures, they hardly provide a common standard for measurement for next reasons:

- is almost always intangible and difficult to measure.
- is difficult to reduce to a homogenous value form; frequently, its value is inferred from the impact it has on the value of the organization, its competitiveness, or the organization’s output.
- is not linked to an economic actor.
- not reside with an individual but in the networks/relationships between individuals.
- includes processes as well as assets participating in processes.
- embodies past mental (or, in some forms, social) effort, as well as past physical effort.
- is not separable from its location (in particular, its temporal location).
- ownership is ambiguous.
- some forms of intellectual capital are themselves transformed in the production process.
- captures less measurable aspects of the production process in order to explain why seemingly identical production processes, in terms of traditional factors of production, can yield such different results across organizations.

The link between these new forms of capital and an economic (social) class is uncertain, if it exists at all. Importantly, in these hybrid forms, capital is no longer a stock—a durable asset—but a dynamic process.

### **Conclusions**

The evaluation methods of the intellectual capital will become absolutely necessary in the future in order to explain the way in which the intellectual capital creates value.

Top companies will change the focus on the performance measuring systems elaborated in the past century because these are no longer relevant in today's economy. Ideas and information matter more than capital. The requirements of the external medium regarding the progress reference to the level of intangible assets will multiply. Organizations' managers are obliged to take the initiative of measuring, managing and distribute the information referring to the way in which the organization generated value for stakeholders, employees, clients and the rest of investors.

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