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ASSESSMENT OF INTELLECTUAL CAPITAL IN JOINT-STOCK COMPANIES

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Abstract. The evaluation of intellectual capital factors is an essential part for the management of joint-stock companies. Many authors indicate that successful intellectual capital management increases value added in joint-stock companies. Nevertheless, intellectual capital is a complex and challenging concept as there is still no clear guidance, what the intellectual capital features and its structural parts are. Theoretical research revealed that scientists accentuate various intellectual capital parts depending basically on the type of their research, on the level of the research (micro, mezzo, macro), variables they selected to investigate and similar. This research paper gives an insight what drivers can be increasing value added in joint-stock companies.

Keywords: intellectual capital, human capital, structural capital, relational capital, joint-stock companies, value added.

JEL Classification: D24, D92, G32, M21.

INTELEKTINIO KAPITALO ĮVERTINIMAS AKCINĖSE BENDROVĖSE

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Santrauka. Intelektinio kapitalo veiksnių įvertinimas yra esminis akcinių bendrovių vadovybės tikslas, siekiant padidinti atitinkamos akcinės bendrovės pridėtinę vertę. Daugumoje mokslinių straipsnių autoriai akcentuoja, kad pagrindinis modernių akcinių bendrovių pridėtinės vertės didinimo veiksnys – intelektinis kapitalas. Vis tik nors daugelio tyrinėtas, intelektinis kapitalas dar neturi aiškiai apibrėžtos sąvokos, struktūrinių dalių, visuotinai priimtų bruožų. Literatūros šaltinių analizė atskleidė, kad įvairūs mokslininkai skirtingai nagrinėja intelektinį kapitalą dėl to, kad tai priklauso nuo jų tyrimo srities: ar intelektinis kapitalas nagrinėjamas mikro, mezo ar makro lygmeniu, kokius kintamuosius pasirenka ir pan. Šiame straipsnyje nagrinėjama, kokie intelektinio kapitalo veiksniai daro didžiausią įtaką akcinių bendrovių pridėtinės vertės didėjimui.

Reikšminiai žodžiai: intelektinis kapitalas, žmogiškasis kapitalas, struktūrinis kapitalas, ryšių kapitalas, akcinė bendrovė, pridėtinė vertė.

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1. Introduction

The concept of intellectual capital is widely investigated and scientists are trying to identify its main features and functions. Many authors (Narula, Dunning 2000; Enright 2009; Bontis 1998; Bontis *et al.* 2000; Marr *et al.* 2003; Huang *et al.* 2007; Cabrita, Bontis 2008; Cater, T., Cater, B. 2009; Liu *et al.* 2009; Sharabati *et al.* 2010; Vargas-Hernández, Noruzi 2010; Zeghal, Maalooul 2010; Peppard, Rylander 2001; Rylander, Peppard 2003; Tseng, Goo 2005; Liang *et al.* 2013) indicate that intellectual capital is closely related to value creation and positively affects business activity. It is believed that the importance of knowledge is overtaking the position of the significance of tangible assets. The joint-stock companies are those units, which usually are brought together by different shareholders and owned by every shareholder depending on the size of the share. Certificates of ownership are basically proportions of a respective company. If the board of owners is considerable, a strong management system must be implemented in order to reach the goals established by owners. New economic system is taking place nowadays and this Knowledge Economy has brought about the importance of knowledge and understanding that intangible assets are valuable and they foster the activity of the joint-stock companies. Intellectual capital can be considered as a part of intangible assets that positively affect the value added not only in various joint-stock companies, but also in every company or business entity. The structure of intellectual capital is discussed in many scientific papers by various authors and can be understood as the sum of different factors. As a consequence the scientific problem arises – what intellectual capital factors influence value added in joint-stock companies' the most? Due to differences and discrepancies in authors' points of view and perspectives it is needed to define intellectual capital itself at first. The main objective of this scientific paper is to present the intellectual capital approach increasing value added in joint-stock companies. This objective is achieved through the analysis of intellectual capital. In addition to this, the relation between intellectual capital and value added of a joint-stock company is investigated and the model is created in order to visualise the process of value creation in a joint-stock company. The object of this research is intellectual capital and its' influence on a joint-stock company's value added. The research's purpose is to evaluate intellectual capital factors influencing joint-stock companies' value added. The methods used are as follows: analysis of scientific literature, trial expert evaluation, average comparison method, and Kendall's coefficient of concordance.

2. The approach to intellectual capital increasing value added in joint-stock companies

Intellectual capital is the concept without any clear guidance as to what exactly it is and what structure it has. Nevertheless, it is agreed that intellectual capital is an intangible concept, which is difficult to define and evaluate. It is also agreed that intellectual capital is observed as a value driver of company's successful activity and performance. Joint-stock companies have a huge quantity of intellectual capital and the potential not just to maintain it, but also to strengthen and develop it more. Intellectual capital can be understood as the economic value of intangible assets of a company. In this case company is perceived in general.

The ability to foster and increase the value added in joint-stock companies is one of the most important intellectual capital functions. Authors (Brooking 1996; Saint-Onge 1996; Robinson, Kleiner 1996; Stewart 1997; Sveiby 1997; Edvinsson, Malone 1997; Roos *et al.* 1998; O'Donnell, O'Regan 2000; Bontis *et al.* 2000; Petty, Guthrie 2000; Chatzkel 2002; Tseng, Goo 2005) emphasize that intellectual capital is the total amount of intangible capital of a company, which significantly increases the value added of the respective company. Tamošiūnienė and Survilaitė (2013), Tamošiūnienė *et al.* (2014) accentuate the importance of intellectual capital in value creation, which leads to fostering the raise of value added and emphasizes intangible aspect of value added of respective enterprise.

The structure of intellectual capital is discussed in many scientific papers by various authors and can be understood as the sum of:

- Human capital, structural capital and customer capital (Saint-Onge 1996; Stewart 1997; Bontis 1998; Roos *et al.* 1998; Brinker 1998; Zéghal, Maaloul 2010);
- Human capital, structural capital and social capital (Bourdieu 1986; Putnam 1993; Swart 2006);
- Human capital, structural capital and relational capital (Ramírez *et al.* 2007);
- Market assets, human centered assets, intellectual property assets and infrastructure assets (Brooking 1996);
- Human capital and structural capital (Robinson, Kleiner 1996; Edvinsson, Malone 1996);
- External structure, internal structure and human capital (Petrash 1996);
- Staff competence, external structure and internal structure (Sveiby 1997; O'Donnell *et al.* 2000);
- Human capital, structural capital, customer capital, organizational capital, innovational capital and process capital (Draper 1997);
- Human capital, structural capital, customer capital, organizational capital, innovational capital and process capital, which is considered to be the composition of structural and organizational capital (Van Buren 1999);
- Human capital and intellectual property (Sullivan H. P. Jr., Sullivan H. P. Sr. 2000);
- Human capital, structural capital, market capital and innovational capital (Bounfour 2003);

– Human capital, customer capital, process capital and innovation capital (Liang *et al.* 2013);
– Human capital and structural capital, which can be understood as the sum of relational capital and organizational capital. Organizational capital itself is also divided into two main structural parts: innovational capital and process capital (Namvar *et al.* 2010).

Literature review provides an insight into multiple structures of intellectual capital and gives the view that the concept itself is not complete and definite. Huge differences and discrepancies are observed in scientific literature as authors do not have a common opinion and strictly defined position regarding the precise intellectual capital definition and structure. Survilaitė (2014) accentuates, that "the assessment of intellectual capital depends on various aspects and can be analysed through multiple perspectives. The evaluation system is more connected to the type of a respective enterprise, its size, the activity company is performing and similar factors." In this paper intellectual capital is considered to be the sum of human capital, structural capital and relational capital. What is more, the model of intellectual capital's influence on value added of a joint-stock company was created (Fig. 1).

The model is created using basic and the most frequently used intellectual capital structural parts in the scientific literature. According to the model, intellectual capital is comprised of three parts: human, structural and relational capital. The assumption is that intellectual capital influences and increases value added of a joint-stock company and vice versa – intellectual capital's structural parts influence and increase intellectual capital itself. Nevertheless, the prerequisite is also that intellectual capital's structural parts influence value added of a joint-stock company as well. The trial expert evaluation would be helpful in order to pre-evaluate, which intellectual capital structural part is affecting value added of a joint-stock company the most. Authors propose the opinion that human capital is the most important part influencing value added of a joint-stock company. Many authors (Popescu 2012; Jerman, Završnik 2012; Ismail *et al.* 2011) also accentuate the importance of employees' knowledge, education, satisfaction and motivation, since content employees result in the increase of value added.

3. The results of a trial expert evaluation on intellectual capital factors influencing value added in joint-stock companies

The discrepancies of intellectual capital factors influencing value added in joint-stock companies lead to the necessity to conduct a trial expert evaluation. The purpose of the trial expert evaluation was to categorize intellectual capital factors and to test whether the model of intellectual capital influence on value added of the joint-stock company was designed properly or a few amendments are still needed to implement. The trial expert evaluation provides general understanding of the intellectual capital contributors

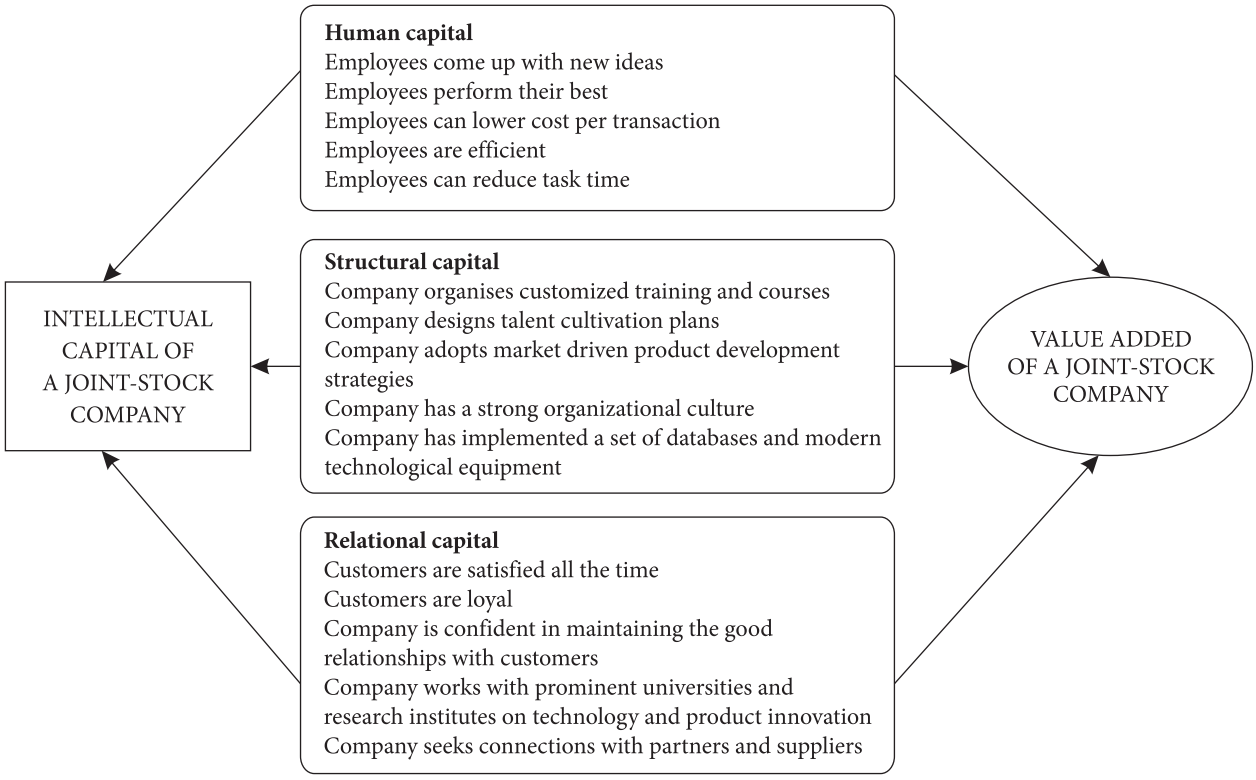

Fig. 1. The model of intellectual capital influence on value added of a joint-stock company

significantly affecting the value added in joint-stock companies. The trial expert evaluation was performed in August of 2014. Experts were selected from various countries: Australia, Bulgaria, Cyprus, Italy, Lithuania and Spain. In total 14 experts were selected, however due to the inconsistencies of opinions responses of 2 experts were removed in order to get further precise results. The questionnaire was based on the intellectual capital factors influencing growth of value added of joint-stock companies. Value creating activities used by Liang, Chen and Lin (2013) were taken as the basis of the questionnaire given to the experts.

Figure 2 shows that the majority of experts (83.33%) had higher university degrees – master's degree. In addition to this, 16.67% of experts already had doctoral degrees. This revealed that experts were highly educated and reasonably mature individuals.

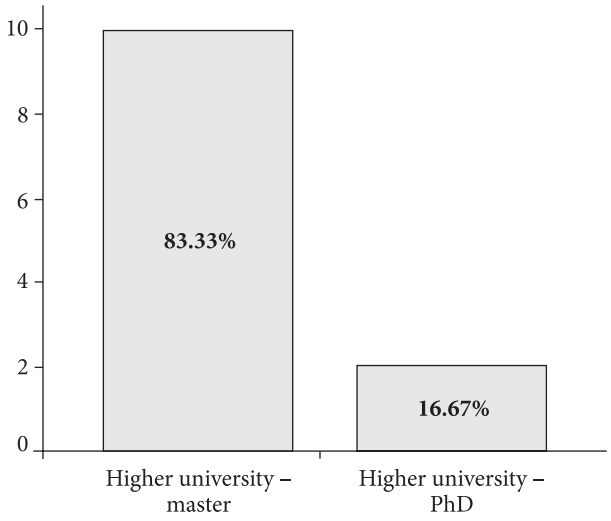

Fig. 2. The level of education of the experts

According to Libby and Blashfield (1978), the number of experts should range from 5 to 9, ideally from 3 to 5. The reason behind this is the accuracy of small group of a trial expert evaluation. Picture reveals that while the number of experts increases, standard variation remains almost the same (Fig. 3). Only in the beginning standard variation increases dramatically, but from numbers 8–10 standard variation levels off.

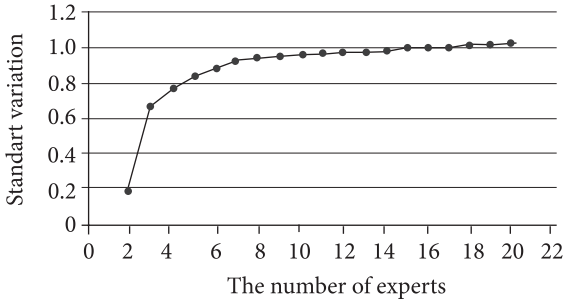

Fig. 3. The subordination of standard variation of a trial expert evaluation and the number of experts

During the investigation the experts had to classify given factors according to the five point Likert scale. All results were analysed by the gained average values depending on the type of the scale:

[0–1.5) – very unimportant
[1.5–2.5) – unimportant
[2.5–3.5) – neither important nor unimportant
[3.5–4.5) – important
[4.5–5.0] – very important

[0–1.5) – never
[1.5–2.5) – rarely
[2.5–3.5) – occasionally
[3.5–4.5) – frequently
[4.5–5.0] – very frequently

[0–1.5) – strongly disagree
[1.5–2.5) – disagree
[2.5–3.5) – undecided
[3.5–4.5) – agree
[4.5–5.0] – strongly agree

In addition to this, the following hypothesis was tested according to the Kendall's coefficient of concordance:

H1: evaluations of experts are contradictory

H2: evaluations of experts are comparable

According to the table below (Table 1), the index/result of Kendall's coefficient of concordance was W = 0.143 (chosen significant level $\alpha = 0.05$). The first hypothesis was rejected and the alternative was accepted as Kendall's coefficient was bigger than estimated value. As a consequence, evaluations of experts are comparable and the investigation can proceed further.

Table 1. Kendall's coefficient of concordance

Test Statistics	
N	12
Kendall's W[a]	.143
Chi-Square	24.011
df	14
Asymp. Sig.	.046

First of all, experts were given 15 intellectual capital factors and had to classify them according to the importance in relation to the value added of a joint-stock company (Fig. 4). The results revealed that according to experts, three factors are very important to the value added of a joint-stock company: employees come up with new ideas (mean = 4.583), company is confident in maintaining a good relationship with customers (mean = 4.5) and employees perform their

best (mean = 4.5). First and third factors belong to human capital element, while second factor belongs to relational capital. Employees are those people who work with given tasks every day and only they can find the ways to improve the process. New ideas generate effective and powerful tools, which can reduce task time and save costs. As a consequence, value added of a joint-stock company increases. The second factor is the ability of a company to maintain a good relationship with customers. When competition is severe customer must be at the heart. Management and shareholders have to take into account the needs and intentions of a customer as well as they can, because competitors can attract and entice them away. In addition to this, according to the trial expert evaluation the third factor, which is very important to the value added of a joint-stock company, is when employees perform their best. Employee is the link between company and customer; it is the representative of a culture of a certain company and is a mirror reflecting all shortages and drawbacks. Motivation and promotion, other incentives must be taken into account when planning the strategy of a respective company. Companies where employees have a direct connection with customers have to follow employee incentive strategy particularly thoroughly as satisfied and appreciated employee performs his best. What is more, the results of a trial expert evaluation revealed that all other twelve factors are important to the value added of a joint-stock company. Nevertheless, they were classified as follows: employees are efficient (mean = 4.417), employees can reduce task time (mean = 4.417), company organises job-customized training and practice related courses (mean = 4.25), customers are satisfied all the time (mean = 4.167), company has a strong organizational culture (mean = 4.167), company seeks connections with partners and suppliers (mean = 4.167), customers are loyal (mean = 4), company adopts market driven product development strategies (mean = 4), company has implemented a set of databases and modern technological equipment (mean = 4), company designs talent cultivation plans (mean = 4), company works with prominent universities and research institutes on technology and product innovation (mean = 3.917) and employees can lower cost per transaction (mean = 3.667). The results revealed that efficiency of employees, their strong motivation and knowledge skills lead to strong organizational culture, which, as a consequence, lead to more satisfied consumers. The trial expert evaluation also revealed that for a value added of a joint-stock company it is important to adopt and establish market driven product or service development strategies and to create and implement a selection of databases and modern technological equipment. Those elements belong to structural capital element and can positively affect value added generated by the joint-stock company. Nevertheless, the relational capital elements, according to the experts, are important as well. It was identified that company should strive to build connections and strong links with partners and suppliers. What is more academic relationship is important

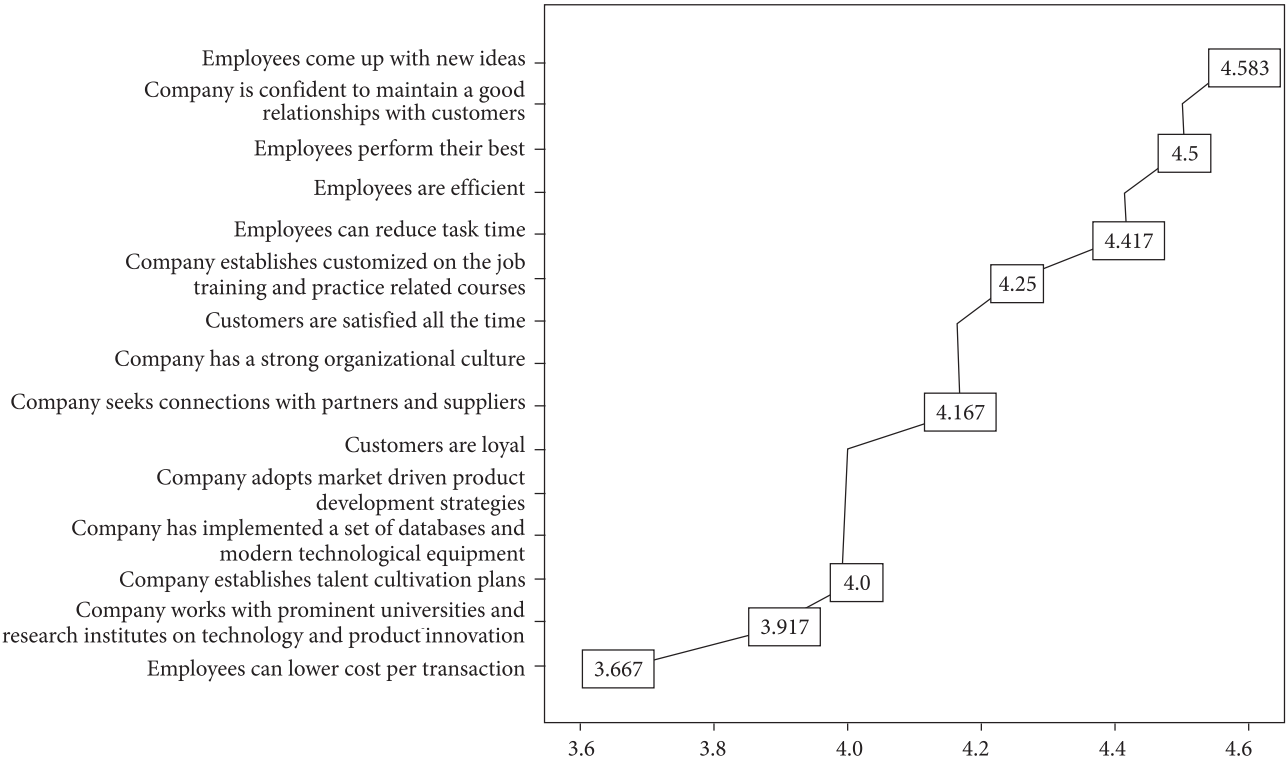

Fig. 4. The importance of intellectual capital factors to value added of a joint-stock company

and joint-stock companies have to work with distinguished universities and research institutes. Such steps taken determine technological and product or service innovation improvement.

Secondly, experts were given 7 intellectual capital factors and had to classify them according to the frequency of advisable implementation by managers in order to increase the value added generated by a joint-stock company (Fig. 5). According to a trial expert evaluation, none of these factors must be used very frequently. The further investigation revealed that six out of seven factors must be used frequently by managers in order to increase the value added generated by a joint-stock company. The factors ranged as follows: investing funds in research & development (mean = 4.25), investing funds in technology (mean = 4), conducting ongoing trainings and coaching sessions for employees (mean = 4), to foster further education development of employees (mean = 3.833), organise advertising campaigns (mean = 3.75) and motivate employees with salary imbursements (mean = 3.583). In addition to this, managers should occasionally allocate funds to client support division/sphere (mean = 3.25). The results of a trial expert evaluation regarding the frequency of factors were quite surprising. Many scientists accentuate that companies must invest funds in research & development and technology very frequently. Moreover, the education of employees, trainings and coaching are mentioned in the scientific literature as one of the most powerful tools for managers in order to generate and foster the boost of value added. However, further researches should be improved with additional explanation, what exactly frequency means as this concept without any margins given in advance can lead to misinterpretation and discrepancies while evaluating the factors.

Thirdly, experts were given 5 statements regarding intellectual capital factors influencing the value added generated by a joint-stock company (Fig. 6). The statements were composed using intellectual capital elements, which are broadly investigated by many researchers and accentuated as the basic factors positively influencing value added. Experts had to evaluate each statement, agree with it or not. However, none of the statements were strongly agreed with by experts. Four out of five statements were agreed with and on one statement experts were undecided. It was agreed that the lack of knowledge could possibly result in reduction of joint-stock company's value added (mean = 4.083). In addition to this, it was agreed that corporate university increases the value added in a joint-stock company (mean = 4), participation in business associations lead to the increase of joint-stock company's value added (mean = 3.75) and costs of employee can have a direct impact on joint-stock company's value added (mean = 3.667). Yet experts were undecided whether investments in research & development reduce joint-stock company's value added (mean = 2.917). As the trial expert evaluation revealed, knowledge and education plays a vital role in value added stimulation and fostering. What is more, relational capital is also a key driver in successful company's activity. It is important to have links with universities and business associations as effective communication and collaboration with them could easily result in increased joint-stock company's value added. On the other hand, the investigation revealed that there is no strong opinion regarding research & development investments. Experts are undecided if joint-stock companies have to invest in research & development in order to increase the value added. This could be due to the fact that such investments have a delayed impact and invested funds do not return as quickly as expected.

To sum up, the trial expert evaluation revealed factors, that influence value added of a joint-stock company the most. Generally speaking, all intellectual capital elements are closely connected to each other and are overlapping. The best way to increase the value added of a joint-stock company is to implement management strategy, which combines and integrates all of the most influential elements of intellectual capital. On the other hand, other expert evaluation can be

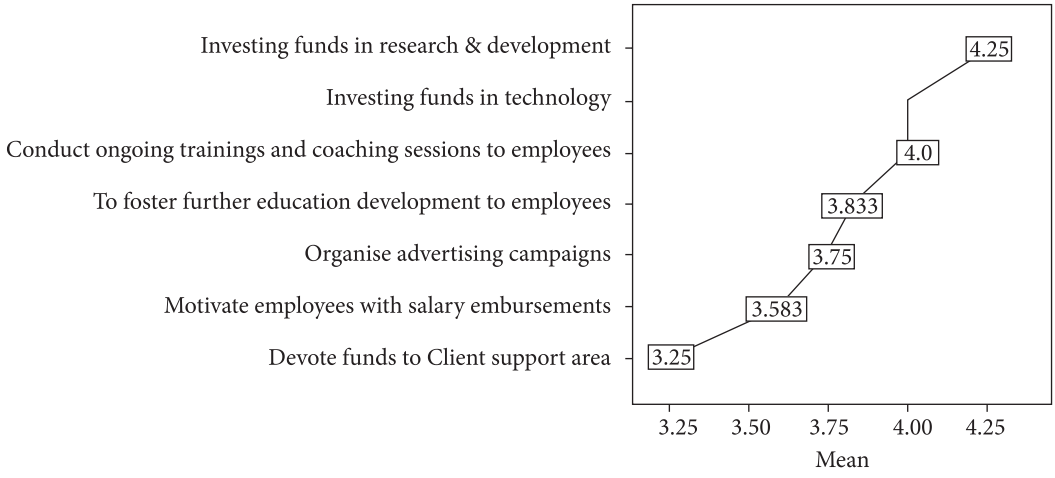

Fig. 5. The frequency of usage of intellectual capital factors

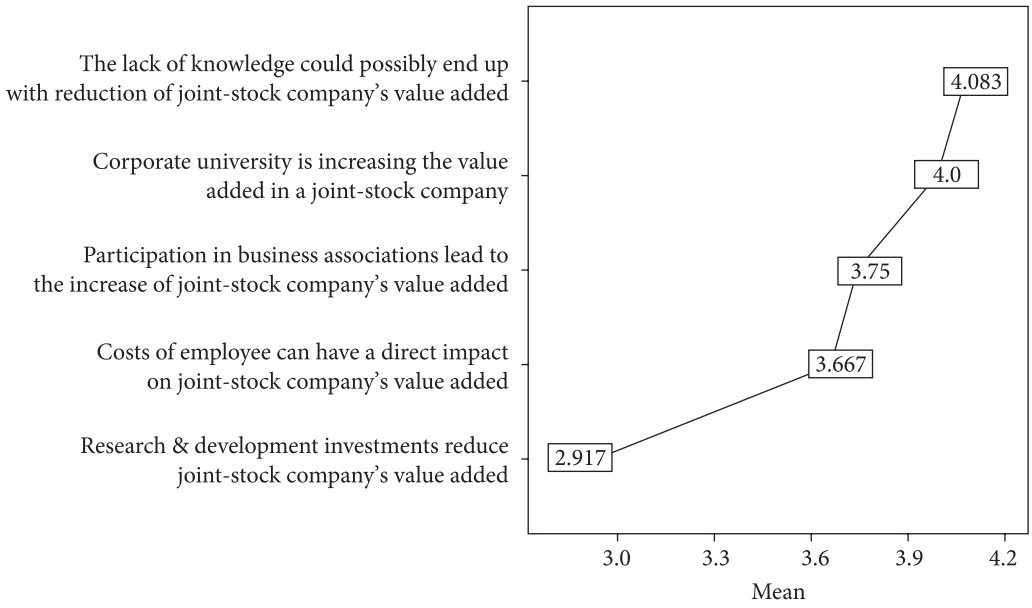

Fig. 6. Statements regarding intellectual capital factors to value added of a joint-stock company

conducted in order to specify the factors, having the strongest influence the value added of a joint-stock company. In addition to this, the model of intellectual capital influence on value added of a joint-stock company must be adapted taking into consideration results of a trial expert evaluation.

Conclusions

To conclude, trial expert evaluation revealed the factors, that influence value added of a joint-stock company the most. The model of intellectual capital influence on value added of a joint-stock company was created based on scientific literature. Authors were trying to design the intellectual capital approach and implement the basic features used in empirical researches. The investigation revealed that three factors were classified as having the highest level of importance to value added of a joint-stock company: employees come up with new ideas, company is confident in maintaining a good relationship with customers and employees perform their best. The ability to find effective and educated employees and to maintain their attention and interest is crucial to management of a joint-stock company. As a consequence, satisfied and motivated employee is more willing to create and generate new ideas, processes and procedural improvements. Moreover, capability to motivate excellent employees fosters the performance of employees' direct functions during the day. With that being said, company can be confident in maintaining a good relationship with customers as employees are the first contact representing a respective joint-stock company. In order to comply with factors, that have major influence on value added of a joint-stock company, the experts also identified the frequency of steps needed to take into account during the process of value added generation. Management of a joint-stock company should frequently invest funds in research & development, technology, conduct ongoing trainings and coaching sessions for employees, foster further education development of employees, organise advertising campaigns and motivate employees with salary imbursements. In other words, experts indicated that in order to stimulate the growth of value added of a joint-stock company, management should focus on two wide concepts: education (trainings, coaching, research and development, technology, etc.) and motivation (promotions of employees, salary increases, satisfactory and comfortable team spirit maintenance, advertising campaigns for consumers, discount systems for loyal customers, etc.). However, there are some discrepancies within experts' opinions as they were undecided whether research & development investments reduce joint-stock company's value added. On the other hand, experts agreed that the lack of knowledge could possibly result in the reduction of joint-stock company's value added, corporate university increases the value added in a joint-stock company, participation in business associations leads to the increase of joint-stock company's value added and costs of employee can have a direct impact on joint-stock company's value added.

Nevertheless, other empirical researches and expert evaluations should be conducted in order to specify and clarify the factors, having the strongest influence on the raise of value added of a joint-stock company. In addition to this, the model would be more reliable if Kendall's coefficient of concordance would be bigger. The revision of the trial expert research is recommended to conduct in order to improve the accuracy of the research.

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