

# THE INTELLECTUAL CAPITAL IN KNOWLEDGE-BASED SOCIETY AND ECONOMY

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*The management improvement in the educational public institutions from Romania owns an undeniable priority in each state government. The necessity of the changes in institutional management related to the administrative system and, mainly, to the management of the intellectual capital defines the utility and the efficiency of meeting the necessities in the respective educational environment and sets as one of the main problems, recently emerged, the elaboration of a number of structural-organisational and functional-operational measures, stimulating management modernization at an educational level, including the higher education institutions, with a main reference to the intellectual capital.*

*In the national literature, these problems are not highly scientifically examined. In my opinion, in Romania, at present there isn't any well-defined framework in connection with the management of the intellectual capital from the educational institutions. That's why I considered that this isn't just an actual topic but it is also a central subject. I'm convinced that a more thorough examination of the intellectual capital will be able to contribute on a long and a medium term to the administrative growth and development. The intellectual capital has a key role in the international relations development and triggers, in my opinion, radical structural changes, which are very important for the amplification of the educational institutions value. The ability to create, use and increase the intellectual capital value is, in my opinion, the foundation on which it is based the public management of educational institutions in a country, the welfare and the life quality for her citizens.*

*The knowledge valorification is a long process, which doesn't offer rapid results. But the effects of promoting and propagating of knowledge are, firstly, on a qualitative structural level and can lead to beneficial effects on long term.*

*In my opinion, in countries in course of development, knowledge itself isn't yet perceived as an active which can be used at its maximum capacity. As a consequence, in my opinion, both the real management and the researches in the management domain should be oriented especially towards this subject.*

*The main aim of this article is to underline the managerial essence of the intellectual capital and to highlight its effects on the organisational performance of an educational institution – and at the same time- to determine managers, generally, and top managers, especially, from educational institutions in Romania, to understand the intellectual capital management importance.*

*The main objectives which I have proposed myself to attain in this paper are science-oriented especially, meaning that I have tried to illustrate the place and the role of the intellectual capital for the socio-economical development, as well as the most important characteristics of the intellectual capital intended to facilitate the creating of the management institutional framework and proficient management of the intellectual capital under the conditions of changing specific to a society and an economy based on knowledge.*

*Key words: intellectual capital, management, knowledge, economy, performance.*

*JEL – K11; J24; O34; M12.*

## **I. Introduction**

According to the established objectives I defined the essential activities which aim at attaining them:

- The identification and systematization of the main theoretical-methodological concepts for defining the term “intellectual capital” on the basis of investigations on papers from local and worldwide specialized literature.
- The exploration of the composing elements from the structure of “intellectual capital” ;
- The analysis of the manner in which, along time, various economical schools representatives’ opinions have evolved, in connection with the integration tendencies in the economical sciences of some concepts such as: the human capital, the intellectual capital, the intangible assets etc;
- The justification of the necessity of promoting some managing policies and of intellectual capital management as a possible mechanism for the developing of the intellectual capital in educational institutions;
- The highlighting of interdependencies existing between the intellectual capital and the investment in education, as main factors of growth and development in a society based on knowledge;
- The applying of my own method of investigation in Romania, at the level of schools in Marghita;
- The proposition of some recommendations related to the development perspectives of the intellectual capital in educational institutions in Marghita;
- The attempt to maximize the attention of scientists, of politicians, and of the main governors on the intellectual capital role in the economic progress and for promoting the making of a positive image in relation with the importance of education for our society professionalization and for attaining a superior qualification level.

The attaining of objectives implied both the analysis of theoretical-methodological concepts and of the manner in which decisional factors can create, develop, utilise the intellectual capital for the attaining of strategic objectives of an educational organisation.

## **II. The theoretical framework**

The first researches in the intellectual capital area started from the second half of the twentieth century, at the time when scientists realised that resources and the quantity of the existing resources of an institution, don’t have a decisive role in the results. Because of this, in the last five decades of the century, a great number of researchers in this domain have developed a new trend based on the resources efficiency. In the 80s of the past century, researchers wondered why institutions with the same financial resources, physical and human, give birth to different levels of value. The answer to this question revealed that the factor which explains these differences has in view the various levels of productivity and market value. The disputes emerged when the market value seemed to be bigger than the accountancy value of an institution. The researches proved that this fact emerges because the intangible assets and especially the intellectual capital are also taken in consideration.

This discovery underlines the fact that educational institutions have various resources and competences. The intellectual capital and its management have at a theoretical level three distinct origins which come from the following researchers: Hiroyuki Itarni, David Teece and Karl-Erik Sveiby.

The first was Hiroyuki Itarni from Japan, who studied the effect of the invisible assets for the management of Japanese educational institutions. Unfortunately, his educational paper in Japanese language from the year 1980 “*Mobilizing Invisible Asstes*” has been translated into English only in the year 1987, and only since then it became accessible to the wide educational public.

The second important author is David Teece and his partners Penrose, Rumelt, Wemrfelt, who researched various theories. Teece presented his survey in 1986 in an article about the technology of marketing. His article "*Profiting from Technological Innovation*" proved the importance of extracting value from innovations.

At last, the papers of the Swedish Karl-Erik Sveiby refer to the human capital as a dimension of the intellectual capital. Sveiby is the one who created "*The Swedish Movement*" in the theories related to the intellectual capital and the knowledge management. He was the first who revealed the importance of measuring the human capital. His first work was educational and was written in 1986 in Swedish. The first book which debates the subject of the knowledge management was educational and was written in 1990 in Swedish.

Sveiby revealed that, unlike the conventional actives, knowledge increases when it is shared and disseminated with and to the others (Agndal 2006:91). In the field of specialized literature it is considered that especially Itami and Sveiby's contributions had a great meaning for the institutional strategy. Due to the fact that certain actives of the educational institutions are intellectual, the acquisition of the aptitudes, knowledge management and the know-how management are targeted, so that learning becomes the basis of the strategies.

Leif Edvinsson is the follower of Sveiby, who made up the first annual report of intellectual capital at Skandia in 1995. In fact, he grouped those invisible actives and he named them as the intellectual capital. Leif Edvinsson created the manners to explain what Skandia called "*the hidden values*" and developed a national intellectual capital management (Edvinsson 2008: 525). The researches continued even later, in the twenty-first century. Thus, Malhotra sustains that, the intellectual capital in the educational system is difficult to control, because of its intangibility, and that is why, it is hard to establish what represents the intellectual capital itself. (Malhotra 2003). Later, Jan Mouritsen and his partners showed that it is not possible to created absolute models of the intellectual capital indicators. (Stahle 2008).

We are going to present, in short, some definitions of the intellectual capital from the educational institutions.

Stewart defined the intellectual capital as an intellectual element which has been formalized, triggered and utilised in order to produce actives of a higher value. He defines the intellectual capital naming it "*the packet of knowledge which can be used*" (Stewart, 1997:288) in an educational institution. Another definition of Stewart given for the intellectual capital is: "*The intellectual capital is the intellectual element- knowledge, information, intellectual property, experience – which can be put into practice*" (Ibidem).

The definition of the intellectual capital after Annie Brooking is that it represents the combination of four elements, and these are: the actives of the exterior environment, the actives of the intellectual property and the actives of the infrastructure. The market actives are those which emerge from a positive relation of the educational institution with the exterior environment, such as contracts, the citizens' loyalty level (Kok 2007). The actives of the intellectual property refer to know-how, copyright and other regulations.

The actives of the human resources are the capacity and the creativity in solving the problems, and other aptitudes of the employees in the educational institutions. Brooking defines the intellectual capital as "*the term given to the combined intangible actives which allow the functioning of the institution*" (Brooking, 1996:24).

The intellectual capital, being analysed by a lot of scientists, received various definitions. Edvinsson (Edvinsson 1997) said that, the intellectual capital of an educational institution can be compared with the root of a tree, both being invisible, and having a great contribution to the quality of the educational institution results. This is also the model of the intellectual capital which is being referred to many times. Edvinsson and Malone's model divides the intellectual capital into two parts: the human capital and the structural capital. The human capital refers to the employees of an institution, their competences, their creativity, their social capacities, and others.

But at the same time, the human capital refers to the value, philosophy and the educational institution culture. They showed that the educational institution cannot have in its property the human capital. On the other hand, the structural capital, in its turn, is divided into the institutional capital and the consumer capital. Here, the institutional capital refers to the innovations of the educational institution and to its processes. Figure no. 1 presents the model of the intellectual capital after Edvinsson and Malone.



Figure no. 1. The model of the intellectual capital after Edvinsson and Malone.

Source: Figure drawn by the author, after the theoretical model

Another structural division of the intellectual capital in the educational institutions was presented by Roos and his partners, who were of the opinion that the intellectual capital divides itself between the human capital and the structural capital, the human capital containing competences, the attitude and the intellectual agility, and the structural capital containing the relations, the institution, the innovation (so-called “renewal”, by Roos) and development (Roos 1998). Figure no. 2 presents the model of the intellectual capital after Roos.

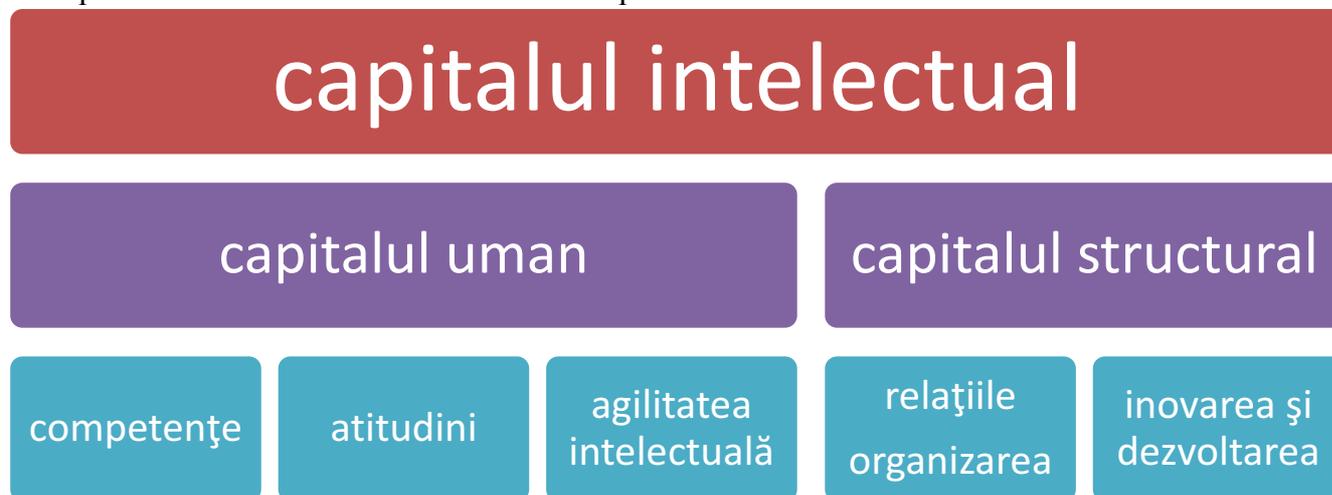


Figure no. 2. The model of the intellectual capital after Roos

Source: Figure drawn by the author, after the theoretical model

Professor Bratianu defines the intellectual capital as the hidden part of an educational institution value, because it “represents the intangible resources of the institution, which cannot be measured with the financial instruments used in measuring the tangible resources” (Bratianu 2009:22). Lacks in the analysis in this area are due to the fact that the models of the intellectual capital don’t explain the way the intellectual capital is utilized for creating value. What was discovered by Leitner and Warden in 2004, is that the theory wasn’t able to explain the correlation between the elements of the various models of intellectual capital (Canibano 2008:24).

As a conclusion, in my opinion, the intellectual capital of an educational institution represents the sum of all the knowledge detained by the officials in an educational institution, which brings about an increase in efficiency, and at the same time, that part in the educational institution which can be created together with the increase of the personal value of the employees, by correctly using knowledge, aptitudes, learning capacity of employees, and also through investment in employees. But all these focus on the knowledge of the consumers, as a final element to attain by increasing the employees' value.

### ***2.1. The structure of the intellectual capital***

The intellectual capital includes both the intangible actives and also the actives which represent the intellectual property. The intangible actives are the human resources, the interpersonal relations in the educational institutions, the organisational culture, the mode of organisation and functioning, and the intellectual property is represented by the name of the organisation, the author rights, the registered marks, as well as the inventions patents. The majority of the consecrated authors in this domain divide the intellectual capital into: human capital, structural capital, and relational capital.

The human capital is composed of knowledge, aptitudes, personal agility, experience, intuition, and personal opinions of employees. This is not property of the public institution, so the staff takes it when they leave that institution (Hung 2009:51). In other words, the human capital is based upon the individual capacities of the employees, which are useful at a collective level for attaining the aims of the public institution. The know-how, imagination and creativity of the employees are as important as the tangible resources for an institution (Petrescu 2008:76).

The structural capital is made up of patents, models, administrative systems and information technology. This represents the structure, strategy, culture and knowledge from the processes of a public institution. It means that, the documents of know-how, the rights of intellectual property and the patents, the software of the public institution, the marks which have been registered, and respectively, the procedures, the data bases and others. These are the actives which remain in the organisation even after the staff leaves the institution.

The relational capital refers to all the relations of the organisation with the exterior, that means the relation with "the clients, citizens, the private environment, the partners, the allied, and others" (Ross 2011:6707), influencing the satisfaction and the loyalty towards the educational institution. The stress is put especially upon the personal relation with the clients (Dumitrescu 2010:2).

## **III. Methodology**

### ***3.1. The design of the research***

For the attaining of the research objectives related to the effects of the intellectual capital over the organisational performance in an educational organisation a survey based on a questionnaire was realised. The questionnaire elaborated in order to answer to the research topic is composed of three constitutive parts of the intellectual capital having the aim to test its efficiency: human capital, structural capital, relational capital. For the assessment of the questionnaire answers a scale with five levels of appreciation on the manner of meeting a certain request was utilized, from : 1 = "Total disagreement", 2 = "Disagreement", 3 = "Neither agree nor disagree", 4 = "Agreement", 5 = "Total agreement" (after cases).

The research part contains 19 questions referring to the human capital -which allow the obtaining of data connected with efficiency through:

- Learning, education, improvement (questions 1-9);
- Experience and competence (questions 10-14)
- Innovation and creation (questions 15-19);

Taking into consideration variations of the greatness of organisations involved in this research, we propose that the analysis of the obtained data to be made depending on the staff number, for the following three categories:

- Category 1: 10-14 employees
- Category 2: 15-24 employees
- Category 3: over 25 employees

The first category comprises the number of employees between 10-14, because an organisation with less than 10 employees is not representative for the present research. Moreover, we consider that small organisations with a number of employees under 10 persons don't have a management system clearly highlighted. Thus the intellectual capital management in the above-mentioned organisations is less obvious.

#### **IV. Results**

Following the analyses, it has become evident that learning investment, education and improvement investment of the staff has a major importance for an educational institution efficiency. Starting from the highlighted data, the respondents in the educational organisations with a limit of 19 employees appreciate that the attained level of the criterion related to "learning, education and improvement" is very low, when compared with the results obtained in bigger organisations, which depicts a higher level of attaining education (16%, 38% respectively). Analysing this situation it is clear that large institutions invest much more in learning and improvement of employees. This fact is possible due to the fact that a lot of institutions have specialized trainers and this type of organisations allocate much more funds for the staff improvement and education, granting a great importance to the institution efficiency. According to the results, the organisations having over 30 employees appreciate that the percent of the competent employees with a satisfactory experience is of 57%, while in smaller institutions this figure is equal with 71%. This fact can be explained due to the reality that in large institutions with over 30 employees is a lot more difficult to have an evidence of all the staff and their level of competency, even if the staff selection is realized after well-defined parameters. Thus, the less staff the institution has got, the better the above established criterion is highlighted.

In connection with the criterion of "innovation and creativity", the organisations with a limit of 19 employees appreciate that the attained level of this criterion is pretty low, but very near to the organisations with a limit of 29, when compared with the results obtained in large organisations, which shows a bigger level of innovative realization (24%, 29%, 37% respectively).

The results obtained with this criterion are very much alike with the results from the first criterion related to "learning, education, improvement". This is possible because in the first case it is about investments, and not any type of investments, but some very serious and very costing. Large educational institutions invest pretty much in technology modernization and the creating of new products, which could cope with the competitors. These institutions address the large public and generally detain a various range of services. However, we consider that small institutions should invest much more in innovation, because it is more and more difficult to resist the pressure from large institutions, in the first turn. Secondly, this fact would be useful for the continual growth and development.

#### **V. Conclusions**

Analysing the presented facts, we can conclude that at present, the human capital is the most important part in the intellectual capital structure. Moreover, without this part the other two parts of the intellectual capital cannot exist.

The created image shows that the analysed town experiences a transition period at present, from a post industrial town which wants to be based on knowledge, but it still has a long way. Here we can debate two opposed facts, but also very important. First, Marghita is a town with a medium

level of living conditions or we could say it is low when compared with the developed towns in Romania. Under these conditions the most part of the population from here aims at surviving and this fact prevents them from thinking of developing the intellectual capital. On the other hand, without development, investments in education, learning and staff improvement, innovation, creation, we cannot pass to the level of a town with an economy and a society based on Knowledge.

## **VI. References**

### **6.1. Books**

1. Brătianu Constantin. *A model of analysis of the intellectual organizational capital*. Bucharest: Academy of Economic Studies. 2009.
2. Edvinsson, Leif and Malone. Michael, *Intellectual Capital: The Proven Way to Establish Your Company's Real Value by Measuring Its Hidden Values*, London: Piatkus, 1997.
3. Petrescu, Ion. *Managementul capitalului uman*. Bucharest: Expert Publisher. 2008.
4. Roos, Johan., Roos, Goran, Edvinsson, Leif, Dragonetti, Nicola. *Intellectual Capital: Navigating in the New Business Landscape*, New York: New York University Press. 1998.
5. Stewart, Thomas. *Intellectual capital: the new wealth of organizations*. New York, NY: Doubleday. 1997.

### **6.2. Articles**

6. Agndal Henrik and Nilsson Ulf. Generation of Human and Structural Capital: Lessons from Knowledge Management. *The Electronic Journal of Knowledge Management*. Volume 4. Issue 2: 91 - 98, 2006. Available online at [www.ejkm.com](http://www.ejkm.com), retrieved on 8.03.2012.
7. Brooking, Annie and Motta, Enrico. A taxonomy of intellectual capital and a methodology for auditing it. *17th Annual National Business Conference*. Hamilton. Ontario: McMaster University. 1996.
8. Cañibano, Leandro. Paloma Intellectual Capital Management and Reporting in *Universities and Research Institutions Estudios de Economía Aplicada*. Vol. 26. Núm. 2. 2008.
9. Dumitrescu, Luigi, Fuciu, Micea. The Role of Database Marketing in the Operationalization of the Services Relationship Marketing. *Studies in Business and Economics*. Sibiu. 2010.
10. Edvinsson, Leif, Lin, Carol. National intellectual capital: comparison of the Nordic countries. *Journal of Intellectual Capital*, Vol. 9 No. 4. Emerald Group Publishing Limited. 2008: 525-545.
11. Hung, Chang. Measuring intellectual capital using fuzzy analytic hierarchy process. *International Journal of Innovation and Learning*. Issue Volume 6. Number 1 / 2009: 51 - 61.
12. Kok, Andrew. Intellectual Capital Management as Part of Knowledge Management Initiatives at Institutions of Higher Learning, *Electronic Journal of Knowledge Management*. Volume 5. Issue 2. 2007.
13. Malhotra, Yogesh. Managing and measuring knowledge assets in the public sector, working paper. Syracuse University, Syracuse. NY: New York. 2003.
14. Navarro, Jose. An alternative to measure national intellectual capital adapted from business level. *African Journal of Business Management*. Vol. 5(16), 2011: 6707-6716.
15. Ståhle, Pirjo. National Intellectual Capital as an Economic Driver. *Perspectives on Identification and Measurement*, 2008. Available online at: [http://www.stahle.fi/National\\_Intellectual\\_Capital\\_as\\_an\\_Economic\\_Driver\\_200408\\_final.pdf](http://www.stahle.fi/National_Intellectual_Capital_as_an_Economic_Driver_200408_final.pdf) retrieved on 8.03.2012.

## VII. Appendix A

Dear participant,

By answering the following questionnaire we would like to find out your opinion on intellectual capital. Therefore, your contribution is considered very important for the successful completion of this study. Your answers will be treated with strict confidentiality.

Thank you in advance for your time and effort.

Kind Regards,

### *The Questionnaire Questions*

#### *Section 1: Introductory Questions*

Gender

- Male                       Female

Age

- 18-29                       30-39                       40-49                       50-59                       +60

Educational background

- High School     University                       Postgraduate (MSc)     Doctoral (PhD)

Institution employees

- Category 1: 10-14 employees  
 Category 2: 15-24 employees  
 Category 3: over 25 employees.

#### *Section 2: Elements of the questionnaire:*

#### **HUMAN CAPITAL**

1	The competence of the employees meets their responsibilities and job requirements?	1	2	3	4	5
2	Does the institution value employees' team work?	1	2	3	4	5
3	Do the employees benefit of continuous learning and training programs?	1	2	3	4	5
4	Does the institution make efforts for developing knowledge and competences of their employees?	1	2	3	4	5
5	Training costs per employee are effective?	1	2	3	4	5
6	Employees learning determine the profitability of the institution?	1	2	3	4	5
7	Does the employees' learning affect the profitability of the institution?	1	2	3	4	5
8	Institution's employees are motivated enough?	1	2	3	4	5
9	Does management quality positively influence the development of the institution?	1	2	3	4	5
10	Lately, the market share of the institution was in a continuous growth?	1	2	3	4	5
11	Institution's employees are professionals in their field?	1	2	3	4	5
12	Institution's employees have been working for a long time in it?	1	2	3	4	5
13	Employees contribute to the effectiveness of the institution?	1	2	3	4	5

14	The managers of the institution are constantly on track with new ideas for the institution development?	1	2	3	4	5
15	Institution's employees contribute with innovative ideas?	1	2	3	4	5
16	Does the organization constantly propel new ideas coming from employees?	1	2	3	4	5
17	The institution develops more ideas, services and products than any other institution in the education system in the town?	1	2	3	4	5
18	Institution's employees are encouraged to bring knowledge and ideas and to share knowledge with colleagues?	1	2	3	4	5
19	Institution's employees are satisfied and happy with innovation policies and programs of their institution?	1	2	3	4	5