Building of Innovation Capacity in Venture Capital Backed Companies: Qualitative Research Approach
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Abstract
The abundance of the research in the field of venture capital funding highlights the importance of this topic to boosting economic prosperity in terms of increasing innovation potential and creation of job places appearing due to the development of high potential in early business stages. The analysis of the scientific literature has revealed a specific role of venture capital in funding an early stage business that faces the shortage of capital for development. Additionally, it is argued that venture capital has a positive effect on companies in terms of various non-financial services. Specifically, this paper deals with the role of venture capitalists in building innovation capacity in their portfolio companies. The findings of the qualitative research suggest that venture capital investors are associated with many changes in a company concerning innovations, so they contribute to the capacity gain for company’s development.

INTRODUCTION
The analysis of the scientific literature has revealed that the activation of venture capital market is becoming a core initiative in public policy for spurring the entrepreneurship in various world regions (Cumming, 2011; Cumming & Johan, 2009; Karsai, 2012). However, not all public actions/initiatives succeed, as in German case (Becker & Hellmann, 2003; Gilson, 2003). Still, there are some doubts whether it is necessary for the government to intervene mainly due to the risk of crowding out private investment (Armour & Cumming, 2006).

The phenomenon of start-ups is widely analysed in the theory of social science. It is analysed in different perspectives, and particularly many attempts have been made to explore the main success factors for start-ups including the strategic, human resource and financing dimensions. Start-ups is the term that refers to newly established companies when the phase of establishment has been finished and the product initiating phase has already been started. Such start-ups are usually associated with venture capital funding as they often face the shortage of capital. Such situation is named the valley of death in the scientific discourse. The discourse on the scientific level presents venture capital industry as having a positive economic effect due to the funding promising early stage ventures and additionally providing value-added services (Hellmann & Puri 2002).

This is not the only problem that start-ups face. The lack of experience in management as a broad concept as well as technological problems are also among the main obstacles for the successful development of start-ups. Therefore, the literature explores the role of a venture capitalist as both a capital provider and a value added provider. For instance, Brander, Egan and Hellmann (2008) state that venture capitalists provide “value-added” to their portfolio companies in terms of providing financial, marketing, human resource and operational management support (Brander, Egan & Hellmann, 2008).

So far, the researchers have argued that venture capitalists may affect the value of portfolio companies by providing them not only with financial support, but also with the additional support/services that influence the value of a company (Fitz, Matusik, & Mosakowski, 2009). The research shows that the main venture capital investors’ value added mechanism works through the active participation in the management of the companies (Lockett et al., 2008, Brander et al., 2008; Maunula, 2006). The scientific literature distinguishes a contract basis and an informal monitoring (Van den Berghe & Levry, 2002). Moreover, some studies argue that different venture capital investors provide different value added for their portfolio companies (Maunula, 2006). Maunula (2006) distinguishes two kinds of venture capital value added to a portfolio company. The first one is an indirect mode and appears through screening and

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signalling while the second one is a direct mode in terms of monitoring and non-financial support in various company’s performance levels like strategic planning, or attracting additional funding. In particularly, scientific literature in the scope of venture capital funding deals with the effect that venture capital has on the venture-backed companies: human resource management in terms of recruiting top managers and other qualitative experts (Hellmann & Puri, 2002), company’s performance indicators (Peneder, 2010; Engel & Keilbach, 2007; Jiang, 2010), and innovation performance in terms of patenting (Dushnitsky & Lenox, 2005; Chemmanur, Loutskina, & Tian, 2012; Dubocage, Rivaud-Dandi & Redi, 2012; Caselli et al., 2009; Bertoni & Tyková, 2012). Thus, the provision of value added services is a distinctive feature of venture capital funding. The value added may reveal oneself in several modes. This raises the scientific problem: what is the role of venture capitalists in building innovation capacity as well as integrating the funding, strategic management and human recourse management issues in venture-backed companies?

The paper aims to explore the role of venture capital in building innovation capacity and identify the main changes associated with venture funding in a portfolio company. The qualitative research method has been employed in order to have a deeper insight in the issues between the two interested parties (a venture capitalist and an entrepreneur).

The paper has been structured in the following manner: the first section deals with the attributes of venture capital funding and value added in portfolio companies; the second part reveals the method employed to measure the effect of venture capital on portfolio companies; and the third part reveals the findings and main implications. Finally, the paper ends with conclusions.

THE ATTRIBUTES OF INNOVATION CAPACITY BUILDING: THE ROLE OF VENTURE CAPITAL

The results of the literature analysis have provided the evidence of the necessity to measure innovation. Sawhney et al. (2006) suggest to measure innovation in a company by many aspects; the innovation radar model embeds four main dimensions: a product, clients, a process and realization. The literature identifies the innovation stimulus (leadership, human resource management, knowledge management and creativity management) which determines the innovation capacity in a company (Prajogo and Ahmed, 2006). Moreover, Szeto (2000) argues that “improving the innovation capacity of firms is dependent upon various factors, among which the continuous supply of innovation resources and the accumulation of innovation knowledge are crucial.” Thus, in the following part of the paper, the role of venture capital investment in strengthening of innovation capacity in a portfolio company will be analysed in several aspects.

From the broad perspective of the conception of value added, the research areas can be extended as follows: 1) human resource management and venture capital; 2) corporate strategy formation and venture capital; 3) firms’ performance; and 4) innovation performance and venture capital.

**Human resource management and venture capital.** Human capital is one of the core ingredients for innovation capacity in a company. According to Hellmann and Puri (2002), it may lead a company to higher professionalization level. In addition, de Carvalho, Calomiris, and de Matos (2008) state that “human resources management is one of the keys to understanding the success of the venture capital industry.”

The analysis of the scientific literature has revealed that resource management and venture capital relation is analysed in several aspects:

- Venture capital investors’ influence on replacement of a chief executive officer (CEO) (Hellmann & Puri, 2002);
- Venture capital investors’ influence on personnel formation in terms of attracting of competent employees (Hellmann & Puri, 2002; de Carvalho, Calomiris, & de Matos, 2008);
- Venture capital investors’ influence on the structure of management board (Rosenstein et al., 1993; Suchard 2009).

The study carried out by Hellmann and Puri (2002) identified that venture capital backed companies much more tend to use business and professional contacts for the recruitment of sales and marketing as well as administrative and managerial staff (Hellmann & Puri, 2002). This aspect of their study has also been confirmed by Suchard (2009).
De Carvalho, Calomiris, and de Matos (2008) focus their study on venture capital as a “human resources management mechanism” (de Carvalho, Calomiris, & de Matos, 2008). Their findings emphasise that “a majority of the venture capitalists affirm that it is common for them to hire managers under suggestions from their colleagues (62.3%) and to suggest managers (56.2%). Furthermore, 37% affirm that they adopt the strategy of recycling managers” (de Carvalho, Calomiris, & de Matos, 2008).

Corporate strategy formation and venture capital. Meanwhile, the qualitative aspects of venture capital and its impact on the strategy formation in portfolio companies has been presented in a few studies: Peneder (2010) and Da Rin and Penas (2007). Private venture capital enables portfolio companies to concentrate on internal R&D while public venture capital releases financial restrictions but does not enhance accumulation of the capabilities inside the company (Da Rin & Penas, 2007).

Venture capital impact on innovation at a company level. The research has revealed that venture capital firms and their relation to innovation research are usually examined by the following aspects:

- Revealing venture capital investment relationship with the company’s innovation strategy (Hellmann & Puri, 2002; Da Rin & Penas, 2007).
- Exploring the impact of venture capital on the growth of enterprises (Engel & Keilbach, 2007; Jiang, 2010).
- Analyzing the venture capital investment relation to productivity growth as a measure of innovation (Ueda & Hirukawa, 2003).

So far, the research has presented the evidence that, on average, venture capital-financed companies provide 10 times more patent applications than the firms without the venture capital funding (Engel & Keilbach, 2007). A high correlation between venture capital funding and patenting activities was identified by D’Adda (2009).

Venture capital and commercialization. Samila and Sorenson (2010) research provides the evidence that venture capital investment is a catalyst in the commercialisation process. According to Samila and Sorenson (2010), universities educate inventors while venture capitalists help them to become entrepreneurs. In addition, Engel and Keilbach (2007) state that venture capitalists assist portfolio companies in the process of commercialisation in terms of providing networking channels.

Venture capital and internationalisation. The impact of venture capital on the process of portfolio company’s internationalization was studied by Makela (2004), LiPuma (2006), Lockett et al. (2008), Fernhaber and McDougall-Covino (2009). Peneder (2010) argues that a venture capital-funded company focuses on international markets, introduces more new products and is more inclined to protect its innovations.

Recent empirical studies (Fernhaber and McDougall-Covino, 2009), which analysed the impact of venture capital on internationalization of new enterprises, confirm the results obtained by Lockett et al. (2008) and claim that active venture capital investors have a positive impact on the processes of internationalization in portfolio companies.

In this paper, we focus on the value added in terms of micro level considering several core aspects. The framework of the research has been presented in Fig. 1.

Fig. 1. The framework of the research
The above presented theoretical analysis on the value added that the venture capital investors provide to their portfolio companies indicates the main areas that might be influenced by these investors:

- **Corporate strategy formation and implementation** is a starting point for the company’s success; the ability to foresee the dynamics of markets and be a step ahead competitors is essential here. Therefore, the risk is high.
- **Human resource management** is a core precondition for the creativeness and innovation in a company. The qualitative changes (recruitment of specialists, experts) in this field could increase the ability to innovate.
- **Technological capacity building** (technologies used, a product created, automatization of processes, etc.), expertise in this field as well as the ability to update the technological base could earn a company its competitive advantage over the rivals;
- **Marketing innovation capacity** (a new distribution channel, product commercialization, brand development, etc.).
- **Self-assessment related innovation** refers to company’s internal efforts to maintain and improve the innovative capacity, for instance, observation and evaluation of on-going internal and external situation (financial and technological audits) and its improvement (quality system implementation, process automation, etc.).
- **Networking related issues** (cooperation with various institutions as well as involvement in the variety of structures (clusters, science and technology parks, associations) including participation in international projects with a view to strengthening company's innovation ability).

This research aims to explore the role of venture capital in building of innovation capacity in portfolio companies in terms of qualitative research approach. In order to cover the dimensions introduced in Figure 1, the above presented six aspects have been revealed from the qualitative approach in the following section.

Therefore, in this research, the innovation capacity at the level of a particular company embeds the following complex elements which are expressed in the ability:

- usage of strategic insight in evaluating company’s competitiveness,
- production of new/or improved products, usage or creation of new or improved technologies,
- adaptation of an effective organisation management system,
- introduction of new marketing solutions.

The networking is an integrated element in both internal and external perspective. On the whole, the framework combining the elements mentioned above could increase the value added and the maximum financial benefit could be earned.

**METHODOLOGY**

In order to check the framework of the research, an in-depth research approach was chosen. The method of expert evaluation is a quite common research approach in social sciences. The main criteria for choosing experts for the research are experience and specific knowledge related to the analysed phenomena.

The method of expert evaluation was chosen in order to reveal the effect of venture capital on portfolio companies in terms of creation of innovation capacity throughout the main changes the entrepreneurs consider to take place due to acquisition of VC funds.

The questionnaire was prepared for the CEO of the companies that were backed by venture capital in Lithuania. The research limitations are related to the context of venture capital market in Lithuania which was mainly triggered by JEREMIE funds. The data was collected in 2012, when there were only 12 companies financed by such funds.

The questionnaire for the experts embedded the questions based on the Likert type scale. Such types of questionnaire were advocated by Gliem and Gliem (2003). The possible ratings for the items ranged from 1 (indicates disagreement with the statement) to 5 (meaning total agreement).

Cronbach’s alpha was computed in order to measure the reliability of the questionnaire, where a coefficient closer to 1 indicates good internal consistency of a scale. A critical value of alpha in this
research is 0.7. A value higher than the threshold (0.7) means that the questionnaire items present a good internal consistency (Gliem & Gliem, 2003).

The data collected is ordinal, thus, non-parametric statistics were applied (Friedman test and Kendall’s coefficient of concordance W). The research results were analysed using SPSS 17. Friedman test and Kendall’s concordance test present the mean rank values, and the corresponding p-value lower than 0.05 indicates the significance in the difference among the sum of the ranks. “Kendall’s W is a normalization of the Friedman statistic. Kendall’s W is interpretable as the coefficient of concordance, which is a measure of agreement among raters” (IBM SPSS Statistics Base 19). “Kendall’s coefficient of concordance is a measure that allows a researcher to evaluate the degree of agreement between m sets of ranks for n subjects/objects” (Sheskin 2000, p. 903). Kendall’s W ranges between 0 (no agreement) and 1 (complete agreement). Finally, the main hypothesis are tested: null hypothesis $H_0$: $W=0$, alternative hypothesis $H_1$: $W\neq0$. (Sheskin 2000, p. 903)

THE ROLE OF VENTURE CAPITALISTS IN BUILDING OF INNOVATION CAPACITY IN A PORTFOLIO COMPANY

The CEO of companies that were funded by venture capital funds are considered to be experts since they know the specificities of interaction with venture capital investors. Thus, they have been acquainted with processes evolving during the acquisition of funding and its realization. 7 experts agreed to fill the questionnaire. The research was carried out in 2012; at that time there were around 12 companies that were financed by venture capital funds created within the JEREMIE (Joint European Resources for Micro to Medium Enterprises) framework in Lithuania.

The questionnaire prepared for the CEO of the companies was based on Likert type questions; it means that the experts rated the given statements in the 5 point Likert scale. In this paper, we particularly focus on the issues related to building of innovation capacity in venture-backed companies.

The statistics on the agreement of the experts with the statements that are related to innovation dimensions in the company which has been affected by venture capitalists has been presented in Figure 2. Kendall’s coefficient of concordance in this case is 0.433 (Chi-Square 12.117, df 4), and corresponding p-value 0.017 indicates the significant differences in the estimated mean ranks.

The highest mean rank (4.21) was given to the statement that venture capital has the impact on corporate strategy formation and implementation in portfolio companies. Therefore, the most inherent effect of venture capital investment is related to corporate strategy implementation and formation. It is in line with the corporate theory that a venture capitalist brings capital investment, and therefore he gets a share of equity in a company and becomes a member in the Board who is responsible for the shaping of strategic streams.

The second most inherent effect of venture capital in portfolio companies is related to self-assessment processes in a company. The statement summed up 3.64 mean rank indicating that the experts treat it as the second important aspect of the impact of venture capital investors on portfolio companies.

One can find interesting that technological innovation and marketing innovation are less affected by VC investors, with reference to the opinion of the experts. On one hand, the companies that have overcome the tight process of VC selection and revision might have already developed their strong capacity in these fields. The literature analysis provides the evidence that VC investors choose the companies which have already earned their competitiveness in the market (Baum & Silverman, 2004). On the other hand, marketing innovations are not inherent in practice, and the experts could have found it difficult to distinguish them.
With reference to the opinion of the experts, mean ranks on the statements which represent the changes related to venture capital investment in a company have been presented in Fig. 3. The order of the statements has been based on the mean ranks that have been outlined in the figure. The significance of the concordance of the experts’ opinions is quite weak - W is 0.283 (Chi-Square 49.58, df 25); corresponding p-value 0.000 indicates the significance of the agreement among the experts on the given statements. The agreement is also weak.

The main change indicated by the experts was the increase in company’s value (mean ranks 21.14). Increased accountability for a Board is also among the main changes.

Another interesting point is that replacement of company’s manager is treated as one of the least important changes, according to the opinion of the experts. It contradicts to the evidence provided in the scientific literature by Hellmann and Puri (2002). However, the experts agree that venture capital is associated with more skilled/professional personnel hired (mean rank of 16.29). The mean ranks on the question about the changes in a portfolio company after acquisition of venture capital investment have been presented in Fig. 3.

Figure 3 also shows that venture capital investment is also related to particular innovation in the level of a company, for instance, introduction of new process control system (14.43 mean rank) is as evidence of organisation innovation; the extended product range - as evidence of marketing innovation.

In general, the method of expert evaluation has disclosed not every assumption. It should be admitted that the results of the research might have been affected by the heterogeneity of the firms represented by the experts; therefore, the changes in each company might be different and dependent on their problematic issues.
Fig. 3 Experts’ ratings on the changes associated with acquisition of venture capital funds

<table>
<thead>
<tr>
<th>Change</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>The increase in company’s value</td>
<td>21.14</td>
</tr>
<tr>
<td>More often performance reports</td>
<td>20.93</td>
</tr>
<tr>
<td>Increased Accountability for a Board</td>
<td>20.29</td>
</tr>
<tr>
<td>Tighter company’s financial accounting</td>
<td>18.71</td>
</tr>
<tr>
<td>Faster product introduction to the market</td>
<td>17.29</td>
</tr>
<tr>
<td>More skilled professionals hired</td>
<td>16.29</td>
</tr>
<tr>
<td>Increased the number of the Board members</td>
<td>15.29</td>
</tr>
<tr>
<td>The corrected the corporate strategy</td>
<td>14.43</td>
</tr>
<tr>
<td>Introduction of new process control systems</td>
<td>14.43</td>
</tr>
<tr>
<td>The extended product range</td>
<td>14.29</td>
</tr>
<tr>
<td>Product cost minimization</td>
<td>14.07</td>
</tr>
<tr>
<td>The growth in turnover</td>
<td>13.29</td>
</tr>
<tr>
<td>Increase in the number of contacts with foreign companies</td>
<td>12.93</td>
</tr>
<tr>
<td>Developed technological infrastructure in a company</td>
<td>12.71</td>
</tr>
<tr>
<td>The company’s productivity growth</td>
<td>12.36</td>
</tr>
<tr>
<td>The increase in sales</td>
<td>12.21</td>
</tr>
<tr>
<td>The decrease in the company’s financial burden (debt)</td>
<td>11.93</td>
</tr>
<tr>
<td>An extended customer network</td>
<td>11.57</td>
</tr>
<tr>
<td>The increase in exports</td>
<td>11.36</td>
</tr>
<tr>
<td>The reduction of production costs</td>
<td>11.29</td>
</tr>
<tr>
<td>Designed (improved) product</td>
<td>11.00</td>
</tr>
<tr>
<td>Increase in contacts with academic and research institutions</td>
<td>9.86</td>
</tr>
<tr>
<td>An extended network of suppliers</td>
<td>9.50</td>
</tr>
<tr>
<td>Replaced company’s manager</td>
<td>9.21</td>
</tr>
<tr>
<td>Satisfying the Needs of Customers</td>
<td>7.86</td>
</tr>
<tr>
<td>Reduced competition in the market</td>
<td>6.79</td>
</tr>
</tbody>
</table>

CONCLUSION/ DISCUSSION

The results of the literature research have revealed many aspects of the value added provision while using venture capital. This research aimed to reveal the role of venture capital investors in building of innovation capacity in terms of the broad innovation concept. The innovation at the level of a particular company in this research is referred as the ability of the company to use strategic insight in evaluating company’s competitiveness, to produce new/or improved products, to use or create new or improved technologies, to adapt the effective organisation management system and to introduce new marketing solutions integrating internal and external networking with a view to achieving the maximum financial benefit.

Covering all the dimensions mentioned above, the questionnaire for the experts was prepared. The results of the expert evaluation indicate that the opinions of the experts were concordant by the ratings given to the particular statements. Therefore, it can be concluded that the most inherent effect of venture capital investment is related to corporate strategy formation and implementation. The second most inherent effect of venture capital on portfolio companies is related to self-assessment processes in a company. Not surprisingly, more attention to financial accountability as well as observation of the indicators of other companies’ performance is necessary. The research has enabled to disclose an interesting point that, with reference to the ratings given by the experts, two dimensions - technological innovation and marketing innovation - are less affected by VC investors. On one hand, the companies that have overcome the tight process of VC selection and revision might have already developed their strong capacity in these fields. On the other
hand, marketing innovations are not inherent in practice, and the experts could have found it difficult to distinguish them.

Concerning the changes related to the venture capital acquisition, the experts united while distinguishing the most inherent ones. The increase in the value of the company is considered to be the most important change. The accountability in terms of more frequent preparation of the reports on company’s performance as well as the accountability to a Board are also treated as important changes associated with the acquisition of venture capital funds. Moreover, it is in line with the aspect of self-assessment mentioned above which was rated by the experts as an important one.

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