DYNAMIC CAPABILITIES - ARE THEY PROFITABLE?

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Abstract:
The consequences of dynamic capabilities (i.e. innovation performance and profitability) is an under researched area in the growing body of literature on dynamic capabilities. This study aims to examine the relationship between dynamic capabilities, innovation performance and profitability of small and medium sized enterprises operating in volatile environments. A multi-case study design was adopted as research strategy. The findings reveal a positive relationship between dynamic capabilities and innovation performance in the case enterprises, as we would expect. It was, however, not possible to establish a positive relationship between innovation performance and profitability. Nor was there any positive relationship between dynamic capabilities and profitability.
The main contribution of this study is a better understanding of the realm of small and medium sized enterprises' internal and external business atmosphere. A sphere dominated, on the positive side, by high product quality, high product innovation, high flexibility, a very low return rate of failed products, a flat organization structure and an involving style of leadership. On the opposite pole it was dominated by a lack of systematism, assessment, monitoring, marketing speculations and feasibility calculation. Furthermore, the sphere was dictated by asymmetric supplier-customer relationships and negotiation power leading, among other possible factors, to meager profitability.

Key Words: Dynamic capability, innovation performance, profitability, SME's, case study

Introduction

Researchers as well as practitioners agree that innovation is a precondition for sustainable competitive advantage (Im and Workman, 2004; Teece, 2007; Shang et al., 2009). Companies compete in a globalized world where market conditions are changing rapidly and the need for updated market and technological knowledge is important. Due to this, it is argued that companies need to develop dynamic capabilities which make them able to adjust their technology and their market offerings and thereby create ownership of difficult to replicate resources and competencies (Teece and Pisano, 1994; Teece, 2007). Examining the body of literature reveals that the majority of contributions are theoretical and conceptual, departing from a one-sided paradigmatic research tradition and further, that the generic research motivation is related to firm performance and profitability. Research questions such as, how can competitive advantage within a firm be achieved and can it be sustained over time? (Eisenhardt & Martin, 2000), further, '*Why are firms different*? and *why do firms in the same industry perform differently?*' (Zott, 2003: 97), or '*How can product innovations generate organizational renewal*?' (Danneels, 2002: 1095), capture the essence of initial contemplations that have fueled research in this field.

In the earlier contributions of dynamic capabilities the innovation concept is not given much attention. However, Danneels (2002) has investigated how product innovation contributes to the renewal of the firm through its dynamic capabilities, with point of departure in an inductive qualitative research approach, collecting data through interviews, observations, and documents. The main focus on dynamic capabilities has been on a firm analytical level targeting the performance of enterprises operating in fast changing technological environments, changing customers and high level of competition (Teece et al. 1997; Danneels, 2002; Zahra et al., 2006). Lin et al., (2012), develops a research framework focusing on

the relationship between market orientation, customer knowledge management, and market knowledge and product innovation from a dynamic capabilities perspective. They found that higher degrees of knowledge about customer management and the market lead to better product innovation performance. They applied quantitative research design developing hypotheses that were tested via the structural equation model (Jöreskog & Sörborg, 1996).

Nonetheless, even though some research has focused on innovation the area still needs enlightenment particularly departing from a qualitative research posture. Moreover, the relationship between dynamic capabilities and product innovation performance and profitability has not been addressed yet, let alone, in small and medium enterprises, that have particular characteristics compared to large enterprises. Further, note that the concept of dynamic capabilities is motivated in creating a better theory of firm performance (Teece et al., 1997;) and thus profitability. We aim to address that relationship empirically and explorative in this study applying a qualitative research approach. More specifically, do dynamic capabilities yield high innovation performance and profitability in SME's as we would expect?

Literature review

The notion of dynamic capabilities was first coined by Teece and Pisano in 1994 and elaborated further in 1997 in order to overcome the shortcomings related to understanding how companies create competitive advantage. Teece et al. draw primarily on Wernerfelt (1984) and Hansen & Wernerfelt (1989), resource-based view of the firm and Schumpeter's (1934; 1942) classic work that emphasizes the need for organizational innovation and renewal. The discussion on competitive advantage was in the 1980'ies mainly departing from the strategy literature such as the competitive forces approach developed by Porter (1980) and the strategic conflict approach (Shapiro, 1989). Within the first mentioned approach it was discussed how a company analyzes its position within an industry and decides how it can defend itself from the competitive forces shaping the industry /environment.

The second approach draws on game theory to understand and analyze how strategic moves can be initiated to influence the rivalry among the competitors. Both approaches contribute with an understanding of competitive advantage as something that can be created through effective strategies and focus seemed to be on how companies can "best play the game" to prevent competition from entering. The shortcomings of the strategy conflict or game theory perspective relate to a too simplistic understanding that market success is created as a result of strategic games which have been argued not to be the actual case (Dierickx and Cool, 1989). To overcome this, Teece et al., (1997) argue that the resource-based view brings a more nuanced understanding of how companies can create competitive advantage. Since the resource-based view focuses on the creation of firm specific and difficult to imitate resources the value is created in the upstream activities of the market place.

This focus is argued to deliver better market offerings resulting from the value created in converting key resources into distinct or cheaper products or services. However, focusing on building and exploiting firm specific competences results in a less flexible and adaptable organization. This means that companies often have "sticky" resource bundles which cannot easily be converted into something else. Thus, flexibility decreases and makes it more difficult to adjust to changing market environments. Therefore, the concept of dynamic capabilities recognizing that especially companies operating in changing environments need to be able to develop a dynamic view perspective on the resources and competences in order to create competitive advantage is developed (Teece et. al., 1997; 2007; Iansiti and Clark, 1994). So what are dynamic capabilities more specifically? How can the concept be defined? Teece et al. (1997: 516), define dynamic capabilities as, '*The firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments'*. Nevertheless, there exist numerous definitions of dynamic capabilities. However, consensus in the field appears to agree upon dynamic capabilities, as an internal process with the purpose of modifying the resource of a given organization (Ambrosini & Bowman, 2009).

In order to better dissection the body of literature on dynamic capabilities we develop a classification schema which is one of the methodological contributions of this paper. This novel schema demands some elaboration, which follows. The literature review reveals inter alia that the main part of research in dynamic capabilities departs from a logical-positivistic paradigmatic perspective, in contrast, to, naturalistic explorative paradigmatic stand (Patton, 1990). As noted by Layder (1993), the logical-positivistic approach utilizes quantitative and experimental techniques to deductively test hypotheses that depart from theory. The aim is to create nomothetic knowledge that can be generalized to other contexts that the one being studied. On the opposite pole, Patton (1990) elaborates that the naturalistic explorative

paradigm uses qualitative naturalistic methods to create a holistic and context dependent understanding of humans' actions and thoughts. The aim is to create idiographic knowledge that is specific to the particular context being studied. As can be realized based on the above mentioned elaboration on axioms, different knowledge will result pending on the paradigmatic position that guide a given research design. If the majority of research in dynamic capabilities departs from a positivistic perspective, a study departing from a more inductive approach will in itself be a contribution because it will lead to a more "thick" and context dependent understanding of dynamic capabilities. The research strategy of this study is inductive and qualitative in nature. This will be further elaborated in the methodology section below. Table 1 below offers an enlightenment of the dimensions mentioned and is used to classify literature on dynamic capabilities. Note that the classification system is generic and thus can be applied independently of research purpose (i.e. dynamic capabilities). Further it should be noted that the classification schema operates at the poles of paradigmatic postures for the sake of exemplification. Hence, there subsists many paradigmatic positions and the contours between epistemologies are becoming increasingly more indistinct.

Table 1 Paradigmatic classification schema

Paradigm (basic believe system)
Ontology: *The nature of reality, i.e. what is reality?* (a) Axioms, (constructivism versus realism) (b) Focus of research (qualitative versus quantitative) (c) Quality standards (subjectivity versus objectivity)
Epistemology: *How do researchers (i.e. particular group) comprehend reality?* (d) Research design (Evolving emergent versus structured) (e) Goal of investigation (understanding versus prediction)
Methodology: *How do we retrieve knowledge?* (f) Data (word, pictures, movies versus numbers) (g) Data collecting (interview, observation, documents versus experiment, surveys) (h) Analysis (inductive, expand or construct theory versus deductive, test of theory) (i) Findings (holistic, thick versus precise narrow)
Symbols used to classify literature: ■ Adjacent to a constructivist posture □ Adjacent to a positivist posture ● Adjacent to a neo positivist posture ♦ Not addressed in study / paper

Tables 2 below summarize the dissection of literature on dynamic capabilities. More specifically selected papers are assessed based on the purpose of the particular study and on classification symbols (a) to (i) elaborated in table 1. Finally, the last column captures the essential construct that fuels a given study.

Table 2 Summarization of review

Author/ **Year**	**Purpose**	**Classification Symbols**	**Generic research stream**
Lin et al., (2012)	*'To explore the mediating effects of market orientation, market knowledge and customer knowledge management on product innovation performance..'* (p.42)	□ (a,b,c, d,e,f,g,h,i)	Product innovation performance (integration)
Molina et al. (2010)	*'To study empirically the influence of managerial perceptions of the*	□ (a,b,c, d,e,f,g,h,i)	Perception, learning & DC

	environment of DC generation' (p. 1355)		
Shang et al. (2009)	"*Aims at a deeper understanding of the alignment between DC and knowledge management approach*" (P. 323)	■ (a,b,e,f,g) ● (h,i) □ (d) ♦ (c)	Service innovation, DC (Integration)
O'Connor (2008)	'*..Is to leverage systems theory and recent advances in DC theory to increase our understanding of how firms can evolve a capability for enabling major innovations'* (p. 314)	□ (a,d,e) ● (f,g,h,i) ♦ (b,c)	Innovation performance, DC, effectiveness of DC, system approach
Teece (2007)	'*..To specify the nature and microfoundations of the capabilities necessary to sustain superior enterprise performance..'*	□ (a,d) ■ (f,g,h,i) ● (e) ♦ (b,c)	Firm performance (Integration)
Im & Workman (2004)	'*To examine the mediating role of new products and marketing programs creativity between market orientation and NP success*' (p.114).	□ (a,b,c, d,e,f,g,h,i)	Product innovation performance
Makadok (2001)	'*To examine the nature of the interaction between resource-picking and capability building in relation to rent-creation activities'* (p. 396)	□ (a,b,d,e,f,h) ♦ (c,g,i)	Firm performance / profitability (integration)
Teece et al. (1997)	'*To explain firm-level success and failure'*(p. 509)	□ (a,d,e) ● (b,f.g,i) ■ (h) ♦ (c)	Firm performance (integration)
Hansen & Wernerfelt (1989)	'*To begin such an integrated examination of firm profitability"*(p.509)	□ (a,b,c, d,e,f,g,h,i)	Firm performance (integration)
Wernerfelt (1984)	'*To develop some simple economic tools for analyzing a firm's resource position..*' (p. 171)	□ (a,b,d,e,i) ● (f,h) ♦ (c,g)	Firm profitability (Resource perspective)

Several realisations can be conveyed based on table 2 above. First, that the main part of studies conducted in dynamic capabilities departs from a positivistic posture (Lin et al., 2012; Molina et al., 2010; Luca et al., 2010; Teece, 2007; Im & Workman, 2004) to mention some. Exceptions, albeit, exist, namely Shang et al., 2009 that aims at a 'deeper understanding' which is consistent with the proclaimed domain of this specific studies paradigmatic position. Shang et al., 2009 undertakes a case study to create a deeper

understanding of the configuration between dynamic capabilities and knowledge management approach. They argue that dynamic capabilities could be a precursor for knowledge management and this will sustain service innovation. Second that the earlier 'research' contributions in dynamic capabilities are almost exclusively theoretical and conceptual in nature (Wernerfelt, 1984; Teece et al., 1997; Makadok, 2001) to mention some. That is, that the foundation of knowledge shared by a group of researchers, i.e. a paradigm, is not backed by empirical investigations. An exception, however, is (Hansen & Wernerfelt, 1989). Molina et al., (2010, p. 1355) vents adjacent to the imbalance between theoretical and empirical contributions that, "*The proliferation of theoretical papers has produced a disconnected body of research*". In the more present body of literature, that is, 2005 and onwards an increase in empirical papers, however, befalls for example, (Lin et al., 2012; Molina et al., 2010; Luca et al., 2010; Shang et al., 2009; Zott & Amit, 2008; Zawislak et al., 2013). Nonetheless, the majority of published papers are theoretical and the need for more empirical based knowledge is still unfulfilled. Third, that generic research interested is related to the performance of an enterprise operating in a volatile internal and external environment and to the performance of product and service innovation because a high performance is presumed related to profitability on the firm level. More specifically, the generic study objects can be condensed to four dimensions namely, (1) Firm performance (Lin et al. 2012; Teece, 2007), (2) firm profitability (Makadok, 2001), (3) product & service innovation (Lin et al., 2012; Im & Workman, 2004), (4) and lastly, that an integration perspective is employed (Zott, 2003; Teece et al., 1997).

Paradigmatic stand of the study and methodology

A case study was undertaken, i.e. a qualitative paradigmatic posture. It was designed as a summation design 2 (Grünbaum, 2007). That is, a design with numerous unit of analysis achieved by studying one unit of analysis in multiple cases. More specifically, the unit of analysis was key informants (Gilchrist & Williams, 1999) constituting the top management with the owner and the top management (e.g. the C-level, CEO, CFO, and COO), in small and medium sized manufacturing companies situated in Denmark and Germany, operating in volatile environment. The rationale behind the summation design 2 is to enhance transferability of inferences and to increase robustness of findings (Herriott & Firestone, 1983; Eisenhardt, 1989), drawing on a replication logic (literal/theoretical), (Yin, 1994). The key informants were thus purposeful selected according to Kuzel, 1999; Morse, 1989.

More specifically, we used 4 sampling technique, namely a. 'theory based', b. 'intensity'. C. 'convenience' (Patton, 1990: 169-183) and c. 'learning intense' (Stake, 2000: 446). We developed a rather structured interview guide based on theory related to the purpose of our investigation. First, we were interested in back ground data of the company, i.e. name, home country, contact person (key informant), function of contact person, organizational structure, number of employees, financial key figures, trends, development and level et cetera, second, we probed about 'innovation input indicators' activities, i.e. R&D level, R&D spending, number of employees involved in R&D and engineering, level of education among employees et cetera. Third, we probed about 'innovation output indicators', i.e. number of patents and or copyrights within the last three years. Did the development of new product lead to new business areas? How much of the total revenues were generated based on new or substantially modified products within the last three year et cetera. Fourth, we were interested in process indicators of innovation, that is, strategy and environment, more specifically, issues related to customers, competitors, technology, innovation strategy, concept development.

Furthermore, we asked about resourcing and implementation, that is, resource commitment and funding, knowledge, product/service development, project management, change management. Additionally, we focused on organizational structure and culture, more specifically, formal structure, style of leadership, entrepreneurial climate, transparency and communication, incentives and rewarding. Lastly, we probed about learning, more specifically, advanced education, reflecting and reviewing, codifying and documentation, sharing experience, external learning.

We thus applied two data generation techniques namely, the qualitative interview and written documents method (Marshall & Rossmann, 1989; Yin, 1994) leaving the third known method, observation, out. Specifically, we conducted seventeen interviews in six case companies during a thirteen month period. We have in average spent four hours in each company. Fifteen informants were interview. Of the seventeen interviews six were follow up interviews, that is, clarification, check of inferences et cetera. We analyzed the rather comprehensive empirical data by using a pattern matching logic as emphasized by Yin (1994: 106-109) and Miles & Huberman (1994: 69-72).

More specifically, we are looking for identical patterns across the cases and for patterns that are related to our study purpose. Finally to secure the truth value of our findings, that is, conformability or objectively, i.e. a neutral position of the researcher, we recorded all interviews and made a partial transcription, we made notes during the interviews and immediately after the interviews, we have strived to create a chain of evidence (Yin, 1994: 34) in the analysis of data, we have conducted member check (Guba, 1981: 316), i.e. presented inferences to informants for approval, discussion and possible amendment, and finally we have conducted several follow up interviews based on the member check. We did this to give other researchers the possibility to confirm our data collection, interpretations and presentation of findings. To secure auditability or reliability, that is, to which degree other researchers can replicate the findings of the study, we have developed a case study database (Yin, 1994) comprising documents (i.e. interview notes, paper articles, consultancy rapport etc.) about each company and number material (i.e. innovation budgets, annual account, etc.).

In addition, we have developed an interview guide based on both theory and empiricism (Eisenhardt, 1989) and further applied it in all the companies. To secure the authenticity or trustworthiness of the findings, we have conducted individually company analysis Patton, (1990: 274-275) and secondly we have worked with rival propositions (Webb et al., 1981: 46-48) throughout the study. Lastly, to secure transferability or external validity (Campbell & Stanley, 1983), we have made holistic content dependent descriptions, or as Geertz (1973: 5) coins it, '*Thick descriptions'*. Furthermore, we have crafted a multi-case design and as mentioned conducted separate analysis on each case giving us the possibility to identify idiosyncratic aspects and seeing them in perspective. Table 3 below offers a summation of our methodology and extent of field activity.

Table 3 Methods

Research design	**Unit of analysis**	**Sampling**	**Data collecting**	**Data analysis**	**Truth value**
Multi-case design	Top management	Theory based Intensity Convenience Learning intense	Interviews Documents	Pattern matching logic	Conformability Auditability Authenticity Transferability
Field activity	17 interviews in six case firms	15 key informants probed	App 4 hours in each firm		

Findings

We are as mentioned interested in the relationship between dynamic capabilities, innovation performance and profitability (i.e. net profits). Hence, we have investigated profitability in the case companies and innovation performance as a consequence of the extent of dynamic capabilities. We identified high innovation performance in several of the case companies.

Positive patterns in high innovation performance case companies

A string of positive traits subsisted in all the case firms. Thus, informants voiced that they considered their innovation performance as above average compared to their competitors. They build the assessment more on soft facts than on hard facts obtained during systematic measurements. The soft facts constituted feelings based on many years of experience and small talk conversations with customers and competitors for example during informal meeting on trade fairs.

Other identical characteristics were a low return rate on product failure and thus high product quality. They, moreover, had a close relationship with their customers characterized by trust, openness and willingness to share information and to cooperate. Furthermore, the customer relationships had a time span from 5 to 12 years. As one informant noted related to information sharing and openness,

"*Calculations, that is, it is, we have always done that…. they know our costs and well thereby also our profit margin"*.

Additionally, they systematically used forecast methods, i.e. role play and expert assessments on the qualitative side and data mining and extrapolation based models on the quantitative side, to predict future customer needs. The assessment of employees' knowledge, education level, cooperation and communication skills etc., was very positive. This was also reflected in level of education of the employees. They typically hold a master degree in science and engineering. A high level of employee satisfaction was recorded primarily as a consequence of a high degree of influence on the planning and executing of ones working obligations. Likewise, customer feedback was systematically stored and used in relation with modifications and product development. Innovation processes were often customer driven. As one informant puts it,

"*It is more the rule that the exception, that our customers simply, has a very clear picture of what they want from us, actually very detailed, often I wonder why they do not it themselves.."*

Further, they had a high knowledge of their close competitors and the dynamics of the market. This high knowledge level, albeit, was not applied to facilitate a cooperating with the competitors, on the contrary, they had no cooperation with competitors (i.e. arm's length relationship). Moving on to production technology, they possessed a very specific and high knowledge of the firm's core technology which they further believed to be sustainable. As one informant said,

"*Well production technology that is my baby, I mean, we all love machines and the physical creation process. You must remember that was the main reason for most of us to go to uni (university). Not because of the boring books / lectures… no offence… but because we could split machines and see how it really worked*"

Moreover, they systematically used tool-based methods to assess the development of existing and emerging technologies (i.e. patent analysis and technological life-cycles models etc.). Regarding innovation strategy, there was a strong feeling of coherence between the future developments of the company through innovation.

Gloomy patterns in high innovation performance case firms

In contrast, they only to a lesser degree define innovation goals, i.e. time, cost, quality, beforehand of the innovation process. More startling, they did not check systematically the financial or technical risk or profitability of innovations projects. Courses of actions, systematics etc. was typically stored in the minds (i.e. tacit knowledge) of few key employees making the case firms more dependent on employee retention. This was a firm pattern displayed in all case companies. In the same vein, they did not systematically search for new ideas, nor did they use methods (for example, creativity methods) for developing new ideas. Furthermore, they did not use clear criteria for assessing and prioritizing new ideas. As one informant noted,

"*No, not really, you see we know the customers and they know us, they simple request what they wants. There is no time at all to create new stuff.. we are much too busy*.."

Concerning funding, they had no access or cooperation with governmental institutions nor did they have a systematical cooperation with universities to help develop their knowledge base. They did not, intra organizationally see possibilities to fund unexpected or sudden arising product development opportunities, as good. One informant noted,

"*Well it is uphill, rather strange I find it, it is not the first time we undertake a development project, you know, actually we do it all the time, nevertheless getting money, funding is hard*.."

Likewise, they found the funding structure for product development, inflexible. That is, employer resources and other resources related to the daily operation of the firms were indeed present. More ad hoc needs such as a purchases, like specialized consulting knowledge, related to a given development project did, however, not have a separated funding reserve. Nor were any clear guidelines offered related to purchasing, for example lists of typical purchases and persons in charge related to a certain type of development projects. Thus, there were no clear organization structure and each buy and buying decision had to advance through the "normal" organization structure, leading to a protracted, inflexible and bureaucratic process. Summing up, a formal system handling the management of development projects did not exist in the case companies. Further, they were not familiar with methods to identify strategies of competitors. Nor the one we probed fore (i.e. scenarios, portfolio, five forces etc.) or others that they were able to mention. More specifically, they did not scan the competitive environment or conduct ongoing and systematic analysis of the competitors. Likewise, they did not analysis the competitors' products,

technology, reputation, distribution channels and relative market share in order to access the impact of the competitors offering on the case companies own portfolio of services and products.

Regarding product development, the findings were somewhat ambiguous, that is, the inter department (i.e. marketing, design, engineering etc.) cooperation was high in most case companies with some exceptions on the opposite pole. Moving on to project and change management, some clear patterns emerged. Unfortunately, the innovation projects were almost never completed on time. Nor were the different roles of members clear and well communicated. Moreover, progress of innovation projects was not assessed and monitored. The decision making process, in contrast, within the innovation project, was short and flexible. Note from the above-mentioned descriptions of findings that both expected and unexpected patterns across the case companies prevail. That is, we find unexpected patterns that are inconsistent with theoretical predictions. The generic characteristics are summated in table 4 below divided in positive and negative individualities.

Table 4 Positive versus gloomy traits

Positive traits	*Gloomy traits*
➢ Innovation performance above average ➢ Low rate on product failure ➢ Close customer relationship ➢ Systematically use of forecast methods to predict customer needs ➢ Systematically storage of customer feedback used to product development ➢ Customer driven innovation ➢ Systematically use of tool-based methods to assess technology ➢ A high coherence between future firm development trough innovation ➢ High knowledge level of firms core technology ➢ Short and efficient decision making process	➢ Lack of systematism / tacit knowledge ➢ Lack of assessment ➢ Lack of monitoring ➢ Lack of feasibility calculations ➢ Lack of liquidity calculations ➢ Lack of profitability calculations ➢ Lack of budget planning Lack of marketing speculations, this combined with, asymmetric supplier-buyer relationship and imbalance in negotiation power, is a dangerous cocktail

What about profitability? It was surprisingly not possible to establish a positive relationship between innovation performance and profitability or between dynamic capabilities and profitability in the case firms. More specifically, the case firms experienced in the last three year a decrease in gross profit in the interval 15 percent to 60 percent, a decrease in profit before net financials (i.e. EBIT) in the interval of 78 percent to 133 percent, a decrease in net profits in the interval of 81 percent to 140 percent. The ratios for the latest annual report (i.e. 2011) illustrated a return on assets in the interval 3 percent to minus 9,8 percent and a return of equity in the interval 1,3 percent to minus 65,4 percent, that is, in sum, a rather disturbing development. Table 5 below summates the figures related to profits.

Table 5 Profitability figures

Results & Ratios	*Development last 3 years percent*
Gross profit	Minus **15** % to **60** %
Profit before Interest & Tax (EBIT)	Minus **78** % to **133** %
Net profits	Minus **81** % to **140** %
Return of assets (ROA)	Plus **3** % to minus **9,8** %
Return of equity(ROE)	Minus **1,3** % to **65,4** %

It could be argued that the worldwide financial crisis that started with the crack of Lehman Brothers Holding Inc. on September 15, 2008 could be the main reason for the deteriorating of the activity level in general and this thus indirectly has caused the financial development in the case companies. However, the very core of the DC concept is the ability to react swiftly and efficiently to changes in the business environment and since the financial crisis has lasted for some years now we had expected to find a positive relationship between DC and profitability.

Discussion

How can the profitability paradox be explained? Why is that the case? A picture emerges that could offer preliminary explanation, namely, despite high flexibility, high product quality and high degree of renewal of products there was distinct lack of systematism, assessment, monitoring, feasibility calculation, liquidity and profitability calculations and budget planning. A more intuitive process prevails which is not based on key figures and numbers.

The more formal foundation of decision making thus lacks input of key account numbers, calculation of contribution margins and budget planning etc. Likewise, integration of marketing speculation was meager. In essence, they are unable to answer questions like, what is the market for this new product, what are the development cost of this innovation project, what need do we fulfill with this product, what are the export potential for this product, what are the cost and benefits of a given innovation project.

In a nutshell, contributions from marketing and accounting is surprisingly underrepresented in the strategic decision making process related to innovation strategy, concept development, commitment and funding of resources, product development, project and change management. This, we speculate, can be attributed to the size of the companies. Take, for example, the initial decision of starting an innovation project and the control and evaluation of the process. It was often made by one individual, i.e. owner or CEO, based on tacit knowledge. For example former experience, or this is an important customer, thus we have to 'solve' this particular problem for them. Often (or always) the supplier-buyer relationship was asymmetric were the case firms constitutes the much smaller part (i.e. the supplier). Hence, an imbalance in negotiation power was distinct. Renewal of products thus had many elements of particularity related to few or one customer making it difficult to profit from the novelty of the product in other business areas. Furthermore, the concentration of tacit knowledge and low degree of more formal documentation of procedures made the case companies particular vulnerable if key employees left the organization. Put in a more colorful manner, the competencies were butter thin in some areas more rife than in others (i.e. marketing and internal accounting).

Practical implications

The importance of an updated and well-structured information decision system should not be underestimated. It was a clear lack in the case firms of this investigation. Based on the findings and subsequent discussion, we speculate, that the incomplete information systems in the small and medium sized case firms is the main contribution factor to the unfortunate development in profitability and key figures. Consequently the management in the case firms and in firms with identical characteristics would benefit from posing the following generic strategic questions in table 6 below,

Table 6 Generic Strategic Questions

GS questions	*Theoretical concepts*
➢ Is there a market for the new product/service? ➢ What is the size of the market? ➢ What is the export potential of the market? ➢ Which need do we cover with the new product/service? ➢ What is the expected life time of the new product/service? ➢ Can we reuse modules of an innovation project in future project? ➢ What is the ideal buyer-seller relationship in this market? ➢ What are the relationship drivers in this market?	The marketing function, i.e. business to business, international marketing, relationship marketing
➢ What are the development cost of a given innovation project? ➢ What are the cost & benefit of a given innovation project? ➢ What is the contribution margin of the product/service? ➢ Can we measure all the cost associated with the development? ➢ Can we identified all cost related to an innovation project? ➢ Can we divide all the cost in variable and fixed costs? ➢ What is the "correct" price of the product/service? ➢ Do we internally have an influence on price setting?	The accounting function, i.e. internal accounting
➢ Are there any competitors on the "new" market? ➢ What are the strength and weakness of the competitors? ➢ What are the entry and exit barriers to the market? ➢ What is the degree of competitive level in this market? ➢ Do we the correct capabilities to craft a superior strategy?	Strategy

Conclusion and future research

In this case study it was possible to demonstrate a positive relationship between dynamic capabilities and innovation performance in small and medium sized technical enterprises operation in volatile environment. However and rather surprisingly, we could not establish any positive relationship between innovation performance and profitability between dynamic capabilities and profitability even though many elements of DC were present. We speculate that this can be attributed to the size of the participating case firms in this study. More specifically, that imbalanced supplier-customer relationship prevailed, creating a skew negotiation power combined with a concentration of decision making with very few individuals in the case firms in combination with extensive use of tacit knowledge and a low degree of systematism, assessment, feasibility calculations and lastly, few marketing oriented speculations.

Directions for future research could be more empirically based investigations from a different paradigmatic posture on the relationship between dynamic capabilities and profitability. Furthermore, the role of marketing and internal accounting in firms heavily influenced by an 'engineering and technology' culture additionally needs more clarification. Moreover, it would be interesting to clarify the relationship between profitability of SME's with a low degree of DC and low innovation performance as we would expect those firms to have a more problematic development in the key financial figures.

Finally, since we speculate that firm size plays an important role it would be interesting to investigate a large company regarding the DC and profitability relationship. That is, we believe that large companies will possess a more complete portfolio of competence and thus have a better knowledge foundation to make the right strategic decisions instead of merely reacting based on intuitions. A SME hence needs to pay close attention to its portfolio of competences. If it is incomplete leading to a "broken" value chain they need to deal with this matter. That is, training and hiring the right employees'. The results of this study suggest that especially competences in marketing and accounting could be an area that needs to be reinforced in small and medium sized technical manufacturing enterprises.

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