**IMPACT OF HUMAN, STRUCTURAL AND RELATIONAL CAPITAL ON EDUCATIONAL NEEDS OF SMES IN CROATIA**

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Jadranka Švarc1, Jasminka Lažnjak2, Marina Dabić3

1Institute Ivo Pilar, Marulićev trg 19, 10000 Zagreb, Croatia, jadranka.svarc@pilar.hr

*2University in Zagreb, Department of Sociology, I. Lučića 3, 10000 Zagreb,*

*Croatia, jlaznjak@ffzg.hr*

*3 Faculty of Economics and Business,Trg J. F. Kennedyja 6, 1000 0 Zagreb, Croatia,*

*mdabic@efzg.hr*

**Abstract**

**Competitiveness of companies in knowledge economy is determined by their intangible assets dominated by intellectual capital and their propensity towards education and training. The purpose of research is to analyse the relationship between the three components of intellectual capital (human, structural and relational) and educational needs using the example of Croatia. The relationships with other companies’ characteristics such as business performance, size, type of industry, etc. are also analysed.**

**The analysis revealed that companies with higher level of intellectual capital are more aware of the benefits and of the need for entrepreneurial education, show better business performance while employees’ satisfaction, motivation, risk taking and innovativeness is higher.**

In order to find out which types and modes of entrepreneurial education companies need, we have examined their preferences towards five aspects of education and training. They revealed that the most needed knowledge is about financial aspects of business and “soft” skills like leadership and management principles. Entrepreneurs prefer problem solving lectures to standard lectures and need consultations related to taxes and legal issues. They feel a need to cooperate with other entrepreneurs and need consultancy how to deal with investors and local community.

Keywords

Education needs, Entrepreneurship Education, Intellectual capital, Non-educational needs, SMEs

1. Introduction

Competitiveness of companies in knowledge economy is determined by their intangible assets dominated by intellectual capital and their propensity towards education and training. The expert knowledge and competencies of the employees (human capital), the internal organization of company (structural capital) and its customer service (relational capital) are decisive factors of company performance and success [1], [2]. Inevitable orientation of today's enterprises on intellectual capital as the key of competitiveness, promote education and training of employees at the centre of the firm’s development strategies [3], [4].

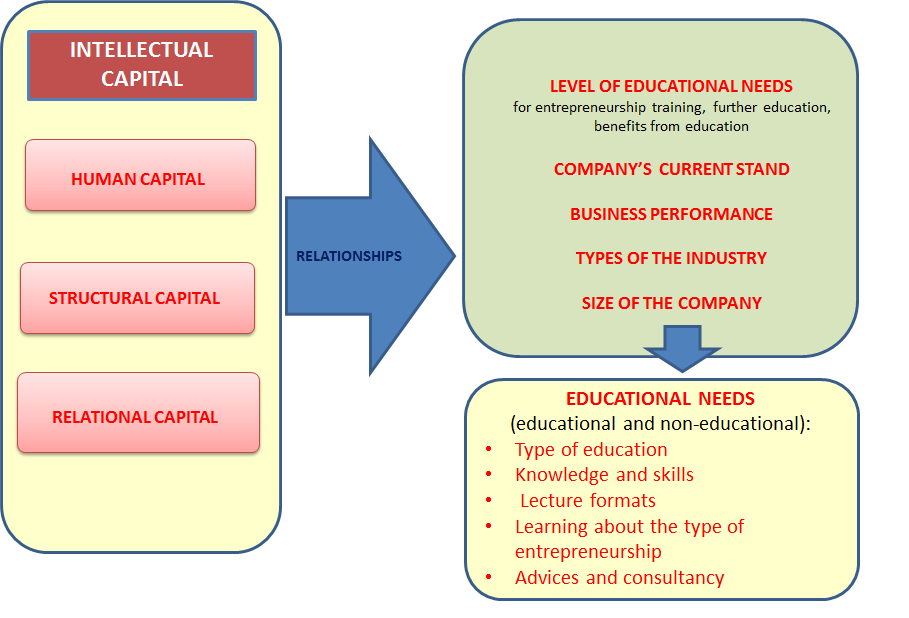
Entrepreneurship education and training is an essential precondition for s small and midsized firm’s development and very probably closely related to the company’s level of intellectual capital [5]. However, the relationship between intellectual capital and education is insufficient explored and rather poorly represented in the literature, especially in countries which are newcomers in market economy like Croatia. Although Croatia has a tradition in studying intellectual capital [6], especially in method of measuring the intellectual capital which is internationally applied [7], the empirical studies of relationship between intellectual capital of companies and their educational needs are not performed.Trying to fill this gap in the empirical research, we conducted the study whose primary objective was to analyse the educational needs of SMES and their relationship with the companies' intellectual capital in Croatia. The relationships with other companies’ characteristics such as business performance, size, type of industry, etc. are also analysed.

The paper is structured in five main sections. After the introduction, the second section provides the conceptual model of research and hypotheses. The third part describes research methodology and sample, while the fourth section discusses the results of research (scales of intellectual capital, testing the hypotheses). The fifth part describes the educational needs and the final sixth section brings the main findings and conclusions.

1. **Conceptual model and hypotheses**

The purpose of research is to analyse the influence of three components of intellectual capital (human, structural and relational capital) on educational/training needs of SMEs for company’s development using the example of SMEs in Croatia. We have tested if the level of intellectual capital is related to the current stand of the company, performance, size and type of industry. The analysis includes also the examination of preferences in types of educational and non-educational needs (Figure 1).

Our basic proposition, therefore, was: the higher the level of intellectual capital (all three components) the greater is the need of enterprise for education and training and the better is the company’s performance and current stand.



**Figure 1** Conceptual model of research

Following this basic presumption, the following hypotheses were formulated:

H1: Intellectual capital (all three components) is positively related with the level of educational needs: the higher the level of intellectual capital the perception of the need of enterprise for education and training is greater

H2: Intellectual capital is positively related with the firm’s performance: the higher the level of intellectual capital the higher the firms’ performance;

H3: Intellectual capital (all three components) is positively related with the current stand of companies regarding employees’ satisfaction, motivation, risk taking and innovativeness: the higher the level of intellectual capital the current stand of companies is better;

H4: There is difference in the level of intellectual capital among different types of industry;

H5: The level of intellectual capital differs significantly with the size of company (number of employees).

1. **Methodology**

The components of intellectual capital (human, structural and relational) are considered as multidimensional concepts. In order to measure the dimension of intellectual capital the three scales have been constructed one for each dimension. Scales are constructed as a series of items in a form of a Likert-type attitude scale of 1-7 (from strongly disagree, to strongly agree).

Human capital scale consists of 20 items that comprise the following dimensions: motivation, satisfaction, employees’ knowledge, skills and creativity, employees’ social skills. The scale of structural capital includes 28 items with the following dimension: organizational structure, organizational learning, organizational culture and strategic culture. Relational capital scale consists of 22 items that cover the following dimensions: relations with customers and suppliers, relations with competitors and allies, relations with society, environmental protection, media and corporate reputation, relations with public sector, relations with investors and other stakeholder.

The level of educational needs of the companies is measured by the three indicators: /1/ needs for entrepreneurship training; /2/ need for adequate further education and /3/ estimated benefits from education and training.

The current stand of companies include four components related to employees: /1/ satisfaction with work, working conditions and climate, /2/ risk taking, /3/ innovativeness and /4/ financial vs. non-financial motivation.

Company’s performance is caught through the three characteristics of the company: /1/ company is a fast growing company (“gazelle”); /2/ company has stable turnover; /3/ sales are constantly growing.

Besides, we have analysed the relationship between intellectual capital and /1/ types of the industry and /2/ size of the company

## *3.1 Data collection and sample*

## The research is based on on-line survey structured in four main parts. The central part of the questionnaire relates to the identification of three types of capital – human, structural and relational capital. The second part relates to identification of the educational needs that includes 5 aspects: type of education, needed knowledge and skills, learning formats, learning about the types of entrepreneurship, need for information and advisory services. The third part relates to the characteristics of the companies such as: employees’ satisfaction, risk taking, innovativeness, company size, etc. The fourth part relates to socio-demographic characteristics of the respondents including industrial sectors. There are additional questions about the open innovation, usual type of education and learning practices, etc.

The survey was constructed and data were collected within the Tempus Joint Project 144713 "Fostering Entrepreneurship in Higher Education (FoSentHE[[1]](#footnote-1)). The questionnaire was addressed to the owner and managers of the companies and data were collected by on-line survey in the period July 15 and September 30, 2011. The non-probability purposive sample of 253 companies limits the interpretation of results because it is not representative for SMEs and industrial categories from Croatia. That is the main limitation of the study. There is no proof of reliability of data due to the on-line data gathering. Therefore the results are only indicative, and do not provide a strong platform for generalisations.

Almost a half of the enterprises in the sample (47.5%) are micro companies which employ up to 8 employees. Another 30.8% company employ between 8 and 100 persons while only 21.7% are midsized companies with 100 and more employees. Majority of respondents, around 60% are younger managers under the age of 40 and the remaining 40% are over the age of 40 year. Sample consists of companies form all economic activities which are almost equally represented. The majority of firms are in Personal services (15.8%), followed by Transportation including community and utilities (13.8%), Wholesale trade and retail (13.0%), finance, Insurance and real estate (11.5%). Construction, Manufacturing and Business services participate with about 10% each. The least number of companies are coming from Healthcare, Education and Natural resources (inc. Agriculture, Mining and Forestry).

1. **Analysis and results**
   1. ***Scales of the intellectual capital***

In order to study the intellectual capital we have, firstly, constructed the scales of human capital based on the questionnaire and tested their reliability. Cronbach’s Alpha revealed high reliability for all three scales of human, structural and relational capital. The value of Cronbach’s Alpha ranges from 0.951 for structural capital and 0. 934 for human capital to 0.903 for relational capital.

The quite low mean values for each type of capital (human, structural, relational) revealed that the level of all three types of capital is estimated as relatively low (from 4.92 to 5.06 on a scale of 1 to 7) (Table 1) with small difference between the three components of the intellectual capital, especially between structural and relational capital (ranging from 4.92 to 5.06). Despite the small differences it could be stated that the respondents estimated the human capital as the most developed, followed by relational capital while the structural capital is least developed.

**Table 1** Intellectual capital values

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | N | Minimum | Maximum | Mean | Std. Deviation | |
| Human capital index | 253 | 1,50 | 7,00 | 5,0684 | ,93616 | |
| Structural capital index | 253 | 1,44 | 7,00 | 4,9218 | | 1,02269 |
| Relational capital index | 253 | 1,17 | 7,00 | 4,9533 | | ,98112 |

The relatively low levels of intellectual capital are probably conditioned by the company’s size included in the sample. As showed in the previous chapter, almost a half of the enterprises (47.5%) are micro companies and employ up to 8 employees. Such small companies rely primarily on the skills and experience of the owner or chief manager (human capital) while the internal company’s relationships, working procedures and other elements that build structural capital are not highly relevant for such a small companies. The more detailed analyses of the company’s size and intellectual capital (see Chapter 4.6) current characteristics) shows that structural and relational capital are significantly lower in micro enterprises (up to 8 employees). Both the capitals are rising rapidly with the number of employees but the structural capital is the highest in the firm with 8 to 19 employees while the relational capital is raising at same level regardless of the employment growth.

* 1. ***Intellectual capital and the level of educational needs (Hypothesis 1)***

The level of educational needs of the companies is measured by the perception of the three aspects of education (Table 2). Since the values of responses for all three aspects of educational need are relatively low and do not exceed 5.3 on a scale of 1 to 7 we can conclude that need for education is not very pronounced and recognized by respondents.

**Table 2** Level of educational needs: values of components’ means

|  |  |
| --- | --- |
| Level of educational needs | Mean |
| The needs for entrepreneurship training (V92) | 4.55 |
| The need for adequate further education (V9) | 5.21 |
| Benefits from education and training. (V 93) | 4.53 |

Note: The needs for education were measured by the Likert scale ranging from 1 to 7

One way ANOVA was used to test the differences between three types of intellectual capital (IC) and level of educational needs in companies. Although there was a significant difference among companies in all three types of IC: Fhc  (6, 246) = 2.983, p= .008; Fsc (6, 246) = 4.779, p= .000; Fsc (6, 246) = 5.562, p= .000; post hoc Tukey comparisons of the three types of IC indicate that there is significant difference in the level of structural and educational capital and needs for education. However, comparison between human capital and educational needs was not statistically significant at p< .05.

When we used ANOVA to test the expressed need for adequate further education for employees there was a significant difference among companies in all three types of IC: Fhc  (6, 246) =19.438, p= .000; Fsc (6, 246) = 17.130, p= .000; Fsc (6, 246) = 14.114, p= .000; Tukey post hoc comparisons of the three types of IC indicate that there is significant difference in the level of all three types of IC need for adequate further education for employees.

Also, ANOVA in the test of the differences between three types of intellectual capital (IC) and the benefits from education and training shows that there is a significant difference among companies in all three types of IC: Fhc  (6, 246) = 3.486, p= .003; Fsc (6, 246) = 4.890, p= .000; Fsc (6, 246) =5.941, p= .000; Tukey post hoc comparisons of the three types of IC indicate that there is significant difference in the level of all three types of IC and benefits from education and training only in the groups with extremely negative and extremely positive attitude toward benefits from education and training.

Although the need for education is relatively low, the analysis of variance (ANOVA) reveals that structural and relational capital are positively associated with all three variables of the level of educational needs, as given above (Table 2). It means that the higher the level of all three dimensions of intellectual capital the greater is the need for education included in this analysis. It clearly shows that the values of attitudes about the need for entrepreneurship education and the benefits from it grow together with the growth of intellectual capital. Since the analysis of variance indicated the positive relationship between intellectual capital and the level of educational needs measured by the aforementioned variables we can conclude that the first hypothesis is confirmed.

***4.3 Intellectual capital and company's performance (Hypotheses 2)***

Company’s performance is caught through the perception of the three aspects of business performance: company is a fast growing company (“gazelle”), company has stable turnover and company has constantly growing sales.

One way ANOVA was used to test the differences between three types of intellectual capital (IC) and fast growing company (gazelle) There were significant differences among companies in all three types of IC: Fhc (6, 246) =8.497, p= .000 ; Fsc (6,246) =14.165, p= .000; Frc(6,246)= 13.272, p=.000.

Also, One way ANOVA showed that there were significant differences among companies in all three types of IC and sales growth. Fhc (6, 246) =15.248, p= .000 ; Fsc (6,246) =23.218, p= .000; Frc(6,246)= 22.388, p=.000.

When we repeated ANOVA to test the difference between three types of IC and stable turnover the analysis also showed significant differences among companies. Fhc (6, 246) =18.554, p= .000 ; Fsc (6,246) =21.299, p= .000; Frc(6,246)=21.594, p=.000.

Tukey post-hoc test comparisons indicate that the companies with constant fast growth, the highest sales growth and stable turnover have significantly higher level of three types of IC.

The analysis of variance revealed that intellectual capital (all three components) is positively related to the selected aspect of companies' business performance. Fast growing companies, companies with stable turnover and growing sales have a higher level of all three types of intellectual capital. We can conclude that companies with higher intellectual capital have better business performance. Therefore, our Hypothesis 2 is confirmed.

In general, companies that recognize the importance of intellectual capital for sustainable and successful growth also show better results in the business performance.

* 1. ***Intellectual capital and the current stand of company (Hypothesis 3)***

In order to explore the relationship of the current stand of the company and intellectual capital four indicators were identified:

* satisfaction of employees measured by satisfaction with the work they do, working condition and working climate ;
* employees’ risk taking measured by developing/utilizing new products within standard circumstances as well as in situation with the scarce resources;
* employees’ innovativeness measured by number of patents and constantly developing new products;
* motivation measured by financial and non-financial measures to motivate employees.

One- way ANOVA was used to test the differences between three types of intellectual capital (IC) and different aspects of the current position of the company. The level of all three types of IC differs significantly for developing new products, across all three variables of working climate and two variables of risk taking. The significant difference between IC and non-financial motivation after Tukey post hoc comparisons indicates that significant difference is only in the case of human capital.

In other words, the higher the level of intellectual capital the higher is the satisfaction of employees with the work they do, working condition and working climate. The level of capital also positively influence employees’ risk taking in developing and utilizing new products within standard circumstances as well as in situation with the scarce resources. Employees invest more efforts to develop new products when the level of intellectual capital is high. Finally, in the companies with the higher the level of intellectual capital, the non-financial measures to motivate employees are important. Financial motivation measures turned out not to vary significantly regarding different levels of IC.

We can generally conclude that higher levels of intellectual capital have the positive influence on employee’s satisfaction with work and working climate their innovativeness, motivation and risk-taking. By this we consider that Hypotheses 3 is confirmed.

***4.5 Intellectual capital and the types of industry (Hypothesis 4)***

All the companies that answered the questionnaire were classified into the 9 types of industry (Table 3). The analysis of variance (ANOVA) revealed that there is no significant difference among the different types of industries and the three types of intellectual capital. It means that the level of intellectual capital (all three components) is equal regardless the sector of economic activity. Somewhat higher values ​​of structural and human capital are in the business services, while relational capital is highest in trade, as might be expected. However, there is no statistical difference which would point to the differences between the industries and the level of intellectual capital. Based on the results of the analysis the hypothesis 4 is rejected.

**Table 3** Companies by types of industries

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Industry | | Frequency | Percent | Cumulative Percent |
|  | Natural resources (incl .Agric., Minig, Forestry) | 16 | 6,3 | 6,3 |
| Construction | 27 | 10,7 | 17,0 |
| Manufacturing | 26 | 10,3 | 27,3 |
| Transportation, Communication, Utilities | 35 | 13,8 | 41,1 |
| Wholesale Trade and Retail | 33 | 13,0 | 54,2 |
| Finance, Insurance, Real estate | 29 | 11,5 | 65,6 |
| Personal services | 40 | 15,8 | 81,4 |
| Business services | 27 | 10,7 | 92,1 |
| Healthcare and Education | 20 | 7,9 | 100,0 |
| Total | 253 | 100,0 |  |

***4.6 Intellectual capital and the size of the company (Hypothesis 5)***

Again one-way ANOVA was used to test the significant difference in the level of IC among companies divided in six groups by size. The companies differ significantly in the level of structural and relational capital across the groups by the number of employees : Fsc (5, 247) = 3.144, p = .009; Frc (5, 247) = 3.255, p = .008.

The analysis indicated statistically significant difference in the level of capital and the given size of the company in the structural and relational capital while the level of human capital is not associated with the size of the company. The value ​​of the structural and relational capital is significantly lower in the micro companies (up to 8 employees) and is growing with the number of employees. Both the capitals rapidly grow in the companies with more than 8 employees. This further growth has the same level for relational capital regardless the employment growth while structural capital is the highest in the companies with 8-19 employees. It slightly declines with the further size of company. We concluded that Hypothesis 5 is partly confirmed.

1. **Which aspects of education are needed**

Since the analysis of variance (ANOVA) confirms that all three types of capital are positively associated with the needs for education (Hypotheses 1) we sought to verify the relationship between the intellectual capital and certain aspects of the needs for education. In order to find out which types and modes of entrepreneurial education companies need in Croatia, we have examined their attitudes and preferences towards the five aspects of education and training:

1. type of education such as university degree education, non-degree education, learning on the site of enterprise, distance learning, etc;
2. needed knowledge and skills such as management principles, leadership, marketing, etc;
3. learning formats such as traditional learning, distance learning, problem-based learning, etc.
4. learning about the types of entrepreneurship (rural, women, social, ethnic, network marketing etc;
5. need for information and advisory services such as how to get in contact with business angels, how to deal with intellectual property rights, investors, taxes, local community, universities, etc.

These five aspects consist in total of 51 statements which describe the various educational needs and were measured by the Likert scale. It should be stated that the need for all aspects of education are estimated rather low since the values of all the statements on the Likert scale 1-7 range in the most cases between 4 and 5. The lower values ​​of 4 are recorded only for “distance learning” and some specialist types of entrepreneurial education (like rural or ethnic entrepreneurship) pointing that these aspects of education are in fact unnecessary.

The analysis revealed that preferred type of education is the education on the site of enterprise followed by the degree programmes (bachelors, masters, etc.) in entrepreneurship, while the least preferred is distance learning and partnership with universities.

The knowledge and skills which are perceived as the most needed to develop the enterprises are related to knowledge about financial aspects of business, building and sustaining a successful enterprise, leadership, creativity and innovation, entrepreneurial marketing and business management principles. The least needed knowledge is related to starting a new business and introduction to entrepreneurship. It can be concluded that entrepreneurs in the sample possess the knowledge and skills needed to start-up and maintain a new business, but they are lacking more complex and "soft" knowledge about marketing, leadership, management principles, creativity and innovation that are needed to sustain the successful company in a long run.

The most preferred type of lecturing formats is the problem-based teaching format followed by workshops and group discussion format, while the least preferred are the distance learning and standard lecture format. It very probably means that entrepreneurs are saturated with both the university-type of ex-cathedra lectures and introductory lessons to entrepreneurship.

The most needed knowledge regarding the specialised type of entrepreneurship is about “network marketing” followed by “technology and entrepreneurship” and “strategic collaboration among entrepreneurs”. The least important is knowledge in entrepreneurship in ethnic, arts, agriculture, women entrepreneurship and family business.

Finally, the most important consultancy and advisors services are related to how to deal with taxes and legal issues, how to cooperate with other entrepreneurs and how to set a strategy for the enterprise. It is worth mentioning that respondents also need consultancy how to deal with investors and local community. The least important information is needed for getting in contact with universities and business angles.

To sum up: entrepreneurs wish education that could be delivered, if possible, on the sight of enterprises but also appreciate university degrees programmes that will enable them to build and sustain successful businesses while knowledge about how to start the business and maintain a new company is needles. The most needed knowledge is about financial aspects of business and “soft” skills like leadership, creativity, innovation, entrepreneurial marketing and business management principles. They prefer problem solving lectures to standard lectures and need consultations related to taxes and legal issues. They feel a need to cooperate with other entrepreneurs and need consultancy how to deal with investors and local community.

1. **Conclusions**

The analysis of the relationship between intellectual capital and educational needs of SME’s in Croatia indicates that the respondents in our survey are aware of the importance of both, entrepreneurial education and all three types of intellectual capital for the firms’ competitiveness and development. In our research we have tried to investigate how these two concepts are related to each other and to other elements of the enterprises. Five hypotheses were tested and three of them are completely confirmed: intellectual capital (all three components) is positively related with the perception of the level of educational needs (H1), firm’s performance (H2), and current stand of the companies (H3).

We can conclude that companies with higher level of intellectual capital are more aware of the benefits of education and of the need for entrepreneurial education. They show, also, better business performance while employees’ satisfaction, (non-financial) motivation, risk taking and innovativeness is higher. The hypothesis 5 (H5) is partly confirmed since the level of relational and structural capital differs with the size of company while the human capital is not related to the company’s size. Finally, the hypothesis 4 (H4) is rejected since there is no difference in the level of intellectual capital among different types of industry.

Despite the fact that the level of intellectual capital of the companies in the sample is relatively low as well as their need for education (means do not exceed the value of 6) there is a high consistency in the positive relationship between three components of IC and demand for entrepreneurial education. In order to find out which types and modes of entrepreneurial education companies in Croatia need, we have examined their attitudes and preferences towards the five aspects of education and training. The analysis showed that entrepreneurs prefer education on the sight of enterprises but also appreciate university degrees programmes that will enable them to build and sustain successful businesses. The knowledge about how to start the business and maintain a new company is needles. The most needed knowledge is about financial aspects of business and “soft” skills like leadership, creativity, innovation, entrepreneurial marketing and business management principles. Entrepreneurs prefer problem solving lectures to standard lectures and need consultations related to taxes and legal issues. They feel a need to cooperate with other entrepreneurs and need consultancy how to deal with investors and local community.

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