

■ Research Article

Does Innovation Capability Really Matter for the Profitability of SMEs?

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The study examines the relationship between innovation capability and firm profitability. The study has been executed by conducting a web-based survey in Finnish small-sized and medium-sized enterprises (SMEs). Previous research has studied the effect of innovativeness on performance. This study went thus a one step further by providing a comprehensive description of the effects of the determinants of innovation capability on profitability of SMEs. According to the results, there is only a minor effect of the determinants of innovation capability on firm profitability. Copyright © 2014 John Wiley & Sons, Ltd.

INTRODUCTION

This paper deals with the issue of innovation capability as an asset of profitability for small-sized and medium-sized enterprises (SMEs). Nowadays, more and more attention is paid to the ability of organizations to develop their innovations. Not only targeting the development towards major technological innovations brings financial value to a firm, for example, according to the study of Forsman and Annala (2011), the majority of SMEs are biased towards incremental innovation development resulting in a variety of innovation types: products, services, processes, production methods, and single functions. In this paper, innovation is seen as an iterative process that aims at creating new products, processes, knowledge, or services by the use of new or even existing knowledge (Kusiak, 2009). Thus, innovation can be regarded as an organizational capability because it is the act that deploys resources with a new ability to create value (Yang *et al.*, 2006).

The importance of innovation capability for superior firm performance has been widely acknowledged in the current literature (e.g., Calantone *et al.*, 2002; Cainelli *et al.*, 2004; Keskin, 2006; Bowen *et al.*, 2010; Jiménez-Jiménez and Sanz-Valle, 2011). However, there is no consensus on whether the effects of innovation capability on firm profitability are positive or negative. Innovations may be a source of cash

flow for firms. On the other hand, innovation often equals with heavy investments by a firm, returns to which often require quite a long time to realize (Varis and Littunen, 2010). Therefore, the effects of innovations on firm profitability may be seen only after a long period of time. Another reason for the inconclusive and inconsistent findings of previous research could be the different definitions of innovation across disciplines (Cho and Pucik, 2005). Also, a variety of profitability measures have been utilized, thus making it difficult to draw any generalizable conclusions (Subramanian and Nilakanta, 1996). In addition, a majority of the research studying the relationship between innovation and profitability use the number of innovations as the measure of innovation capability. In the context of SMEs, innovation capability is a broader concept, meaning that the effects of different determinants of innovation capability should be taken into account when studying the relationship between innovation capability and firm profitability.

The objective of this study is to investigate the relationship between the determinants of innovation capability and firm profitability. Previous research has often concentrated either on innovation capability as one dimension without studying the relationship aspect by aspect or on studying only the effects of one determinant of innovation capability. Therefore, the present study takes one step further by investigating the relationship of multiple determinants of innovation capability and firm profitability. The study contributes to the current understanding by presenting the important determinants of innovation capability that affect firm profitability.

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The paper is organized as follows. Previous literature is presented in the Literature Review section. The relationship between innovativeness and profitability is discussed and the concept of innovation capability is defined. The research methods and data collection are presented in the Methodology section. The fourth section presents the results. Finally, discussion and conclusions, including limitations of the study and suggestions for future research, are presented.

LITERATURE REVIEW

Innovativeness and profitability

The importance of innovativeness for firm performance has been widely acknowledged. Tidd (2001) divides measures that are used to prove the relationship between innovativeness and business performance, into two categories. The first group concerns accounting and financial performance. These measures include profitability, return on investment, and share price. The second group concerns market performance, for example, the share or growth (Tidd, 2001). Earlier studies have suggested that innovation is an important determinant of profitability as well (e.g., Leiponen, 2000). It has been demonstrated that innovative propensity influences the extent to which abnormal profit outcomes persist over time (Roberts, 1999). It has also been found that there exists a clear difference in profitability between innovators and non-innovators (Cefis and Ciccarelli, 2005).

The relationship between innovativeness and profitability has traditionally been studied via the number of innovations or patents generated by a firm. Several studies have concluded that the effects of innovation on firm profitability are positive and relevant. The findings of Pett and Wolff (2011) indicate that innovation is important for the profitability of return on assets (ROA). Also in the study of Subramanian and Nilakanta (1996), ROA was used to measure organizational performance. It was found that the adoption of a large number of technical and administrative innovations leads to greater profitability. Also, innovation speed has been found to be a significant predictor of objective financial performance measured by ROA (Gopalakrishnan, 2000). Ken and Tsai (2010) found a relationship between patent success and some measures of profitability, such as return on equity (ROE). On the other hand, Geroski *et al.* (1993) suggest that the number of innovations produced by a firm has a positive effect on its profitability, but the effect is, on average, only rather modest in size.

The number of innovations or patents may not be the only appropriate measure for innovation success. Also, subjective data have been used to study the relationship between innovativeness and

profitability (Calantone *et al.*, 2002; Cho and Pucik, 2005). According to Cho and Pucik (2005), the impact of innovativeness on profitability is mediated by quality. They also suggest that innovativeness has a positive effect on profitability, partly because innovativeness affects quality, which in turn affects profitability. Calantone *et al.* (2002) have used a subjective scale for firm innovativeness and discovered that firm innovativeness is positively related to firm performance, or more precisely, profitability.

As a summary, the profitability of a firm is not necessarily dependent on the number of new innovations. The firms that are more profitable have capabilities or competences that others lack. These capabilities may be linked to the process of innovation (Love *et al.*, 2009). It has also been suggested that the indirect effects are greater and more long lasting; that is, it is the process of innovation that really matters for profitability (i.e., the transformation of internal capabilities) rather than the returns from individual innovations (Geroski *et al.*, 1993). According to Rosenbusch *et al.* (2011), SMEs may benefit even more if they develop, communicate, and embrace an innovation orientation. Thus, also the capability to produce innovations can be a critical factor when aiming at better profitability.

Innovation capability

Sáenz *et al.* (2009) consider innovation as a dynamic capability (i.e., a capability that allows the organization to integrate, build, and reconfigure internal and external competences in order to address rapidly changing environments (Teece *et al.*, 1997)). Innovation capability has also been considered as a theoretical framework aiming to describe the actions that can be taken to improve the success of innovation activities (Lawson and Samson, 2001). Hogan *et al.* (2011) define innovation capability as a firm's ability, relative to its competitors, to apply the collective knowledge, skills, and resources to innovation activities related to new products, processes, services, or management, marketing, or work organization systems, in order to create added value for the firm or its stakeholders. Thus, in present study, innovation capability is a predictor of innovativeness. According to previous definitions, innovation capability has at least the following features:

- Innovation capability refers to a potential or ability to produce innovations (e.g., Neely *et al.*, 2001; Lawson and Samson, 2001; Laforet, 2011)
- Innovation capability is internal capability (e.g., Akman and Yilmaz, 2008; Ngo and O'Cass, 2009; Martínez-Román *et al.*, 2011)
- Innovation capability requires continuous improvement (e.g., Szeto, 2000; Lawson and Samson, 2001; Olsson *et al.*, 2010)
- Innovation capability aims to add value (e.g., Szeto, 2000; Hogan *et al.*, 2011)

A body of literature has identified the factors that impact the ability to manage innovation (e.g., Smith *et al.*, 2008). Similarly, in this study, innovation capability is defined as a potential of an organization to create innovations continuously, and it consist of the determinants influencing an organization's capability to manage innovation. According to earlier literature, these determinants include, for example,

- leadership practices (e.g., Tang, 1998, 1999; Bessant, 2003; Tidd *et al.*, 2005; Perdomo-Ortiz *et al.*, 2006; Martensen *et al.*, 2007; Colarelli O'Connor, 2008; Skarzynski and Gibson, 2008; Smith *et al.*, 2008; Kallio *et al.*, 2012; Saunila and Ukko, 2013),
- employees' skills and innovativeness (e.g., Perdomo-Ortiz *et al.*, 2006; Martensen *et al.*, 2007; Colarelli O'Connor, 2008; Skarzynski and Gibson, 2008; Smith *et al.*, 2008; Tura *et al.*, 2008; Liu, 2009; Kallio *et al.*, 2012),
- processes and tools for idea management (e.g., Lawson and Samson, 2001; Tidd *et al.*, 2005; Skarzynski and Gibson, 2008; Smith *et al.*, 2008; Saunila and Ukko, 2013),
- supporting culture (e.g., Tang, 1998, 1999; Lawson and Samson, 2001; Tidd *et al.*, 2005; Martensen *et al.*, 2007; Colarelli O'Connor, 2008; Skarzynski and Gibson, 2008; Smith *et al.*, 2008; Liu, 2009; Kallio *et al.*, 2012; Saunila and Ukko, 2013),
- external sources for information (e.g., Romijn and Albaladejo, 2002; Tidd *et al.*, 2005; Perdomo-Ortiz *et al.*, 2006; Colarelli O'Connor, 2008; Laforet, 2011; Kallio *et al.*, 2012; Saunila and Ukko, 2013),
- development of individual knowledge (e.g., Tang, 1998, 1999; Bessant, 2003; Tidd *et al.*, 2005),
- employees' welfare (e.g., Laforet, 2011), and
- linkage to strategic goals (e.g., Bessant, 2003; Martensen *et al.*, 2007; Smith *et al.*, 2008).

Research model and hypotheses

Previous findings suggest that innovations may have an effect on firm profitability. Traditionally, the number of innovations or patents has been used as a measure of innovativeness (e.g., Audretsch, 1995; Subramanian and Nilakanta, 1996; Cefis and Ciccarelli, 2005; Love *et al.*, 2009). The effect of innovation capability and its determinants on profitability has remained unknown. In accordance with the earlier literature and the previous study of Saunila and Ukko (2013), innovation capability has been divided into seven determinants (Table 1) in this study: external knowledge, work climate and well-being, ideation and organizing structures, regeneration, participatory leadership culture, individual activity, and know-how development. This categorization was chosen because it summarized the determinants of innovation capability presented in earlier literature.

As presented in earlier literature, it is not necessarily the number of innovations that make firms more profitable, as innovating firms may have competencies that make them more profitable than non-innovating firms. It is the innovation capability that matters. Therefore, the following hypotheses can be formulated:

H1: There is a significant relationship between external knowledge and profitability

H2: There is a significant relationship between work climate and well-being and profitability

H3: There is a significant relationship between ideation and organizing structures and profitability

H4: There is a significant relationship between regeneration and profitability

H5: There is a significant relationship between participatory leadership culture and profitability

H6: There is a significant relationship between individual activity and profitability

H7: There is a significant relationship between know-how development and profitability

The purpose of this study is to explore the relationship between the determinants of innovation capability and firm profitability within the context of SMEs. The theoretical review discussed above has led to the research framework presented in Figure 1.

METHODOLOGY

Measures

The approach of this study is quantitative. The questionnaire developed for the study consisted of two parts. The first part comprised 29 items measuring different issues related to innovation capability, divided into seven subcategories. The second part comprised two items measuring profitability.

Innovation capability

The independent variables of the study were the determinants of innovation capability, namely, participatory leadership culture, ideation and organizing structures, work climate and well-being, know-how development, regeneration, external knowledge, and individual activity. Each of the determinants was measured using 3–6 items. When possible, validated measures reported in previous research were used. When the items had to be modified, the items were derived from the literature. Items modified of the studies of Hurt *et al.* (1977), Samson and Terziowski (1999), Tang (1999), Calantone *et al.* (2002), Guan and Ma (2003), Ojala (2003), Wang and Ahmed

Table 1 Summary of the determinants of innovation capability

Determinant		References	Description
Participatory leadership culture	Leadership/Management style	Smith <i>et al.</i> (2008); Tang (1998, 1999); Martensen <i>et al.</i> (2007)	The overall atmosphere of the organization that supports and motivates innovation and also leadership that facilitates innovation
	Supervision and control	Martínez-Román <i>et al.</i> (2011)	
	Resource management	Lawson and Samson (2001); Wan <i>et al.</i> (2005); Smith <i>et al.</i> (2008)	
Work climate and well-being	Management personalities	Smith <i>et al.</i> (2008)	Represent the well-being of the employees and further the work climate for innovation development, including collaboration and values
	Innovation culture	Neely <i>et al.</i> (2001); Martensen <i>et al.</i> (2007); Laforet (2011)	
	Communication	Lawson and Samson (2001); Wan <i>et al.</i> (2005); Smith <i>et al.</i> (2008)	
	Attitude to innovation	Wan <i>et al.</i> (2005); Smith <i>et al.</i> (2008)	
	Collaboration	Smith <i>et al.</i> (2008)	
Ideation and organizing structures	Shared values	Tang (1998, 1999)	Related to the structures and systems that successful innovation requires. This includes the generation, development, and implementation of innovations and the ways how the work tasks of the organization are organized
	Organizational structure and operation processes	Tang (1998, 1999); Lawson and Samson (2001); Neely <i>et al.</i> (2001); Kallio <i>et al.</i> , 2012	
	Idea generation and management	Lawson and Samson (2001); Smith <i>et al.</i> (2008)	
	Rewards	Lawson and Samson (2001); Martínez-Román <i>et al.</i> (2011)	
	Level of decentralization	Wan <i>et al.</i> (2005); Smith <i>et al.</i> (2008); Martínez-Román <i>et al.</i> (2011)	
Know-how development	Cross-functional communication	Tang (1998, 1999); Martínez-Román <i>et al.</i> (2011)	Skills and knowledge of the employees play an important role in innovation capability. This includes the utilization of knowledge as well as the improvement of employee skills
	Professional knowledge and skills	Romijn and Albaladejo (2002); Tang (1998, 1999); Smith <i>et al.</i> (2008)	
	Further learning	Romijn and Albaladejo (2002); Tang (1998, 1999)	
Exploiting external knowledge	Training and education	Smith <i>et al.</i> (2008)	The importance of the proper behavior of exploiting external networks and knowledge to the overall organizational innovation capability
	Knowledge of external environment	Neely <i>et al.</i> (2001); Smith <i>et al.</i> (2008)	
	Intensity of networking	Romijn and Albaladejo (2002); Kallio <i>et al.</i> , 2012	
	Learning about customers and competitors	Lawson and Samson (2001); Martensen <i>et al.</i> (2007)	
Regeneration	Organizational learning	Smith <i>et al.</i> (2008); Wan <i>et al.</i> (2005); Smith <i>et al.</i> (2008); Laforet (2011)	An organization's ability to learn from earlier experience and to use that experience to create innovations and develop their operations
	Attitude to risk	Martínez-Román <i>et al.</i> (2011)	
Individual activity	Learning and capacitation	Martínez-Román <i>et al.</i> (2011)	Employees' individual innovation capability and activity is needed to form the organization's overall innovation capability.
	Attitude/willingness to innovate	Wan <i>et al.</i> (2005); Martínez-Román <i>et al.</i> (2011)	
	Creative thinking behavior	Tang (1998, 1999); Kallio <i>et al.</i> , 2012	
	Employee motivation	Smith <i>et al.</i> (2008); Tang (1998, 1999); Kallio <i>et al.</i> , 2012	
	Empowered employees	Lawson and Samson (2001); Kallio <i>et al.</i> , 2012	

Source: Elaboration based on Saunila and Ukko (2013).

(2004), Martensen *et al.* (2007), Dobni (2008), and Kallio *et al.*, 2012 were used. The variables were measured by a 5-point Likert-type scale, ranging from 1 (strongly disagree) to 5 (strongly agree). A neutral response "neither disagree nor agree" was adopted to reduce uninformed responses.

Profitability

The dependent variable, meaning profitability, was measured by two items. Previous literature has used a variety of measures for profitability. These include for example return on investment (ROI) (Yamin *et al.*, 1997; Calantone *et al.*, 2002; Cho and Pucik, 2005),

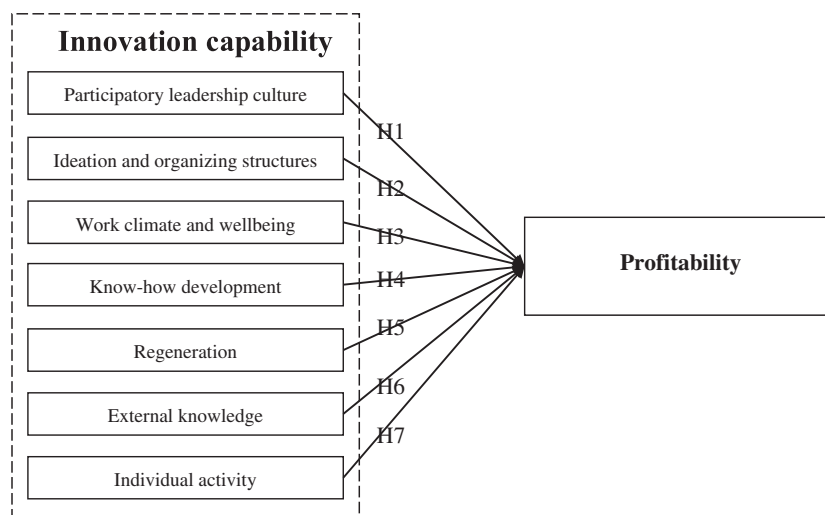


Figure 1 Research model and hypotheses

ROA (Zahra and Covin, 1995; Subramanian and Nilakanta, 1996; Roberts, 1999; Gopalakrishnan, 2000; Zajac *et al.*, 2000; Calantone *et al.*, 2002; Cho and Pucik, 2005; Ken and Tsai, 2010; Gunday *et al.*, 2011; Pett and Wolff, 2011), return on sales (ROS) (Audretsch, 1995; Zahra and Covin, 1995; Calantone *et al.*, 2002; Gunday *et al.*, 2011; Pett and Wolff, 2011), ROE (Cho and Pucik, 2005; Ken and Tsai, 2010), net profits (Audretsch, 1995), and liquidity (Yamin *et al.*, 1997). In the present study, two of these previously used measures for profitability were adopted as dependent variables: return on investment (ROI) and business profit.

Sample and data collection

The data used to test the hypotheses were gathered from Finnish SMEs. A total of 2400 companies, based on revenue (2–50 Meuro) and number of employees (10–249 Meuro), were randomly chosen as targeted respondents. Web-based questionnaires were targeted to both top managers and employees of the selected companies. The questionnaire was sent to both response groups because both views were seen to be important when evaluating the determinants of innovation capability. Thus, a total of 4800 questionnaires were sent. After discounting the return-to-sender messages, 4050 questionnaires reached the respondents as 750 addresses were invalid. To gain a better response rate, three reminders were sent, each one week after the previous reminder. 302 full returns (out of a total of 4050) were obtained. Thus, the final response rate was 7.46%.

The proportion of the respondents was nearly equal between the manufacturing and service sectors (46.6% and 51.1%, respectively). About 70% of the respondents were managers, and the rest were employees. In terms of organizational size based on the number of employees, 72% of the responses came from firms with 49 employees or less, and around 28% were from firms with 50–249 employees. Based

on revenue, around 45% of the responses were from firms with 2–5 Meuro revenue, around 43% from firms with 5–20 Meuro revenue, and around 11% from firms with 20–50 Meuro revenue.

To check the non-response bias, an analysis of variance (ANOVA) test was performed. The informants were divided into four groups: first respondents, first reminders, second reminders, and third reminders. The results of the ANOVA test revealed that there was no significant difference (at the 5% significance level) between the four groups. Therefore, it could be assumed that a non-response bias did not exist.

RESULTS

Before testing the hypotheses, the validity of the constructs was assessed. Factor analysis (FA) was used to determine the unidimensionality of the constructs and to eliminate unreliable items. All items of one determinant were subjected into principal component analysis. Based on the FA tests, one item was eliminated because it loaded alone on another factor. The results of the FA presented in Table 1 suggest that the standardized loadings are highly significant for all these items, meaning that the underlying constructs are valid. The reliability was tested by calculating the Cronbach's alphas of the constructs. The alpha values are presented in Table 2, which shows that the alpha values of six factors are greater than 0.60. In one factor (individual activity), the alpha value is less than 0.50, which indicates that the reliability of the factor can be questioned, and therefore, the results concerning the factor should be handled circumspectly.

Table 3 presents the intercorrelations of all the variables used in this study. In order to assess the extent of multicollinearity, the variance inflation factor (VIF) was computed. The VIF factors were significantly below the cut-off value of 10, and therefore, it is suggested that multicollinearity did not cause problems.

Table 2 Descriptive statistics and the results of factor analysis and reliability tests

Item	Number of items	Mean	Standard deviation	Factor loadings	Cronbach's alpha
Participatory leadership culture	6	3.6527	0.61378	0.546–0.777	0.802
Ideation and organizing structures	6	3.4562	0.63072	0.499–0.766	0.712
Work climate and well-being	5	3.9327	0.60259	0.702–0.801	0.787
Know-how development	3	3.7512	0.78355	0.777–0.843	0.736
Regeneration	3	3.7951	0.78427	0.795–0.868	0.763
External knowledge	3	3.9578	0.73826	0.730–0.793	0.626
Individual activity	3	3.5851	0.61221	0.566–0.770	0.483

Table 3 Intercorrelations of the variables

	1	2	3	4	5	6	7	8
Determinants of innovation capability								
1 External knowledge								
2 Work climate and well-being	0.295***							
3 Ideation and organizing structures	0.267***	0.568***						
4 Regeneration	0.382***	0.452***	0.437***					
5 Participatory leadership culture	0.263***	0.636***	0.568***	0.531***				
6 Individual activity	0.154**	0.384***	0.296***	0.369***	0.403***			
7 Know-how development	0.229***	0.475***	0.490***	0.394***	0.471***	0.285***		
Dependent variables								
8 Return on Investment (%)	−0.117*	−0.059	−0.079	−0.023	−0.090	0.008	−0.001	
9 Business profit (%)	−0.020	−0.074	−0.090	−0.020	−0.139*	−0.080	−0.018	0.657***

*** $p \leq 0.001$.** $0.001 < p \leq 0.01$.* $0.01 < p \leq 0.05$.+ $0.05 < p \leq 0.1$.

In terms of Hypotheses 1–7, the regression results show that all the hypotheses, except 1 and 5, were rejected (see Tables 4 and 5). Detailed results of the regression analyses are presented below.

Hypothesis 1 stated that “There is a significant relationship between external knowledge and profitability.” This hypothesis was supported. Model 2 shows that the degree of exploiting the external knowledge has a negative relationship with firm profitability measured by ROI ($\beta = -0.119$), but the relationship is nevertheless significant ($p < 0.1$). However, the adjusted R^2 is only 0.016, which indicates that only 1.6% of the variance can be explained with the model.

Hypothesis 5 stated that “There is a significant relationship between participatory leadership culture and profitability.” This hypothesis was also supported by the data. Model 14 shows that participatory leadership culture has a negative relationship with firm profitability measured by business profit. The relationship is also significant at the 0.05 level. However, only 2.2% of the variance can be explained with the model.

Models 9, 11, 12, and 15 were also found to be statistically significant. However, the determinants of innovation capability were not found to be significant in these models. The control variables (no of employees and industry) were the only ones that had a significant relation to the business profit. This

result is in contrast with the findings of past research, which propose that size and industry do not have an effect on the profitability of a firm.

DISCUSSION

The result concerning Hypothesis 1 and Model 2 presents a negative relationship between the exploitation of external knowledge and the return of investment of the firm. This result is somewhat surprising and indicates that the firms have not been able to utilize external knowledge in a sophisticated manner. For example, Kallio (2012) has examined how absorptive capacity has been understood in the context of practice-based non-research and development innovation, by defining in her conclusions that the knowledge that is possessed by individuals, but is not used by the organization, is external to the organization. This may have been the case also in the current study, in other words, a lot of effort and resources may have been harnessed in gathering external knowledge, but the benefits have not been realized due to the lack of appropriate methods.

As regards Hypothesis 5, Model 14 shows that a participatory leadership culture has a negative relationship with firm profitability measured by business profit. This is an interesting result, as many prior studies have reported that participatory leadership

Table 4 Regression analyses of innovation capability on firm profitability

Dependent variable	Return on investment (%)							
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
	Beta	Beta	Beta	Beta	Beta	Beta	Beta	Beta
Control variables								
Revenue	0.100	0.101	0.100	0.099	0.099	0.092	0.100	0.101
No of employees	−0.026	−0.015	−0.026	−0.024	−0.024	−0.027	−0.026	−0.028
Industry	0.096 ⁺	0.094	0.094	0.095 ⁺	0.097 ⁺	0.089	0.096 ⁺	0.099 ⁺
Determinants of innovation capability								
External knowledge		−0.119 [*]						
Work climate and well-being			−0.054					
Ideation and organizing structures				−0.077				
Regeneration					−0.020			
Participatory leadership culture						−0.073		
Individual activity							0.001	
Know-how development								−0.019
F	1.624	2.307 ⁺	1.435	1.668	1.244	1.611	1.214	1.240
R	0.127	0.174	0.138	0.148	0.128	0.146	0.127	0.128
R ²	0.016	0.030	0.019	0.022	0.016	0.021	0.016	0.016

*** $p \leq 0.001$.** $0.001 < p \leq 0.01$.* $0.01 < p \leq 0.05$.+ $0.05 < p \leq 0.1$.

Table 5 Regression analyses of innovation capability on firm profitability

Dependent variable	Business profit (%)							
	Model 9	Model 10	Model 11	Model 12	Model 13	Model 14	Model 15	Model 16
	Beta	Beta	Beta	Beta	Beta	Beta	Beta	Beta
Control variables								
Revenue	0.103	0.103	0.103	0.102	0.102	0.088	0.101	0.105
No of employees	−0.116 ⁺	−0.115 ⁺	−0.115 ⁺	−0.114 ⁺	−0.115 ⁺	−0.118 ⁺	−0.116 ⁺	−0.120 ⁺
Industry	0.098 ⁺	0.097 ⁺	0.095	0.097 ⁺	0.098 ⁺	0.086	0.107 ⁺	0.106 ⁺
Determinants of innovation capability								
External knowledge		−0.011						
Work climate and well-being			−0.069					
Ideation and organizing structures				−0.086				
Regeneration					−0.012			
Participatory leadership culture						−0.129 [*]		
Individual activity							−0.089	
Know-how development								−0.045
F	2.210 ⁺	1.662	2.017 ⁺	2.230 ⁺	1.662	20.930 [*]	2.269 ⁺	1.805
R	0.148	0.148	0.163	0.171	0.148	0.195	0.172	0.154
R ²	0.022	0.022	0.026	0.029	0.022	0.038	0.030	0.024

*** $p \leq 0.001$.** $0.001 < p \leq 0.01$.* $0.01 < p \leq 0.05$.+ $0.05 < p \leq 0.1$.

as one of the key elements in the success of companies. However, if the managers of SMEs, which usually have low organizational hierarchy levels, concentrate too much on the operative level actions, they may ignore their primary task: management of the company. On the other hand, tight participation of the managers in the operational activities may decrease the idea generation and creativity of the

employees. These two reasons may thus explain the negative relationship between participatory leadership and business profit.

In general, some past studies demonstrate evidence of a meaningful association between innovativeness and firm profitability (Subramanian and Nilakanta, 1996; Calantone *et al.*, 2002; Cho and Pucik, 2005; Ken and Tsai, 2010). It has also been suggested that

it is the process of innovation that really matters for profitability rather than the returns from individual innovations (Geroski *et al.*, 1993). The purpose of this study was to go one step further and investigate the relationship between innovation capability and firm profitability. The literature on innovativeness, innovation capability, and profitability led us to hypothesize that there would be a relationship between innovation capability and profitability. The analysis, however, indicated that the relationship is mainly nonexistent. The only determinants of innovation capability that were found to be influential were external knowledge and participatory leadership culture. The effect of these determinants was still small, and in both models, the impact was found to be negative.

Although it is clear that individual innovations themselves have an effect on profitability (Geroski *et al.*, 1993), the effects of the capability to produce these innovations do not show in firm profitability measures. One plausible reason for the five hypotheses to have been rejected and no significant correlation between a majority of the determinants of innovation capability and profitability found is that the relationship between innovation capability and profitability is more complex than expected according to the initial theoretical development. It seems to be obvious that innovation capability or potential for innovativeness is not enough alone, if the organization lacks the tools and methods to realize this potential. There can also be found plenty of other predictors that affect profitability than innovation capability (e.g., competition situation and business cycle). The capabilities may also be linked to the process of innovation, having thus an indirect and long lasting effect on profitability (Geroski *et al.*, 1993; Love *et al.*, 2009).

CONCLUSIONS

In this study, we examined the effects of the determinants of innovation capability on firm profitability. We conducted statistical tests using linear regression analyses in a sample of Finnish SMEs. The main findings of this study were that (1) only two determinants of innovation capability, external knowledge, and participatory leadership culture had a statistically significant effect on firm profitability, (2) the effects were modest, and (3) the effects were negative. As a conclusion, innovation capability is not realized in SMEs, at least in profitability measures.

The study has some limitations that should be acknowledged. The issue has been studied in Finnish SMEs. Thus, the results may not be fully generalizable to other parts of the world. The response rate accounted for 7.46, which is low. However, the sample covered such a large portion of Finnish SMEs employing 10–249 people and having a revenue of 2–50 Meuro that the results are likely to reflect the population pretty well.

Although the balance of evidence on the direct effect of innovativeness on profitability is weighted

toward positive findings, previous research has not examined the possible direct effect of capability on profitability. This study suggests a signal of the existence of the relationship. Therefore, the findings of our study point out the need for more extensive research on the innovation capability–profitability relationship counting for the mediating role of organizational attributes and processes. This way, a more precisely defined linkage between these two issues can be formulated in the future. In-depth research is also needed to study the tools and methods to assist the realization of innovation capability.

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