EVOLUTION OF INTANGIBLE ASSETS – CASE STUDY KNOWLEDGE – BASED COMPANIES VS. ORGANIZATIONS TOP 100 ISSUERS AFTER CAPITALIZATION

NICOLETA RĂDNEANŢU [*]

ABSTRACT: *Development of knowledge-based companies and implicitly of knowledge-based economy led to the occurrence of a new type of innovative, computerized, flexible trading companies focused on human resource, with a high level of intangible assets, etc. – knowledge-based organizations. With the occurrence of knowledge-based economy, the role of intangible assets in knowledge-based organizations is emphasized. The paper also presents the conclusions of a comparative study performed using two samples of companies listed on the Bucharest Stock Exchange – companies included in "knowledge-based" category and companies in Top 100 issuers after capitalization. In order to increase the relevance of obtained results, we used χ^2 Test and Fisher's exact test (in case χ^2 test was not stable).*

KEY WORDS: *intangible assets; knowledge-based organizations/companies; Top 100 organizations/companies; χ^2 test and Fisher's test.*

JEL CLASSIFICATION: *M21; M41.*

1. INTRODUCTION

Development of knowledge-based companies and implicitly of knowledge-based economy led to the occurrence of a new type of innovative, computerized, flexible trading companies focused on human resource, with a high level of intangible assets, etc. – *knowledge-based organizations*.

Specific issues of knowledge-based companies and afferent organizations (knowledge-based organizations) are of topical interest and importance given that they leave a mark on all scopes of business (economic, social, political, etc.). Accounting is not left outside this phenomenon, all the more as **knowledge** – central element of the

---

[*] *Assist. Prof., Ph.D., Romanian-American University, Romania, nicoleta.radneantu@yahoo.com*

new type of company/economy/organization – is an intangible asset whose importance can no longer be ignored.

Reffering to role reversal of the two categories of assets, tangible and intagible assets produced and amplified in modern economics, A. Toffler (1995) states: "what matters are not buildings or devices of a company, but the contracts and marketing and sale strenght force, administration's organizational capacity and the ideas yeasting in employees' heads". In these circumstances, companies management directed its efforts for creating and developing intangible assets supporting this innovation process by: achievement of research-development expenses, allocation of resources for employees' training, etc. As a result, the company's market value becomes more and more influenced by intangible assets and implicitly by the intellectual capital it holds (Radneanțu et. al., 2010).

In this context, we intend to capture the essence of intangible assets with the help of a comparative study (with the help of answers received as a result of sending a question: In your opinion, which will be the evolution of the importance of intangible elements below, in the next 3-5 years?) regarding the perceptions of managers of knowledge-based organizations and companies in Top 100, listed on Bucharest Stock Exchange.

2. DEFINITION, PURPOSE, METHODOLOGY OF RESEARCH AND ANALYSIS OF RESULTS

2.1. Research purpose

In this research, we intended to emphasize comparatively the perception of managers of knowledge-based organizations and Top 100 companies about the evolution in the next 3-5 years of the importance of certain intangible elements. In addition, we intended to determine if there is a connection between the type of company and the managers' perception regarding the evolution of their importance, in the next 3-5 years.

2.2. Definition of analyzed samples

For the achievement of proposed goal we used two samples: (1) Top 100 most active companies listed on Bucharest Stock Exchange (BVB, 2010) – which we shall name, abbreviated, Top 100 companies/organizations and (2) knowledge-based organizations listed on Bucharest Stock Exchange.

a) Knowledge-based organizations

For the identification of knowledge-based organizations listed on Bucharest Stock Exchange, I used the definition given by Sveiby (1989)*: a knowledge-based company is a creative organization selling know-how, with non-standardized productivity, with high capacity of solving arising issues, dependant on the personnel*.

Twenty-six knowledge-based organizations were identified on Bucharest Stock Exchange.

b) Top 100 companies of issuers after capitalization

"Top 100 issuers after capitalization in the last 3 months on Bucharest Stock Exchange" (abbreviated Top 100) is a list containing the most active companies listed on Bucharest Stock Exchange. Top 100 contained 68 companies.

Populations are independent, meaning no knowledge-based organization is part of Top 100 and no company in Top 100 can be included in the category of knowledge-based organizations.

2.3. Research variables

Study's variables are represented by marks given by managers of knowledge-based organizations to main intangible assets not registered in current financial situations in Romania for the generation of added value (evolution – shall increase, shall decrease, shall remain constant).

Main intangible assets generating added value used in analysis are: Knowledge and skills of human capital, Supplier relationships, Customer relationship, Company image, Customer loyalty, Alliances, partnerships, Organizational culture, Employees' professional skills, Professional experience, Employees' loyalty, Employees' satisfaction, Employees' education, Employees' creativity, Organization's reputation.

2.4. Research methodology and results analysis

For this purpose, we used the χ^2 test (Pearson) which allows the comparison of proportions in two or more independent samples (in our case the samples are represented by the two types of organizations (Niculescu-Aron & Mazurencu-Marinescu, 2007).

As there are three possible answers (future importance of intangible element <u>decreases</u>, future importance of intangible element <u>remains</u> <u>constant</u>, future importance of intangible element <u>increases</u>), for each of the 14 intangible elements we designed a contingency table of 3x2 (3 lines corresponding to the three variants of answers – values of analyzed characteristics – and 2 columns corresponding to the two types of companies – number of samples/groups). The contingency table does not contain "I don't know" type of answers. Each such contingency table contains:

- The proportions of the ones who answered "i" (i=1,3) in each of the two categories of companies (populations) (% within knowledge-based company) and on total analyzed companies (% of total);
- Expected count automatically calculated in the hypothesis that the type of company has no influence on the "i" answer (the proportion of the ones who answered "i" in the sample – type of company – is the same as the proportion of the ones who answered "i" in total analyzed companies).

The results obtained in the 14 contingency tables are synthesized in Table 1.

Table 1. Results obtained in contingency tables

Intangible assets	Answers to the question	Top 100 companies (%)	Knowledge-based companies (%)
Importance of knowledge and skills of human capital	decreases	29,8	9,5
	remains constant	38,3	28,6
	increases	31,9	61,9
	total	100	100
Importance of supplier relationships	decreases	33,3	4,8
	remains constant	33,3	33,3
	increases	33,4	61,9
	total	100	100
Importance of customer relationships	decreases	13	14,2
	remains constant	39,2	4,8
	increases	47,8	81
	total	100	100
Importance of company image	decreases	26,1	4,8
	remains constant	43,5	28,6
	increases	30,4	66,6
	total	100	100
Importance of employees' professional skills	decreases	18,4	4,8
	remains constant	36,7	19
	increases	44,9	76,2
	total	100	100
Importance of professional experience	decreases	29,2	4,7
	remains constant	31,3	28,6
	increases	39,5	66,7
	total	100	100
Importance of employees' education	decreases	28,6	9,5
	remains constant	61,2	42,9
	increases	10,2	47,6
	total	100	100
Importance of organizational culture	decreases	7,8	30
	remains constant	70,6	25
	increases	21,6	45
	total	100	100
Importance of employees' loyalty	decreases	20,4	28,6
	remains constant	57,2	52,4
	increases	22,4	19
	total	100	100

Importance of customer loyalty	decreases	36,4	9,5
	remains constant	34,1	33,3
	increases	29,5	57,2
	total	100	100
Importance of employees' creativity	decreases	10	14,3
	remains constant	76	33,3
	increases	14	52,4
	total	100	100
Importance of employees' satisfaction	decreases	14,5	28,6
	remains constant	66,7	28,5
	increases	18,8	42,9
	total	100	100
Importance of alliances, partnerships, etc.	decreases	0	4,8
	remains constant	39,2	38,1
	increases	60,8	57,1
	total	100	100
Importance of organizations' reputation	decreases	2,7	0
	remains constant	73	42,1
	increases	24,3	57,9
	total	100	100

From Table 1. it results that most managers of Top 100 organizations (percentage between 31,3% and 76%) consider that the importance of all intangible elements remains constant. In exchange, most managers of knowledge-based organizations (percentage between 57,1% and 81%) consider that the importance of 10 intangible elements increases; exceptions are the opinions regarding: customer loyalty, organizational culture, employees' education and employees' satisfaction.

χ^2 test was designed to compare the proportions of the ones who answered "i" (i=1,3) in the two independent samples and to verify if the type of company (group) influences the proportions of the ones who answered "i".

SPSS programme calculated the values of χ^2 test starting from the square of differences between observed counts (number of knowledge-based companies/Top 100 companies who answered "i") and the expected counts (determined in the contingency table).

The value of calculated χ^2 (χ^2_{calc}) was compared to a theoretical value (χ^2_{critic}= 5,9915 (Niculescu-Aron & Mazurencu-Marinescu, 2007) corresponding to the level of chosen significance (95%, meaning α = 0,05) and a number of two degrees of freedom (df = (l-1)(k-1) = (3-1)(2-1) = 2).

In using χ^2 test, we considered that:

- For each of the analyzed intangible elements, the total population (total number of companies that supplied valid answers) has different values;
- The volume of each sample is reduced considering that 21 knowledge-based companies and 52 companies of Top 100 were analyzed (total

population is maximum 73, the sample of knowledge-based companies is of maximum 21, and the sample of Top 100 companies is of maximum 52);

In these circumstances, the interpretation of results of χ^2 test was made depending on the "number of expected count with values smaller than 5" (x cells (y%) have expected count less than 5), respectively:

- We have considered that the calculated value of χ^2 test, is stable when there are "0" expected count less than 5;
- We have considered that the calculated values of χ^2 test are not stable if there is at least one expected count less than 5. In this case, we completed the analysis of Fisher's exact test (p).

Working hypotheses tested within χ^2 test have been:

H_0: there are no significant differences between the proportions of the ones who answered ''i" of the two samples (the type of company does not affect the answer to the question),

H_1: there are significant differences in the proportion of the ones who answered "i" of the two samples.

The following algorithm was used for the interpretation of the answer obtained in χ^2 test:

1. if there is no expected count less than 5 (0 cells (0%) have expected count less than 5) then:
   - if $\chi^2_{calc} > \chi^2_{critic}$ => H_1 hypothesis is accepted;
   - if $\chi^2_{calc} < \chi^2_{critic}$ => H_0 hypothesis is accepted;
2. if there is at least one expected count less than 5 (x cells (0%) have expected count less than 5) then "p" values are analyzed for Fisher's exact test:
   - if $p < 0.05$ => H_1 hypothesis is accepted with a probability of (1-p);
   - if $p > 0.05$ => H_0 hypothesis is accepted.

In Table 2. are presented the results obtained based on χ^2 test.

Table 2. Results obtained based on χ^2 test

Intangible elements	Expected count < 5	X^2_{CALC} value	X^2_{CRITIC} value	test is applicable (yes/no)	P value (FISHER's exact test)	Significance level	Accepted hypothesis	Interpretation
Importance of knowledge and human capital skills	1	-	-	yes	0,064	0,05	H_0	No connection
Importance of supplier relationships	0	7,577	5,9915	no	-	-	H_1	Connection

Importance of customer relationships	1	-	-	yes	0,006	0,05	H_1	No connection
Importance of company image	1	-	-	yes	0,014	0,05		Connection
Importance of employees' professional skills	1	-	-	yes	0,06	0,05	H_0	No connection
Importance of professional experience	2	-	-	yes	0,044	0,05		Connection
Importance of employees' education	2	-	-	yes	0,002	0,05	H_1	Connection
Importance of organizational culture	1	-	-	yes	0,001	0,05	H_1	Connection
Importance of employees' loyalty	2	-	-	yes	0,775	0,05	H_0	No connection
Importance of customer loyalty	0	6,515	5,9915	no	-	-	H_1	Connection
Importance of employees' creativity	2	-	-	yes	0,002	0,05	H_1	Connection
Importance of employees' satisfaction	1	-	-	yes	0,011	0,05	H_1	Connection
Importance of alliances, partnerships, etc.	2	-	-	yes	0,424	0,05	H_0	No connection
Importance of organization's reputation	2	-	-	yes	0,028	0,05	H_1	Connection

Note: No connection = H_0: there are no significant differences between the proportions of the ones who answered"i" of the two samples (the type of company does not affect the answer to the question)

Connection = H_1: there are significant differences in the proportion of the ones who answered "i" of the two samples (the type of company affects the answer to the question).

From Table 2. it results that the value of χ2 test was stable only for two characteristics (relations with suppliers and customer loyalty), for the other characteristics being necessary to apply Fisher's exact test. The interpretation is the following: managers' perception regarding the evolution of the importance of analyzed

intangible elements is not related to the type of company, only for the following assets: knowledge and skills of human capital, professional skills, employees' loyalty, alliances and partnerships. For the other 10 intangible elements was shown that there is a relation between the type of company and the managers' perception regarding the evolution of their importance, in the next 3-5 years. Therefore, the type of company influences the perception of most managers, regarding the future evolution of the importance of analyzed intangible elements.

3. CONCLUSIONS

From the performed research results that the transfer to knowledge-based economy determined essential changes in the hierarchy of elements generating added value within a trading company. Thus, if until recently main elements, generating future benefits were considered tangible assets; currently the managers emphasize intangible elements such as knowledge and skills of human capital, company's image and reputation, professional skills, customer relations and relations with suppliers, employees' creativity, etc.

The main limit of the research was the reduced dimension of the sample of knowledge-based companies. It had the following causes:

- Reduced number of knowledge-based companies listed on Bucharest Stock Market, which is, in fact, an indicator of the reduced level of development of the knowledge-based companies in Romania;
- Managers' reluctance to supply information about intangible elements within the companies they lead;
- The sometimes hostile attitude of managers towards change (impact of knoweldge-based companies);
- Inssuficient information of managers regarding knowledge-based companies/knowledge-based economoy/knowledge-based organizations, which are often considered purely theoretical.

REFERENCES:

[1]. **Niculescu-Aron, G.; Mazurencu-Marinescu, M.** (2007) *Metode econometrice pentru afaceri* (Econometric Methods for Business), ASE Publishing
[2]. **Rădneanţu, N.; Gabroveanu, E.; Stan, R.** (2010) *From Traditional Accounting to Knowledge Based Accounting Organizations*, Annals of the University of Petrosani, Economics, vol.X , pp. 307-319
[3]. **Sveiby, K.E.** (1989) *The Invisible Balance Sheet*, p. 9, [Online], Available at: http://www.sveiby.com/articles/IntangAss/DenOsynliga.pdf
[4]. **Toffler, A.** (1995) *Powershift – Puterea în mişcare (Moving Power)*, Antet Publishing, Bucharest
[5]. **BVB** (2011) *Top 100 issuers after capitalization, in the last three months in Bucharest Stock Market*, [Online], Available at: http://www.bvb.ro/Listed_Companies/_Societati Main.aspx, [Accesed on 20th of July 2011]