The Innovation Process in Small Firms: Maintaining the Entrepreneurial Edge

Introduction

Although innovation is considered as the key attribute of small businesses' long-term success (Clark, Staunton, & Rogers, 1993; Rosenbusch, Brinckmann, & Bausch, 2011), actual innovation output is only realized by a very small percentage of them (Scozzi, Garavelli, & Crowston, 2005). This paper extends our knowledge with regards to this "SME-innovation paradox" (Ortega-Argilés, Vivarelli, & Voigt, 2009), by opening up the black "behavioral" box in between structural advantages and disadvantages of SMEs and innovation outcomes. More specifically, we study the different steps of the innovation process of successful small businesses to evaluate how entrepreneurs transfer innovation inputs into successful outputs. Starting from resource-based theory (Barney, 1991), we argue that it is not the resources itself, but instead how entrepreneurs craft them into capabilities, that will result in sustainable innovation advantages. Next, we compare the findings on six successful SMEs to those on six SMEs that had the potential for innovation but not the results. This comparison enables us to highlight how maintaining the entrepreneurial edge stimulates successful innovation practices in SMEs.

This qualitative paper contributes to the literature in two ways. First, building on existing academic knowledge on innovation in SMEs, we discuss the different phases of the innovation process of successful SMEs. Secondly, for each of the critical steps in the innovation process, we illustrate how entrepreneurs creatively craft strategic decisions and link them to human resource investments and capabilities.

Conceptual Development

Innovation, defined as “any new business endeavor, in whatever form, that yield a monetary result”, is undertaken by SMEs in order to find new ways of increasing their bottom line results (Rogers, 1998). “Newness to the world” in this setting is less of a factor as “newness to the organization” (Massa & Testa, 2008). The notion that innovation is not a single definable element but instead a wide spread multi-faceted phenomenon gives rise to the thought that simple models might not capture the full extent of innovation. Traditionally, academic research has treated innovation success mainly as a static outcome variable. Studies focusing on the antecedents of innovation success (García-Morales, Llorens-Montes, & Verdú-Jover, 2006; Jansen, Van Den Bosch, & Volberda, 2006; Martins & Terblanche, 2003) have been abundant and their findings are well documented. However this treatment of innovation success as a static variable, limits our understanding of innovation, especially in relation to the actual realization of a firm’s innovation potential (Edwards, Delbridge, & Munday, 2005; Gassmann, 2006). Instead, a process-based approach is required to understand the subtle details of innovation by looking at the way innovation is created, and the processes and behaviors involved in its conception.

Innovation processes in organizations have been a popular topic in academic literature. Researchers have focused on theory-based visualizations of the innovation process (Rothwell, 1994) and investigated distinct factors of the aforementioned process such as the idea generation phase (Ardichvili, Cardozo, & Ray, 2003; Baron, 2006; Lumpkin, Hills, & Shrader, 2004), the innovation implementation phase (Fidler & Johnson, 1984; Klein & Sorra, 1996; Repenning, 2002), or support activities in the innovation process (Basadur & Gelade, 2006; Pearce & Ensley, 2004). The idea generation phase is described in more detail in the work of Lumpkin et al. (2004), and they distinguish five different stages which lead to the creation of an opportunity. Stage 1 to 3 (preparation, incubation and insight) deal with idea generation or opportunity recognition, while both evaluation and elaboration are a first check

whether the external market and the internal organization are suited for the opportunity to be exploited. Along the same lines are the works of Ardichvili et al. (2003) who emphasize the importance of entrepreneurial alertness, prior experience and the ability to recognize opportunities, and Repenning (2002) who concludes that that three elements play a key role in innovation implementation, namely reversion, regeneration and motivation threshold. Although insightful, these studies fail to offer an integrated explanation for the reasons why seemingly similar SMEs obtain different results in their innovation endeavors. A more detailed analysis of the behaviors of entrepreneurs during the full process is needed to fully grasp how SMEs sustain their entrepreneurial edge.

Sample and Method

The sample in this paper consists out of 12 manufacturing SMEs. Six of these are nominees or winners of the "Most Innovative SME" challenge organized by the Province of Limburg in the Netherlands. Judging criteria are development, creativity, risk-taking innovative performance as well as continuity, reputation and outstanding HRM practices. The other six SMEs come from a program called "Future companies". In this program SMEs are identified which have the potential for innovation but have not capitalized on this potential yet. The database of these "Future companies" consists of approximately 750 companies. We selected six companies matching key characteristics (industry and size) from our six winners. Consultants managing these "Future companies" were asked to verify if the match was appropriate. In each of these SMEs we interviewed individuals involved in the innovation process. The interviews lasted between 50 minutes and two hours. To present the data results, we combine the visual mapping technique as advocated by Langley (1999), with temporal bracketing and narratives. In this way, we can first make a visual map of the innovation process of the six successful SMEs, and afterwards use brackets and narratives to discuss the

behaviors of the entrepreneurs, both successful and not yet successful in their innovation endeavors.

Results

The innovation process

When conducting our interviews it quickly became clear that SME owners/entrepreneurs distinguish different phases in their innovation process which all have specific challenges. Figure 1 provides an overview of the four phases of the innovation process: Idea Generation, Development, Production and Completion. Table 1 describes the behavioral aspects and specific events important in the four phases of the process.

--- *Insert Figure1 and Table 1 over here* ---

Innovation behaviors

As the process model described in Figure 1 is deducted from the interviews with the six successful entrepreneurs, we have to check if the model is not generic for all SMEs, independent of their success in innovation outcomes. A comparison of this model with that of the innovation process of the SME's that have not been successful innovators yet , reveals major differences in behavior within the different innovation stages for the entrepreneurs in the less successful innovation group. Within the idea generation process, we notice that these entrepreneurs are less ambitious in setting innovation goals. They seem to derive their identity as an entrepreneur from what the company currently is instead of what the company could achieve. Moreover, whereas the successful entrepreneurs use time as a precious resource, and try to create extra time for strategic thinking about innovation, the entrepreneurs in the less successful innovation group are mainly involved in day-to-day operational activities. They

indicate that “the lack of time” is preventing them to generate new ideas in their companies. With regards to the development phase, entrepreneurs who are not yet successful innovators are much more focused on and involved in the craftsmanship or technological capabilities of their company, and less on the strategic or management aspects of the business. Accepting that innovation is a long-term process with an uncertain outcome seems to be hard for them. They are also less inclined than the successful entrepreneurs to engage in cooperation activities as they focus and rely on their own competencies. In the production stage, this difference is further translated into a management style in the non-successful SMEs in which the entrepreneur is the central actor who initiates and controls the full process. Delegation and stimulating pro-activeness amongst the employees, as their successful counterparts are doing, is lacking.

Conclusion

The paper gives rise to the thought that the difference in innovation success in seemingly similar SMEs can be explained by how organizations creatively craft their resources (human and financial) into core innovation capabilities. Based on these capabilities, they also seem to be able to change their attitudes towards their external environment and possible cooperation opportunities within that environment. As such this paper furthers our understanding of the behavioral factors important in the innovation process of SMEs that allow them to maintain their entrepreneurial edge. As such we make a solid contribution to the literature on the innovation process in SMEs

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Tables and Figures

Figure 1: Innovation Process Model

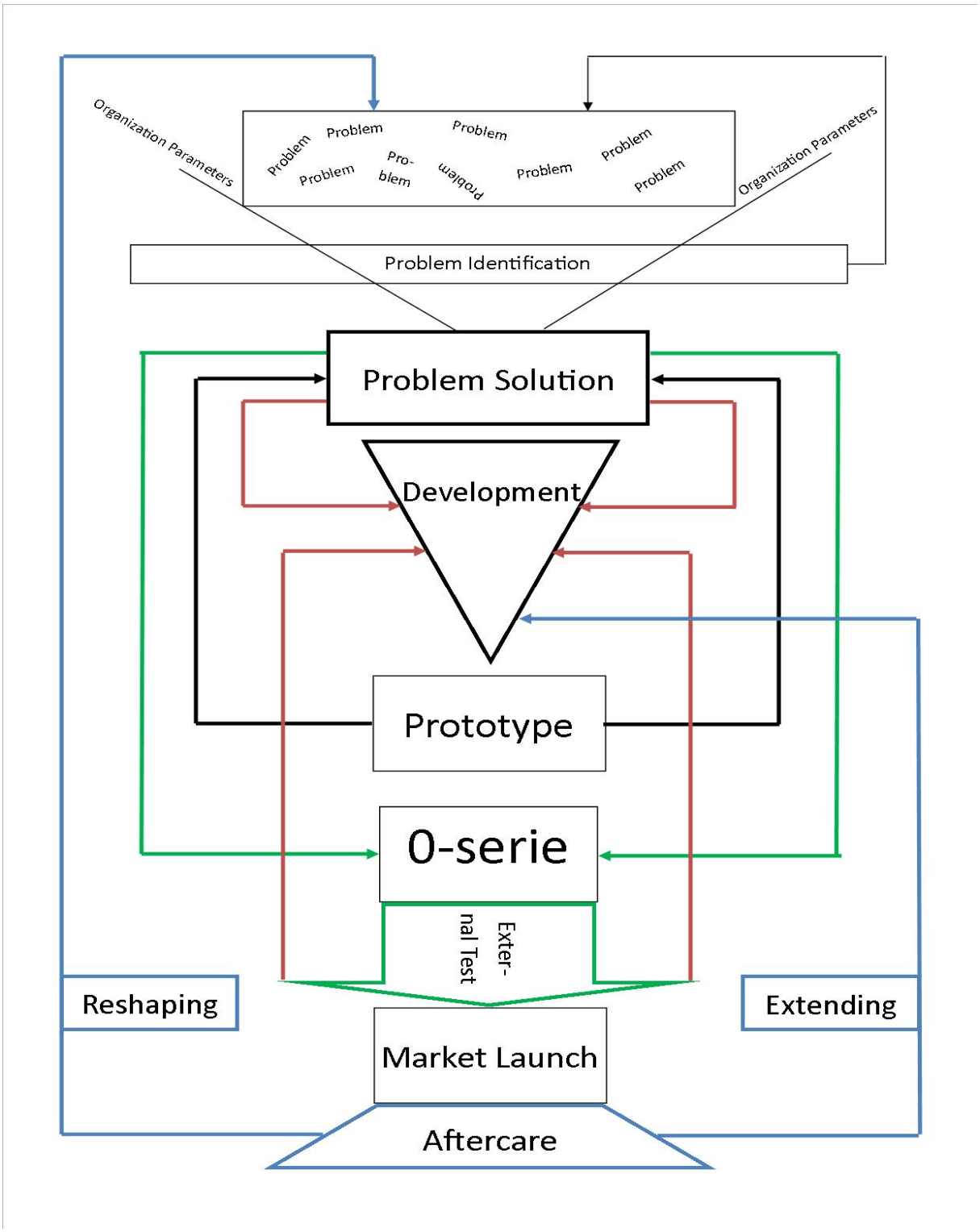

Table 1: Description of the required approach in the four phases of the innovation process in the various domains

	Phases			
	Idea Generation	Development	Production	Completion
	4 stages: Problem Recognition Problem Definition Organizational Parameters Problem Solution	3 stages: Development Prototype 0-series	2 stages: Market Launch After-sales support	2 stages: Revising Reshaping
Domains				
Human Resources	The entrepreneur is the main stakeholder, supported by a key set of employees again selected by the entrepreneur. The entrepreneur creates an innovative mind-set within the organization by making time for innovation and an agenda-setting policy detailing innovation priorities.	Key innovation personnel, most notably the innovation manager, takes the reigns of the innovation process. The entrepreneur assumes a more supervising role, involving him or herself only in major decisions. Next to this the entrepreneur in cohort with the innovation manager becomes responsible for attaining and utilizing external support.	A shift in personnel can often be observed in this event. As development draws to a close other qualities are required form the actors involved in the innovation process. As such development skills are less needed and need to be replaced by organizational skills able to get the product out into the world and deal and recognize and can interpret customer feedback.	In this event the burden of innovation shifts back to the entrepreneur who has to possess inspirational qualities to convince his organization and its partners to recommit to new innovation projects.
Financial Resources	The need for financial resources on behalf of the intended process at this point is limited. However similar to human resources the organization should free up financial resources to be allocated to searching for new problems and opportunities. Therefore certain financial slack is imperative.	The demand on financial resources in this stage becomes rather large. Innovation in itself is costly endeavor and as such the accumulation of sufficient financial resources becomes imperative. Acces to capital is however no main hurdle in the innovation process	Although costs associated with the actual development of the product have come to a minimum, setting up production facilities and organizing the logistical operation around getting the product out in the world still requires a substantial investment. Here ROI needs to manifest itself	Abundance of financial resources makes it both easier and more difficult to re-engage in innovation activities. Easier because of financial slack, more difficult as the organization feels there is more to lose when re-engaging in a perceived risky project.
Cooperation	Cooperation in this stage is only sparsely used. Cooperative idea generation is even discouraged. The exception to this rule is when third parties requests are made appealing to specific skills within the core business of the organization.	The level of cooperation sought within this event is high. Organizations start forming a network around their innovation of interested partners where they themselves act as the coordinator utilizing the expertise of others in the network	Again the level of cooperation sought in this event is high. However the nature of cooperation is quite different as it now is mainly geared at working with end-consumers to gather as much feedback on the finished product as possible.	Previous cooperation dissolves as partners tend to want a (financial) exit and are less interested in continuing the partnership. The level of cooperation sought is low as organizations are inwardly focused and are reconsidering their options and weighing the alternatives
External Environment	Used as a test site for the potential ideas. The organization utilized the external environment to gage potential customer reaction as well as doing market research to estimate potential market sizes.	Given the assessment made in the idea generation event regarding the ability of the organization to successfully execute the development of the innovation, external aid is sought in those areas in which the organization feels its lacking. This need can be financial, technical or market related	The main focus on the external environment changes from a focus mainly attributed towards that of the completion of the innovation, to a focus on the evaluation of the innovation. As such the focus shift towards the end-consumers and is mainly aimed at gathering feedback.	Often acts as input for the revising vs. reshaping discussion. As feedback on the innovations is gathered from the external environment the organization has to consider which actions to undertake.