

## INCREASING THE VALUE OF INTELLECTUAL CAPITAL AS A RESULT OF USING RELATIONS BETWEEN ITS COMPONENTS

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**Summary:** The paper presents results of research on the relationship existing between the components of intellectual capital. The starting point was the analysis of current views on intellectual capital presented in the literature. Taking into account basic priorities of research, and therefore need to examine the relationship between individual components and to determine the possibility of improving the intellectual capital management techniques, it was decided that the basis of the method will be clarified and expanded a three-part literature model, which consists of structural capital, human and relational. The individual components are detailed subareas characterize the essential functions of the company with a key importance for the state of intellectual capital in the enterprise.

**Keywords:** intellectual capital, human resources, knowledge management

### 1. INTRODUCTION

Demands on contemporary enterprises are increasingly high and encompass the even wider range of areas. Contemporary enterprises are required to participate in the development of local societies, to be responsible for the state of the region and the country, and to care for the natural environment, the employees, social benefit packages, etc. The relations between contemporary enterprises and their environment are very complex and variable in time due to the turbulent nature of the market. The consequence of the change in the relationship between an enterprise and its environment is the need for introducing new methods of managing organizations. The rush towards new solutions increases the role the human factor and intangible resources, in general. As Wriston stated (Wriston, 1992), a new source of values is not material; it is the information and knowledge put in the work that is used to create the values. Intellectual capital and knowledge become the basic sources for building competitive advantage. These elements are not, however, easy to be measured, described and characterized. Knowledge has a number of features that distinguish it from among all the other resources of an enterprise. The following should be primarily pointed out here (Karwowski 2004:13):

- intangible knowledge that is difficult to measure,
- unstable knowledge that may disappear at any time,
- knowledge, in most cases, is embedded in the minds of employees who have the freedom of will,
- knowledge is not used up, but in the opposite, it increases as it is used,
- knowledge cannot be bought at any time, and often requires a long time to be collected, and
- knowledge cannot be used by different processes at a time.

According to the common view, knowledge becomes a priority productive factor and an important determinant of technological progress. This view is confirmed, for instance, by the successes of the knowledge-based economy, where (Garbryś, 2001: 73):

- knowledge constitutes the most valuable resource,

- the highest competitive potential is possessed by products whose main component is knowledge,
- from among all production factors, human capital undergoes the largest changes.

The largest added value is created by companies investing into human capital and able to effectively use external knowledge sources.

Knowledge constitutes not only an organization's resource, but also its product. However, an enterprise, as such, has no possibility of creating knowledge. As stated by J. Baruk, knowledge forms as a result of mental activities performed by each individual; therefore, its primary source is a human (Baruk, 2001). S. Forlicz, on the other hand, defines knowledge as a set of data about the surrounding world, which is collected by an individual (Forlicz, 2008: 13). An enterprise has, however, the capability to actively influence the shape and scope of knowledge and does this through assuring its employees the appropriate working conditions. Nonaka and H. Takeuchi point out to the fact that knowledge is created by information which, in turn, is a stream of data which provides a basis for creating a new knowledge, that is its further expanding (Nonaka and Takeuchi, 2000: 95). At the same time, they divide the organizational knowledge into three basic categories:

- the personalized core of knowledge (explicit and implicit knowledge),
- the codified knowledge (documentation, reports, publications, databases, designs), and
- the established applied knowledge (processes, services, products, relations, technologies).

Closely related with the concept of knowledge and knowledge management in an enterprise is the intellectual capital. Olsson is stating that intellectual capital is created by knowledge and skills that individual employees contribute to the enterprise (Olsson, 1998). A broader conceptualization, though generally in the same interpretative domain, can be found in the studies by Ulrich who perceives intellectual capital as being identified with the enterprise and the competencies of its employees, which are expressed through their way of thinking and working (Ulrich, 1998). This author provides even a ready equation to describe intellectual capital, whereby the intellectual capital is the product of competency and motivation.

The approach to intellectual capital prevailing in the literature distinguishes, however, this concept from knowledge, while making the latter – incidentally, similarly as for human capital – just one of the components. As Stewart states (Stewart, 2001), intellectual capital is knowledge that enables raw material to be transformed into a more valuable one, thus allowing a specific financial value to be gained. The components of this capital are human capital (talents), structural capital (methodology, intellectual property, software, documentation, etc.), and customer capital (relations with customers). Stewart clearly details three basic components of the intellectual capital, which can be classified into two groups: internal and external. Bukowitz and Williams perceive intellectual capital as the relationship between human capital, customer capital and organizational capital, which maximizes the organization's potential for creating a value (Bukowitz and Williams, 2000:223).

By subjecting the research results reported in the relevant literature to analysis it can be easily concluded that the consistent approach to intellectual capital is still missing. Individual authors present their visions and view, but there is no general agreement on what the intellectual capital is and how it influences the performance of an enterprise. Nor relationships between intellectual capital and other enterprise asset components - even so seemingly obvious factors as human capital – are indicated.

One of the basic problems related to intellectual capital is the issue of reliable methods for its evaluation. The difficulties in examining intellectual capital are associated with the features that characterize it. As Rowińska-Fronczek states (Rowińska-Fronczek 2003: 129) intellectual capital is characterized by:

- an immaterial form,
  - non-measurability,
  - uncountability,
  - not allowing itself to be subjected to accounting appraisal,
  - not undergoing wear,
- possible to be simultaneously used at many places and for different purposes.

## **2. ANALYSIS OF THE RESULTS**

For achieving the basic goal of the study, the author's research method was used, which serves for the evaluation and development of the intellectual capital of an enterprise. Considering the fundamental priorities of the research, there is the need for examining the relationships between individual components and determining the possibilities (resulting from those relationships) for improving the intellectual capital management techniques. It was decided, that the base of the method would be the expanded three-part model, recognized in the literature, made up of structural capital, human capital and relational capital. Within individual components, sub-areas were identified, which characterized significant enterprise functions of key importance to the state of intellectual capital in the enterprise. As a result of multiple test studies carried out, the author ultimately decided to adopt nine sub-areas, because this variant assured, on the one hand, the required detail of the research and, on the other hand, did not lead to generating excessively large sets of values that would be difficult interpret and would result in drawing unclear conclusions. The intellectual capital structure assumed for the purposes of the research was as follows:

- human capital: the area of competencies, the effectiveness of human capital management, the sphere of human resources;
- structural capital: the sphere of investments in development, the effectiveness of administration, the quality of carrying out processes;
- the sphere of market relations: the assessment of the market situation, the effectiveness of conducted activity, the customer relation area.

It was assumed that the most appropriate format for expressing individual sub-areas would be percentage values. This assures high transparency of data and the ease of data interpretation, and enables the actual state of individual spheres to be readily determined. Achieving this goal was possible thanks to the created sets of elementary indicators, whose average value was used for describing the individual sub-areas. Within the human capital sphere 23 indicators were distinguished the structural capital sphere was described using 20 indicators and the sphere of market relations was described using 21 indicators.

Based on the assumed set of indicators, a sample of 70 enterprises was tested. The results of this stage of analysis made it possible to examine the extent of relationship between individual spheres, as determined using Pearson's correlation coefficient. The aim of this operation was to examine possible relationships and interactions that might provide the basis for the process of inference, as well as the detailed analysis of the intellectual capital structure. The calculated correlation coefficients are presented in Table 1.

From the obtained results it was found that, relationships occurred not only between the elementary components making up the three main spheres of intellectual capital, but also between the components representing different areas. A vast majority of the relationships found had, however, an unclear nature. All of the areas subjected to analysis have a positive effect on size of enterprise performance effects. Their improvement leads to higher effectiveness in carrying out processes in the enterprise due to a reduction in staff fluctuation, an increase in customer satisfaction, better selection of the means of promotion, etc. So,

relationships between individual components do exist, though, in many aspects, it is hard to precisely describe the mechanisms or causal relationships that drive them, due to their unclear character.

**Table 1. Summary of correlation indices for the adopted components of intellectual capital.**

<i>Sphere</i>	<i>Sub-area</i>	Area of competencies	State of human resources	Effectiveness of human capital management	Sphere of investment in development	Effectiveness of administration	Quality of carrying out processes	Assessment of the market situation	Effectiveness of conducted activity	Customer relation area
Human capital sphere	Area of competencies	1,00								
	State of human resources	0,51	1,00							
	Effectiveness of human capital management	0,16	0,45	1,00						
Structural capital sphere	Sphere of investments in development	0,20	0,30	0,48	1,00					
	Effectiveness of administration	0,05	0,23	0,34	0,41	1,00				
	Quality of carrying out processes	0,06	0,32	0,03	0,07	0,35	1,00			
Market relations sphere	Assessment of the market situation	0,20	0,04	0,13	0,07	0,29	0,47	1,00		
	Effectiveness of conducted activity	0,21	0,05	0,06	0,15	0,21	0,27	0,47	1,00	
	Customer relation area	0,29	0,13	0,06	0,10	0,05	0,10	0,05	0,41	1,00

Source: The author's study

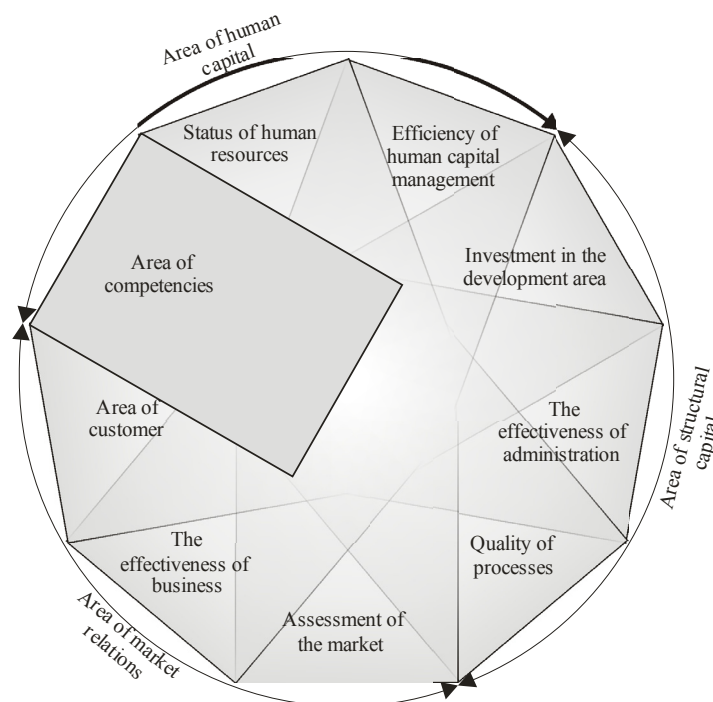
From the point of view of the research goal undertaken, particularly interesting are relationships occurring between components representing different areas of intellectual capital. Indeed, these show an additional potential for searching for the synergic effect within the enterprise management processes. Particularly distinct relationships were found to exist between the sphere of investments in development and the effectiveness of human capital management, as well as between the quality of carrying out processes and the assessment of the market situation. In the latter case, the attempt to explain the causes of this state is, to some extent, easier. The more efficient carrying out of processes leads to a better customer service and minimizing the losses due to the small number of defects, which results in more complete meeting the key success factors, increasing the competitive advantage and greater resistance to the adverse influence of the substitute product sector. The mechanism relating the effectiveness of human capital management to the sphere of investments seems to be more complex. The causes of its existence can be searched for in two main areas. First, in good management. Its consequence is undertaking broad planning and investment activities, as well as deep understanding of the role and tasks of the human factor. Achieving satisfactory financial results requires the proper carrying out of tasks within all management areas. The second likely cause is a mechanism, whereby the competencies of employees are, so to speak, "pulled" by the developing technology and organizational solutions. For example, newer manufacturing methods may require people with a wider range of knowledge and appropriate experience allowing them to efficiently use the enterprise's resources made available to them.

So, intensively growing enterprises are, in a sense, "compelled" to care about the state of possessed human resources.

The identified relationships between the examined components allowed a discussion on the structure of intellectual capital to be taken up. Intellectual capital is a kind of conglomerate, being made up of different, often apparently mismatched or unrelated elements. The effectiveness of its use is determined by the relationships between those elements, and actually the ability to identify and utilize them. It is these relationships that determine the level of an enterprise's performance level, its market position, and the existence or non-existence of competitive advantage. They allow better and fuller understanding of the notion of intellectual capital, the integration of the concept of its management with the strategic bases of the enterprise's existence. Finally, it is their existence that makes it possible to discern the effects of using the intellectual capital, and thus to reduce the level of its abstractness and to see its practical dimension. By the identification of these relationships, areas with interactions were indicated. So, the potential for intensifying the intellectual capital by using the identified relationships between individual components was shown. This, on the one hand, allowed the intellectual capital structure to be illustrated in a greater detail and, on the other hand, enabled fuller and broader understanding of the role played by the organizational capital in an enterprise.

Based on the analysis of the relationships between individual components of intellectual capital, a model was created, as shown in Figure 1. The basic criteria for the location of individual components was their belonging to one basic group and the calculated correlation coefficient values. In making the graphical presentation, the author chose to use the shape of a polygon that allowed the identified relationships between individual elements to be represented in a clear manner. This shape of the model allows also, in the case of examining individual components, a ready visual evaluation of the state of specific elements and the magnitude of their interaction.

**Figure 1. The model for the evaluation of an enterprise's intellectual capital**



*Source: The author's study*

The research carried out has identified major elements that pose most problems to enterprises in the sphere of competencies. These include primarily inconsistency in undertaking activities, manifesting itself chiefly in lack of synchronism between the competency management system and the other personnel functions, such as, for instance, failing to consider the system-defined requirements in the recruitment and selection process. The consequence of this is the need for incurring additional expenses on filling gaps in the knowledge of employees, and the low level of meeting the work post profiles by the employees. Moreover, lack of skills in the area of effectiveness assessment of undertaken development processes is found. The inspection of training effects is often too general, being based on simple one-off questionnaire surveys that do not provide reliable data for analyses. In addition, the examination of the current job potential of employees is in many instances conducted in an unplanned and non-systemic manner based on the opinions of superiors or ineffective methods not matched to the realities of enterprises. As a consequence, the development of employees in many cases takes place in a chaotic manner, and the selection of individuals for training programmes is controversial. The basic cause of the majority of irregularities found in this sphere was aiming at minimizing the system costs. The care about the shape of the economic outturn account of an enterprise should be one of the basic tasks of the managerial staff. However, excessive saving on development programs curtails the competency management system's capability to function, and in extreme cases it totally distorts the sense of existence of such a system, limiting it exclusively to recording in documentation and taking periodical activities spurred solely by arising current needs.

### 3. CONCLUSIONS

As a result of detailed research carried out in the sphere of human capital management effectiveness it was found that, *inter alia*, the labour costs in the majority of enterprises constituted a significant element of the economic account. The basic factors were pay costs making up, in extreme instances, about 80% of the total labour costs. This structure shows clearly that a considerable part of the entities under study allocated small sums to the development of employees and the incentive system. The lack of resources for basic activities, such as the shaping of organizational culture, training or an incentive scheme, was reflected in the relationship of the pay level change dynamics and the productivity dynamics. The pressure by employees and by trade unions representing them resulted in an increase in the pay level that was not justified by the corresponding increase in individual productivity that would lead to increasing the enterprise's performance. Paradoxically, in spite of increasing the pays, no increase in the satisfaction level among the employees was observed in those enterprises. Too low expenditures on the other personnel functions and the resultant impairment of human resource management did not allow the comprehensive and effective influence on the employees. This situation created a "vicious circle" effect in several enterprises, leading to a consistent increase in labour costs and a decline in the economic effect.

A basic problem identified within the sphere of human resources was, occurring in many instances, high staff fluctuation reaching 30% per year in the extreme case, with a medial of 13.7% for the total sample. The high rotation of employees is a factor with a destructive effect on the organizational culture, employees' morale, or the process of transferring knowledge and experience between generations. This is also indicative of the existence of irregularities in the enterprise management sphere, not only within the human resources. Particularly adverse in this aspect is leaving of the enterprise by employees whose service period exceeds 2 years. Those employees have already attained a certain level of stabilization and in many instances participated also in a training process. As the enterprise has invested financial resources in

these employees, with their departure it will lose the possibility of gaining profits from processes carried out.

The research within the sphere of investments in development showed the occurrence of a certain stratification in the population of enterprises under examination. The distribution of data showed that the result concentrated around the minimum and maximum values. So, enterprises use two basic investing strategies: limited investments resulting from the current needs, and extensive ones correlated with long-term strategic planning. The strategic variant used resulted primarily from the specificity of the industry in question and the economic standing of the enterprises. Development through extensive investments is always associated with a risk that must be minimized by observing advantageous market trends, reported customer needs, or financial results. A considerable group of enterprises renounce processes of a developmental nature to concentrate solely on satisfying current needs or those foreseeable in a short time-frame. From the point of view of intellectual capital, such activities are insufficient. It is necessary to plan, make attempts to predict future events and to commence beforehand adaptation processes. Indeed, short-term adaptation activities are concentrated chiefly on spheres of basic importance, leading to the omission of a number of elements seemingly minor and little significant, but actually providing a bond between different spheres, thus contributing to the occurrence of a synergic effect. Based on the research results, three elements were identified, which were responsible for the largest number of irregularities in the sphere of administration. First, this was a large number of mistakes resulting from disruptions in communication systems. In part of the enterprises information channels are unnecessarily complicated and blocked. Considering the fact that each successive element of the information transfer chain might contribute to the occurrence of distortions in the transmission, attempts should rather be made to shortening the channel to a minimum by connecting to it exclusively those entities that are really necessary. The second group of irregularities related to the inefficient use of information systems. Workers in part of the enterprises did not have skills that would enable them to fully utilize the potential of IT solutions available to them. This resulted from the incorrect conducting of training processes, but also from the lack of constant inspection that could reveal any irregularities. The inability to utilize the available resources led to increasing the duration of particular activities and, as a consequence, to a reduction in the number of administrative activities completed in a unit of time. The third are of occurring mistakes was the sphere of complaints. Part of the entities under examination did not fully use the potential lying in complaint documentation and did not have a system that would allow them the efficient identification of the causes of occurring defects or non-conformities. Thus, the period of devising and implementing corrective actions elongated, exposing the enterprise to the risk of occurrence of an increased number of irregularities of this type.

The research showed that the average degree of meeting the market profile in the enterprise population under study was 48.31% with a median value of 45.75%. So, the majority of enterprises have problems with adjusting themselves to the market. It should be noted, however, that the adopted research methodology considers results above 55% as good, while those exceeding the threshold of 65% as indicating a very good adjustment to the market needs. Nearly half of the results lay in the medium sphere, that is in the range from 45% to 55%, with a maximum of 60.5% (the spread of the sample was 22.5%). Similar results were obtained in the analysis of the level of attractiveness of the sectors in which enterprises are active, where a distinct concentration of values was observed in the low and medium spheres (the three fourths of the results lay in the range from 44.25% to 57.94%, with a maximum of 66.5%). In spite of taking into account long-term factors, the sector attractiveness assessment indicator considered in the research was also based on the part of the values describing the current state of the environment. So, its value is intentionally sensitive to sudden and

unexpected events arising in the market. Thanks to this, a better picture of the actual potential of an enterprise is obtained, which provides more solid bases for development activities within the intellectual capital. An important factor influencing the value of the calculated market situation assessment indicator was the substitution threat. This is one of the market areas that pose serious problems to enterprises, because of the slight possibility of counteracting. Using promotional or awareness campaigns for customers might reduce the interest in substitutes; however, the specificity of the contemporary market and customers being accustomed to having wide possibilities of choosing usually make any preventive actions doomed to failure in the long run.

The analysis of the results obtained within the customer relation sphere has distinguished three basic groups of enterprises. The first group is characterized by a large share of regular customers, exceeding in some instances 90%. This customer structure assures a normalized level of incomes, and the relations strengthened by many years of cooperation allow the number of misunderstandings and non-conformities to be reduced to a minimum. In the long run, low activity in the sphere of acquiring new purchasers might contribute, however, to a significant worsening of financial results (especially in the case of losing a strategic customer of a significant share in the total sales). The second group of enterprises is characterized by high customer rotation. A majority of the contracts are concluded for short terms or even on a one-off basis for a specific order. The consequence of this customer structure were observed fluctuations in incomes – aside from the periods where the financial outcome dynamically improved, there were periods of declines. In addition, the profit enterprises was also affected by the costs of acquiring new customers being disproportionately higher than the costs of retaining the regular customer. The third group of enterprises was characterized by a division into regular and new customer being close to equal.

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