KNOWLEDGE IN ENTERPRISE: THE ROLE AND PERFORMANCE MEASUREMENT

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Abstract
The current entrepreneurial environment increasingly makes demands on the recognition of driving forces influencing value creation. Intangible assets, first of all knowledge are becoming such driving forces. The paper emphasizes the role of knowledge in enterprise also in continuity with the management of new competences on the new global market. In brief, it presents some methods of measurement of intangible assets performance, the part of which is knowledge. In conclusion the paper emphasizes requirements for monitoring and valuation of intangible property performance with the emphasis on knowledge capital.

Keywords: *performance management, knowledge, intangible assets, enterprise, viewpoint*

1. Introduction

A newly arising competitive environment exerts pressure on the re-evaluation of company reporting character and on making changes in the systems of performance measurement. Performance and its monitoring and maintaining have become not only the instrument of competitiveness but also the precondition of a company existence.

IMA (Institute of Management Accountants) has surveyed opinions of its one thousand and half members on the systems of performance measurement (Denton, 2002).

In the IMA survey from 2001 it is said that 80 % of its respondents announced the implementation of changes in the systems of performance measurement during the last three years. The changes varied from radical (rejecting the current systems) to incremental ones (delivering or eliminating of measurement). 33 % of respondents mentioned a change as the main renovation of the system of measurement. 31 % of those respondents said that their system of measurement was less than adequate or even insufficient for supporting company's goals and initiatives. Only 15 % of them considered the systems of performance measurement as very good or excellent for a communication strategy. The users evaluated the balanced scorecards much better.

Key challenges for performance measurement seem to be intangible assets including also knowledge. In the IMA survey 60 % of the respondents thought the innovation to be part of company's statement about its mission. Yet, more than 50 % of them indicated the system of measurement as insufficient or less than adequate in that area. In total, less than 10 % of the respondents considered the indices of performance for intangible indices including assessment of knowledge as very good or excellent.

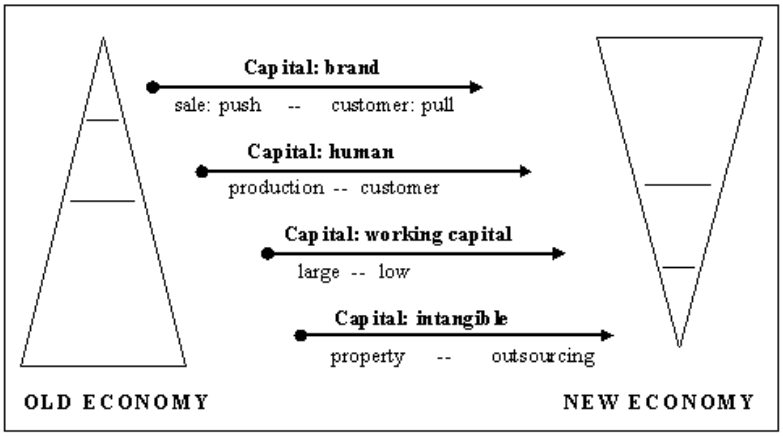
Also reports from companies dealing with performance evaluation – the Institute of Authorized Accountants in England and Wales (ICAEW) (www.icaew.co.uk), the Centre for Tomorrow's Company (CTC) and the Centre for Performance Measurement (www.tomorrowscompany) show the support to non-financial measurement with the focus on knowledge. Also the research done by PricewaterhouseCoopers called ValueReporting (www.valuereporting.com) came to the same conclusion. There is no doubt that the above-

mentioned reports would deserve more attention. Because of the contribution's extent, however, only the above-mentioned conclusions have been presented. More detailed information can be found on the indicated web pages.

2. A new entrepreneurial environment increases the role of knowledge in business

A new competitive environment is characterized by the shift in the structure of company's sources. The following picture explains a growing importance of intangible property and changes in sources.

Figure No. 1: Company de-capitalization



Source: Ruthner, R., 2002

Prahalad (1998) aptly describes a newly arising competitive environment. He identifies eight discontinuities accompanying the new economics: environment-friendly behaviour, putting a limit on intermediation, standards, distorted borders among branches, convergence, variations in demand, deregulation and privatisation, globalisation. Those discontinuities will influence companies in a different way but generally all of them will have to include globalisation impacts into their decision-making, they will be forced to form alliances, even though sometimes temporal only, they will have to accept speed as the element accompanying all processes, and they will be forced to re-evaluate their "entrepreneurial" model so that it would comply with the requirements of a new environment. Environment where enterprises leave existing role in society (profit only) to new wider view of corporation's functioning considering triple – bottom – line (Krymlakova, 2007). Primarily, they will have to lay a **considerable emphasis on acquiring** and the right **use of knowledge.**

The above-mentioned discontinuities will not be further dealt with because of the extent of the paper.

At managing discontinuities the managers will be confronted with new complex challenges. A company in the new environment has to apply **principles of knowledge management** to be able to cope with new competences. Managing competences on the new global market is a complex task having at least five various elements (Prahalad, 1998):

1. Obtaining the access to new knowledge and its acquiring
2. Integration of many various fields of knowledge

3. Cooperation within various cultures overcoming considerable distances
4. Learning of how to quit inappropriate things – to overcome a routine
5. Coordinated applying of competences within the framework of many business entities

Creation of new competences, their selective using and the protection of the current competences act as a big challenge as far as knowledge management is concerned both from the view of desired intellectual abilities and workforce's knowledge, and from the view of organisation. Minimally they include the following requirements: investment into bringing people of various cultures closer together in a company, improving the knowledge of languages, keeping a considerable volume of documentation but not bureaucracy itself, a systematic professional training focussed both on the analytical and experimental nature of management.

3. Knowledge as part of intangible enterprise values

Knowledge management is closely connected with the intellectual capital. Sweiby thinks them "twins" – "two branches of one tree" (Sweiby, 2003b). The difference between the management of intellectual capital and knowledge management is clearly expressed by Sveiby's definition of knowledge management: "the art of creating values from intangible property" (Morris, 2003).

The difference between intangible assets and intellectual capital used to be defined rather vaguely. According to the definition by the Organisation for Economic Cooperation and Development the intellectual capital is part of company's overall intangible assets. Others understand intangible assets as "goodwill" and the intellectual capital as part of goodwill (Davies, Waddington, 1999).

Leif Edvinsson, one of the creators of Skandia Navigator model defines intellectual capital as "**knowledge** that can be **converted into values**" (www.skandia.com). While creating "Navigator", he emphasized a constant ownership of knowledge represented by inventions, thoughts, software, and patents, which he included just into intellectual capital. In "Navigator" he defines also human capital but at the same time he emphasizes a necessity of transforming it into intangible, intellectual property, which he considers a basic task for managers of intellectual capital or knowledge managers.

The Organization for Economic Cooperation and Development describes intellectual capital as "economic value of two categories of company's intangible property: organisation (structural) capital and human capital" (Guthrie, 2001). Structural capital consists of elements such as software property, distribution networks and supply chains. Human capital includes human resources inside a company (employees) and external sources (above all customers and suppliers).

4. Methods of intangible assets performance measurement including knowledge

Luthy (2002) classifies four approaches to the measurement of intangible assets:

Direct methods of intellectual capital valuation

As soon as particular components of intellectual capital are identified, they are evaluated individually or by the aggregated coefficient. The result is a financial evaluation of intangible assets (e.g. Technology Broker).

Methods of market capitalization

They compare differences between a market value of the company and its value for shareholders. This difference is considered as intellectual capital or intangible property.

Methods based on property profitability

A company compares the value of property profitability with an average in the branch. Multiplier difference is the value created by tangible property and the income from intangible property. Costs of capital or the rate of interest are taken into account (the EVA method can be part of such approach).

Scorecard methods

Various components of intangible assets or intellectual capital are incorporated in scorecard together with their driving forces initiating their development (e.g. Skandia Navigator, IC-index, Intangible Assets Monitor, Balanced Score Card).

The methods offer various advantages. The methods of market capitalization and the methods based on property profitability are useful for a merger or acquisition and/or for the assessment from the standpoint of stock market. They can be used for a comparison of companies within the same branch because they illustrate well a **financial value of intangible property (as well as knowledge),** which is a feature attracting the attention of top management. Their advantage is that they are clearly communicated with budgeting and accounting. The disadvantage is that the effort to transform intangible assets into financial means can lead to lightweight or false conclusions not corresponding to reality.

The advantage of methods of direct evaluation or scorecards is that they will create **a more integral,** easier obtainable picture about company's soundness than a mere using of financial indices and also the fact that they are easily **applicable** at any hierarchical level. Their disadvantage is that the indices are closely connected with each other, and they have to be divided into particular levels and for particular purposes, which make a mutual comparing rather difficult. Also the implementation of those methods might face up to the misunderstanding on the part of managers who are still accustomed to think only in terms of finance.

The article Measuring Intellectual Assets (www.montague.com) presents another classification of techniques. Again, due to the extent of my paper that classification will not be further mentioned.

For purposes of this paper two following methods of intangible property valuation with the focus on knowledge assessment will be presented.

4.1 Knowledge Assets Map

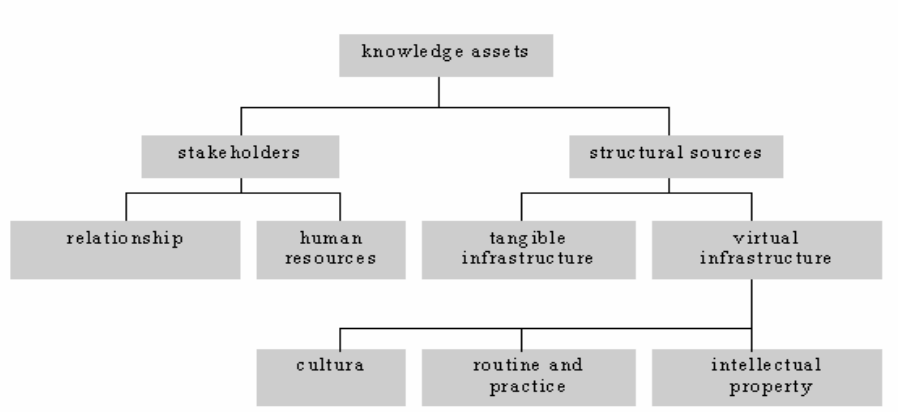
A model assessing intellectual property is especially useful for purposes of accounting and external reporting even though they do not inevitable provide managers with an instrument of company's **knowledge property assessment.** The map provides managers with a broader framework for knowledge assessment both from the external and internal viewpoint (Marr, B., Schiuma, G., 2001). It comes from a widespread interpretation of intellectual capital that includes overall knowledge assets of a company. The map provides a framework that will spread the promotion of understanding the structure of knowledge assets. It will allow critical areas of knowledge to be identified and defined and facilitates designing indices for knowledge capital appreciation.

The map is based on knowledge assets interpretation as a sum of two company's sources: stakeholders and structural sources. This difference reflects two main components of a company, its actors who can be internal or external ones in relation to the company, and its basic components – elements creating the basis of company processes. The following picture clarifies the hierarchy of knowledge assets and its classification into subclasses.

Stakeholders' sources are divided into relations with stakeholders and human resources. The first group identifies all external actors while the other one represents internal participants. Structural sources are divided into physical and virtual infrastructures that refer

to the appropriate tangible and intangible nature. In the end the virtual infrastructure is further divided into culture, practice and routine, and intellectual property.

Figure No. 2: Knowledge Assets Map



Revised from: Marr, B., Schiuma, G., 2001

Six categories of knowledge assets identified by the Map:

- Relations with stakeholders - include all forms of relations between a company and its stakeholders. These relations may concern licence agreements, partner's associations, financial relations, and contracts and measures about trade channels. They also include customer's loyalty, the name and a good reputation of the company that represent the basic connection between a company and its stakeholders.
- Human resources – include knowledge provided by employees in the form of qualifications, motivation and loyalty as well as in the form of advice or a tip. Know-how, technical expertises, abilities to solve problems, creativity, education, attitude and enterprising spirit are considered other key components (Horvathova, 2008).
- Physical infrastructure – includes the whole infrastructure of property including information and communication technologies such as computers, servers and other hard systems.
- Culture – includes corporate culture and management philosophy. Among some significant elements there are company values, the way of building a network of relationships, the set of objectives, defining a company mission.
- Work and routine – includes internal work, virtual networks and a regular procedure, which are unexpressed rules and procedures. Some key elements are: handbooks on procedures allowing procedures and rules to be systematically classified, databases, unexpressed rules of behaviour, a managerial style. Practice and routine will determine how to control processes, and in which way a process of workflow goes through a company.
- Intellectual property is a sum of patents, copyrights, trademarks, makes, registered designs, trade secrets and processes, the ownership of which has been awarded to a company by the law.

4.2 Intangible Assets Monitor

In the model developed by Sveiby in 1997 the expression intangible assets is used rather than intellectual capital (Sveiby, 2003a). In particular, three categories of intangible assets are

taken into consideration. They are: intangible assets associated with the internal structure, associated with the external structure and assets represented by people's competences.

Internal structure comprises intellectual property, patents, copyrights, corporate culture, managerial processes, network of channels.

External structure comprises relationships with customers and suppliers.

Competencies of employees are associated with human capital taking into consideration skills instilled in individuals working in a company.

In order to define indices for valuation of intangible assets in each of the above-mentioned categories the Monitor identifies three critical areas of measurement: growth, performance, and stability. In each area a company defines key indices of specific intangible assets valuation.

The first step in the materialization is to determine who is interested in results. Measurement can be performed for the external or internal presentation. In the first case the indices usually describe the company as precisely as possible in order to let stakeholders know what the value of the company is. In the other case the measurement was undertaken in order to provide managers with a knowledge information system. Contents of two various presentations are different. Internal information should predominantly centre on a flow, change and data control. Measurement for external needs should be able to inform on key indices and provide explanation of company intangible values

A structure of the monitor is depicted in the following picture. Its working out together with examples of indices is presented in the Enclosure No l.

Picture No. 3: Intangible Assets Monitor

	Enterprise Market Value			
	Intangible assets			**Tangible assets**
	Competences	Internal structure	External structure	
growth				
innovation				
performance				
stabilization				

Revised from: Sveiby, 2003a

5. Conclusion

Nowadays, it is possible to open the annual report of every large company, check data in accounting statements and find out the facts about physical property[1]. But it is possible to find out very little or even nothing about the property that is a real driving force of values creation. Rajat Gupta, a director of Mc Kinsey consulting firm, foretold that during the period of ten years there would be at least one airlines company having almost nothing as far as the physical property (tangible) was concerned and instead it would rely on virtual intangible assets: a brand (make), the system of making reservation, the right to land and databases (Neely, 2002).

[1] In the Czech Republic a legal duty exists for all subjects registered in the trade register to meet the Collection of documents kept at the register court among others by financial statements. The Collection of documents is accessible for the public. The easiest way of how to obtain information is to search www.obchodnirejstrik.cz

Recently it has been very often emphasized that a tangible property is not the only property of a company. The research led by Arthur Andersen firm compared the market value with the accounting value in 3.500 American companies over two decades. They found out that in 1978 the accounting value typically reached 95% of the market value while in 1998 the accounting value was at the level 28% of market value. Why?

A partial reason is growing recognition of knowledge work importance. For example, Oracle (Morris, 2003): in August 2000 its market valuation was 254.509 million of dollars, which was a 39,4 times higher value than a company property. How can it happen? How can be the company with 6.460 million dollars of tangible property valuated at the market at the rate of 254.509 million? Of course, the answer can be found in company intangible assets – a brand, its position on the market, abilities, knowledge etc. A company is far more than a mere sum of tangible property (Vokounova, 2006). In the current, information-orientated society intangible assets often overweigh company's tangible property. A question arises, how the manager and the investor can monitor whether the value of intangible assets is increasing or decreasing. For that reason a requirement for recording and monitoring of intellectual capital performance with the emphasis on knowledge capital is activated.

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ENCLOSURE NO. 1
INTAGIBLE ASSETS MONITOR: MATRIX OF INTAGIBLE ASSETS
WITH EXAMPLES OF METRICS

Company market value				
	INTANGIBLE ASSETS			**TANGIBLE ASSETS**
	People's competences	Internal structure	External structure	
Metrics of growths and renewal	Professional experience Education attained Costs of training Workforce fluctuation	Investments into the internal structure Customers' contribution to systems/processes developing Investments into information systems	Profitability per customer Growth	
Metrics of innovation	Costs of education Diversification	A share of new products or services A number of newly implemented processes	A share of sales to new customers	
Metrics of performance	The ratio of professions in a company Added value from every profession Driving force effect Profit per employee	The ratio of supporting employees Sales per one supporting employee Corporate culture	Index of customer's satisfaction Index victory/loss Sales per one customer	
Metrics of stability	Average age A number of seniors A ratio of wages amounts A rate of turnover for particular professions	The age of organization Fluctuation of supporting employees The rate of newly hired employees	A share of big customers The age structure of customers The rate of loyal customers Frequency of repeated orders	

Source: Sveiby, 2003a