

Factors influencing investments in intellectual capital: Case of Latvia

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ABSTRACT

Intellectual capital became one of the most important resources at company, which provides sustainable competitive advantage. Despite of this the amount of intellectual capital investments is not significant in Latvia. The aim of the paper is to describe the factors influencing investments in intellectual capital at company level. The empirical study is used to obtain information by conducting a survey, the results are analysed and interpreted using factor analysis. The induction method is used to interpret and generalize the survey results, as well as various research papers and scientific literature are studied and entrepreneurs from certain sectors of national economy are interviewed.

Keywords: intellectual capital, intellectual capital investments, factors influencing investments, company.

1. INTRODUCTION

The concept of intellectual capital is connected with various concepts, such as intangible assets, intellectual property, patents, licences etc. At the present time, living in knowledge society, intellectual capital could be considered as the knowledge which could be transformed into value [16]. This transformation requires certain conditions, for example, company capabilities to use its own knowledge and attract knowledge from external and internal environment, and investments. Investments in intellectual capital are necessary for knowledge creation and accumulation within company, developing infrastructure (including business routines) and organization culture and by staff training.

There are different approaches to understanding of the concept of investments in intellectual capital. Some researchers define this investment as different kinds of expenditures: for example, expenditures in R&D [2], [7], or expenditures in training, software, reputations, brand, and design and business process improvement [1]. But the previous study by the authors about the concept of intellectual capital investments shows that investments

and expenditures are not synonyms [21]. Some researchers suggest comprehensions for intellectual capital investments, which combine financial and non-financial aspects. Many of these comprehensions include company value creation and a competitive advantages creation aspect [23], [24]. Innovation is created by investments in intangibles. When such investments are commercially successful, and protected by patents, they are transformed into tangible asset creating corporate value and growth [20]. For this particular study we define investments in intellectual capital as *company investments in different intangible assets (software, brand, etc.), research and development; business processes routines and procedures, and human resources for financial and non-financial value creation.*

The main aim of the research is to determine factors influencing investments in intellectual capital at companies in Latvia.

The research questions are:

- 1) What are the factors influencing investments in intellectual capital at an enterprise in Latvia?
- 2) What kinds of investments in intellectual capital are most important for companies?

The following research hypotheses are developed by the authors:

- H1: One of the disincentives of intellectual capital investments is lack of funds.
H2: Entrepreneurs will invest in intellectual capital, if they see financial benefits from these investments.

To achieve the research aim the following tasks are determined:

- 1) To determine the most important factors, influencing intellectual capital investments in positive or negative ways;
- 2) To develop a questionnaire for factor determination at company level;
- 3) To create a data base of respondents;
- 4) To collect a certain number of statements and interpret results.

The research was made at company level and as a result we determined main factors, which influence company's intellectual capital investments.

2. LITERATURE REVIEW

Studying literature, we found that there are several factors influencing an intellectual capital investment, which could be divided into different groups:

- 1) Internal factors. These factors are under enterprise control and the enterprise could change them;
- 2) External factors. These factors could influence the enterprise and decision making process, but the enterprise could not control or change them.

The authors have grouped the factors influencing investments in four groups according their environmental and monetary descriptions (see Table 1).

Table 1. **Factors influencing investments in intellectual capital** [created by authors]

	Non-financial factors	Financial factors
Internal	<ul style="list-style-type: none"> - Human resource qualification - Amount of available intellectual capital at company - Ability to absorb investments - Understanding of the concept of intellectual capital investments - Unwillingness to invest - Management and business processes organization - Organization culture 	<ul style="list-style-type: none"> - Availability of necessary financial funds - Uncertainty of return from investments - Accountancy standards
External	<ul style="list-style-type: none"> - Partnership and cooperation - Protection of intellectual property rights 	<ul style="list-style-type: none"> - State support for innovation - Financial funds and tools' availability for entrepreneurship - Tax reliefs

The authors determine main internal factors on the basis of the previous researches: human resource qualification, organization culture, management and business process organization, and company ability to absorb investments, rate of return from investments' uncertainty.

Well-educated and qualified employees encourage new knowledge and technology implementation at the company. As a result the company invests more in staff training program and technology modernization [11], [30]. At the same time in some studies it is found that investments in training have no significant effect on company performance [4]. It means that some companies could attract qualified employees and not invest in staff training.

At the present time resources cannot provide a sustainable competitive advantage for a company. Company needs a smart management and business process organization [3], [5], [18], [24]. An effective resource management, including intellectual resources, could be one of key drivers for value creation at the company. Some researchers distinguish synergy and multiplier effects between intellectual capital components [12], [13]. These effects change intellectual capital investments' influence on the company results. For

instance, if a company separately invests in technologies, there is no significant positive influence on company performance. Companies do not have an optimal assets combination very often. There is no balanced structure of intellectual capital either. Because of these reasons the investments' influence on enterprise results is not positive [26]. Some researchers tested the relationship between intellectual capital components in microfinance industry in Uganda. They conclude that positive and strong relationship exists between human capital, structural capital, relational capital and financial performance [16].

Significant part of company's management is organization culture. For effective investments in intellectual capital and higher return from the investments company needs to develop organization culture, which is focused on knowledge sharing. Such organization culture improves an intellectual capital accumulation process at company. One of the main tasks for managers is to develop certain organization culture, which motivates employees, employers and other stakeholders to share their knowledge and experience, [10], [18], [19].

Management and business process organization, including organization culture, impact company ability to absorb investments. The intellectual capital investments are connected with knowledge flows to company. The knowledge stocks and flows model predicts that competitive advantage depends on the continual accumulation of relevant knowledge stocks from knowledge flows [8], [9]. After a certain point, additional investments and knowledge flows may lead to diminishing returns and, as a result, firm performance. The main task for managers is to make a decision about the type and timing of knowledge flows between potential flows and existing knowledge stocks [22].

Each company expects return from their investments. Rate of return from investments in intellectual capital is uncertain because of several reasons. One of the reasons is that a part of company's intellectual capital – human capital - does not belong to the company. It means that company invests in the capital which is not the property of the company and the company can lose it and possible benefits, too. There are many different methods for calculating the rate of return, for example, ROI, profit per employee, Value Added Intellectual Capital Index (VAIC index), etc. [6], [28], [29]. Most of these methods are used for financial benefits calculation, but there is lack of methods for non-financial benefits calculations. It could be considered as one of the reasons of the uncertainty of return from investments in intellectual capital. This factor is related to understanding of these investments. Many researchers and entrepreneurs consider only financial benefits as benefits from investments.

According to literature review the main external factors are: partnership and cooperation, state support for innovation, accountancy standards, protection of intellectual property rights.

According to Organisation for Economic Co-operation and Development (OECD) report, cooperation encourages experience and information exchange and

declines each partner costs. The established networks increase availability of information, resources and funds. In some countries cooperation is not developed because of different reasons [27].

Some enterprises develop their own research, but some use created new knowledge and technologies. For example, in Norway the share of enterprises, using ready R&D results and the share of enterprises with in-house R&D is quite similar. The biggest part of innovative enterprises has in-house R&D.

Companies meet the problem with lack of funds very often. Therefore state support for innovation and knowledge-based economy could be incentive for investments in intellectual capital and further company development as well. In different countries governments use direct support and indirect support for R&D. For example, in Canada indirect support through tax policy is bigger, but in Iceland government uses only direct support.

Accountancy standards are one of the factors hinder investments in intellectual capital. The valuation of intellectual capital investments within accountancy framework raises several problems relating to their identification, measure and control. According to International Accounting Standards Board (IASB) rules, the accounting treatment of internally generated intangible assets is less rigid but it remains deficient. Indeed, IAS 38 (Intangible Assets) details necessary stages for the creation of an intangible asset by specifying at every stage whether it is possible to predict future economic benefits associated with the asset. The development phase allows an entity to bring proof of existence of an intangible asset's capacity to generate revenue. In this setting, the development costs must be capitalized provided such costs compliance with certain conditions. These conditions are [15]: (a) the technical feasibility of completing the intangible asset so that it will be available for use or sale; (b) its intention to complete the intangible asset and use or sell it; (c) its ability to use or sell the intangible asset; (d) how the intangible asset will generate probable future economic benefits; (e) the availability of adequate technical, financial and other resources to complete the development and to use or sell the intangible asset; and (f) its ability to measure reliably the expenditure attributable to the intangible asset during its development.

Protection of intellectual property rights as a factor influencing the investments in intellectual capital hinders investments if there is no mechanism for implementation of law in the country and consumer culture and income are at a low level.

The literature review results show that the factors influencing intellectual capital investment are studied from different points of view.

3. METHODOLOGY OF THE RESEARCH

The research includes not only factors influencing investments in intellectual capital, but also covers the

understanding of the concept of investments in intellectual capital and possible benefits from the investments at Latvian companies.

The sample survey is limited by companies, which are members of one of two organizations: Business Efficiency Association and Latvian Society for Quality. The general sample consists of 114 companies; the necessary number of respondents for conducted survey is 88 companies. Representative number of respondents is calculated according to general practice [14].

The authors select a questionnaire as a research tool for research aim achieving. To evaluate each statement about factors influencing investments in intellectual capital, respondents were offered to use the 4-point Lykert type scale. The opportunities for evaluation are: 1 – very important, 2 – average importance, 3 – relatively important, 4 - not important.

The questionnaire consists of few sections:

Section A: respondents' statements about their understanding of the concept of intellectual capital and investments in intellectual capital and self-evaluation about the amount of the intellectual capital at the company (questions 1-4).

Section B: statements about the importance of different kinds of investments in intellectual capital and benefits from investment, and self-evaluation about the amount of investments at the company (questions 5 – 7).

Section C: statements about the importance of factors influencing intellectual capital investments (question 8).

Section D: respondent profile (industry, number of employees, annual net turnover, location, duration of activity) (questions 9-14).

The following qualitative and quantitative research methods have been used: logical and comparative analysis, deductive method to interpret the general information and link it to specific cases, the statistical method to group information and to analyse different regularities, the empirical method to obtain information by conducting a survey, and the induction method to interpret and generalize the survey results.

The questionnaire results were analysed, using software SPSS for factor analysis.

4. RESULTS OF THE RESEARCH

For interrelations determination the authors have made a factor analysis based on principal component analysis. Factors rotation is based on Varimax method. During factor analysis questions with significant correlation are selected and the results are shown in Tables 2 and 3.

Table 2. **KMO and Bartlett's Test** [created by authors]

Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy		0.658
	Approx. Chi-square	1385.378
Bartlett's Test of Sphericity	df	496
	Sig.	0.000

Table 3. **Total Variance Explained** [created by authors]

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5,594	17,482	17,482	5,594	17,482	17,482	3,176	9,923	9,923
2	3,599	11,248	28,729	3,599	11,248	28,729	3,051	9,535	19,458
3	2,471	7,722	36,452	2,471	7,722	36,452	2,688	8,400	27,858
4	2,217	6,927	43,379	2,217	6,927	43,379	2,543	7,947	35,805
5	1,958	6,118	49,496	1,958	6,118	49,496	2,418	7,558	43,363
6	1,623	5,073	54,569	1,623	5,073	54,569	2,094	6,545	49,908
7	1,484	4,638	59,207	1,484	4,638	59,207	1,925	6,016	55,924
8	1,159	3,620	67,110	1,159	3,620	67,110	1,526	4,770	65,616
9	1,130	3,530	70,640	1,130	3,530	70,640	1,392	4,351	69,967
10	1,067	3,334	73,974	1,067	3,334	73,974	1,282	4,007	73,974
11	,842	2,630	76,604						
...						
32	,089	,279	100,000						

Extraction Method: Principal Component Analysis.

KMO and Bartlett's test results show that adequacy is satisfactory. The total number of components is ten, which describes relationships among different variables. The components rotation results are shown in Table 4.

The first component (Table 4) describes interrelations between company size, operation duration and amount of investments in intellectual capital. It can be concluded that a company which operates at the market for a long period of time, with a big number of employees and annual net turnover, invests more in intellectual capital. It means that one more factor influencing intellectual capital investments could be determined: company size. Respondents consider that the most important investments in intellectual capital are investments in staff training and research and development. But investments in R&D are important for respondents who include R&D into the components of intellectual capital. The fifth component of rotated matrix shows positive interrelations among investments in software acquisition and improvement and technology acquisition. These investments are important for companies, too. Investments in personnel recruitment, staff evaluation system development and implementation and staff training, staff loyalty as a possible benefit from investments and amount of the intellectual capital at company are interrelated. It can be concluded, that investments in recruitment, training and evaluation do not impact the employee's loyalty at a certain level if company has sufficient amount of intellectual capital. The authors suppose that companies invest less if they have enough intellectual capital for company's strategy implementation and goal achieving. The amount of the intellectual capital is evaluated as sufficient at the companies which operate in such Latvian regions as Riga and Pieriga.

The most expected benefits from the investments for respondents are financial: profit, market share

enlargement, increase of productivity and profitability, increase of company value. Profit and market share enlargement are positively interrelated. It means that companies believe that on enlarging a market share the profit will increase. But some of non-financial benefits are considered important, too: staff qualification improvement, reputation improvement, partnership strengthening. The most important non-financial benefit from the investments is customer satisfaction which impacts further financial benefits and results. The main financial factors influencing investments are availability of financial funds at company, financial funds (for example, EU funds) availability for companies, state support for innovation, tax reliefs. Positive interrelation among these factors is observed. These factors impact company ability to invest. If company has necessary financial resources, such factors as state support and different kinds of funds availability are not conclusive for decision making about investments.

Big part of respondents considers that the main non-financial factors are human resource qualification, ability to absorb investments, protection of intellectual property rights and understanding of the concept of intellectual capital investments. Companies' statements show that for effective results from the investments they need a "platform for making investments". If they have no employees with certain qualification, capability to use investments, if created intellectual property could not be saved for company use and defended from competitors and illegal usage, they do not invest, or invest less, or investments will not achieve certain results. These factors become more and more relevant in Latvia last years because of economic crisis, low wages, and migration. At the same time such a factor as unwillingness to invest is not relevant for companies.

Table 4. Rotated Component Matrix^a

Questions	Questions short description	Component									
		1	2	3	4	5	6	7	8	9	10
Q10	Number of employees at the company	0,895									
Q11	Annual net turnover at company	0,854									
Q7	Amount of investments	0,826									
Q14	Duration of company life	0,749									
Q8_11	Financial funds (for example, EU funds) availability for companies		0,888								
Q8_10	State support for innovation		0,869								
Q8_12	Tax reliefs		0,761								
Q8_15	Accountancy standards for intellectual capital disclosure		0,587								
Q2_3	Production technology			0,882							
Q2_4	Information technology			0,835							
Q2_5	Sales and communication technology			0,816							
Q5_1	Staff recruitment				0,808						
Q5_3	Staff evaluation system development and implementation				0,716						
Q5_2	Staff training				0,713						
Q6_10	Staff loyalty improvement (result from investments)				0,571						
Q8_2	Amount of intellectual capital at company				0,565						
Q5_14	Software acquisition					0,851					
Q5_13	Software improvement					0,799					
Q5_9	Technology acquisition and improvement					0,578					
Q5_11	R&D (as an investment object)						0,810				
Q2_14	Research and results (as intellectual capital part)						0,736				
Q5_12	Patents acquisition						0,678				
Q6_1	Increase of profit							0,808			
Q6_2	Market share enlargement							0,779			
Q2_10	Business routines								0,780		
Q2_6	Licenses								0,631		
Q2_2	Staff experience									0,855	
Q8_5	Cooperation among companies									0,506	
Q3	Amount of intellectual capital for company's strategic goal achievement										0,771
Q12	Location of the company (region)										- 0,645

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization

a. Rotation converged in 8 iterations.

5. CONCLUSIONS

The conducted survey covers aspects related to investments in intellectual capital: understanding of the concept of these investments benefits from them and factors influencing these investments.

The main kinds of investments at company level in Latvia are considered investments in staff training and R&D. The authors suppose that it could be explained by the entrepreneurs' understanding of the concept of intellectual capital and investments. A big part of them believe that intellectual capital is employee's knowledge; as a result they define investments in intellectual capital as investments in staff training. Some entrepreneurs agree with a wider definition of investments, which includes company investments in different intangible assets (software, brand, etc.), research and development;

business processes routines and procedures, and human resources for financial and non-financial value creation.

Companies expect different benefits from the investments: financial and non-financial. However, most of respondents' expectations are financial benefits such as profit, market share enlargement, increase of productivity and profitability, increase of company value. It approves the second hypothesis of current study. Only the customer satisfaction as non-financial benefit is considered as very important. The authors could conclude that financial and non-financial benefits mentioned are interrelated.

Due to the economic and social situation in Latvia, the main factors influencing the decision about investments are financial factors, such as availability of financial funds (for example, EU funds) at company, state support for innovation, tax reliefs. These factors impact company ability to use financial resources for investments. At the

same time, results show that respondents understand the relevance of the non-financial factors for decision making. Therefore as main non-financial factor is considered human resource qualification, ability to absorb investments, protection of intellectual property rights.

The survey results will be used for the development of methodology concerning decision making and intellectual capital investments at the company level.

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