

Helsinki University of Technology  
Laboratory of Industrial Management  
Doctoral dissertation series 2004/1  
Espoo 2004

**The Unexpected Benefits of Internal Corporate Ventures:  
An Empirical Examination of the Consequences of Investment  
in Corporate Ventures**

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Dissertation for the degree of Doctor of Science in Technology to be presented with due permission of the Department of Industrial Engineering and Management for the public examination and debate in Auditorium TU2 at Helsinki University of Technology (Espoo, Finland) on the 22<sup>nd</sup> of June, 2004, at 12 noon.

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ISBN 951-22-7121-4 Printed  
ISSN 951-22-7122-2 Electronic  
ISSN 1459-8051 Printed

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## **ABSTRACT**

Corporate ventures, the projects representing significant attempts by established firms to extend their domains into new areas, have long presented a fundamental puzzle. They are uncertain, thus results are unpredictable, in a world that values corporate predictability and reliability. They often do not deliver the intended results, and expose the corporation to significant risks. On the other hand, firms persistently make substantial investments in pursuing internal corporate ventures, and corporate venturing is often described as a key process through which organizations renew their capabilities and maintain their competitiveness. The question arises why would firms do this? Do corporate ventures create benefits for their parent firms, even when outcomes are not what was intended when the ventures were initiated?

In this dissertation, I address this question offering evidence that suggests that ventures can create positive outcomes for the corporation even if they do not produce intended results. Drawing on ecological models, resource dependence models, and real options thinking I develop propositions of environment, venture level, and firm level factors that correlate with value creation in corporate ventures.

To empirically explore these propositions, I collected data on 37 corporate ventures in a large European telecommunications equipment manufacturer during the period from 1998-2002. I collected both quantitative and qualitative data from internal documentation, public sources and press releases and through multiple interviews (ranging from one to six interviews) in the ventures. Altogether I conducted 104 interviews. The ventures in question are the entire population of ventures authorized through a formal stage/gate process (with three major stages) in place within this firm at the time. As distinct from projects intended to enhance the existing business, these ventures all represent forays into either new market spaces or into the commercialization of new technological solutions. To analyze the decision-making processes I used both qualitative and quantitative analysis methods

allowing us to exploit the depth of data but also systematically compare patterns across ventures.

Several key findings emerged from the data. I found support for the importance of venture level, firm level and venture environment variables in explaining venture outcomes. Value created by ventures depends on both the intrinsic value potential and how this value is managed and captured in the firm. While I found that value creation in terms of revenues or number of patents grew with the age of ventures, in line with real options arguments, I found ample evidence of value creation in discontinued ventures. In fact, discontinuing ventures in which time had disproved the venture concept and reallocating the resources that these ventures had created was a major value creation mechanism in the corporation. Central to this value creation process was redirecting or discontinuing ventures, as key milestones were approached. Several mechanisms permitted the firm to benefit even from discontinued ventures. They include transferring personnel with important individual skills, the development of new products, creation of important new organizational capabilities, development of new knowledge and the creation of intellectual property. I further found that strategic relatedness plays a pivotal role in venture survival and value creation. In line with resource dependence arguments, ventures that are related to the corporate strategy receive more management attention and survive longer.

This dissertation informs several bodies of literature. First, the study contributes to the literature on corporate venturing by empirically examining some of the controversies surrounding value creation through corporate ventures. The study further informs recent debates around applicability of a real options perspective on strategic investments under high uncertainty by showing that a rigorously structured staged investment program helped the focal firm to manage its investment projects and to create significant value even from ventures that were discontinued. The research sheds light on ecological models by showing that a firm can adapt to changing environment in the world of high uncertainty, although not easily. The study also informs literature on organizational search. Particularly in complex and dynamic environments, intelligent search heuristics are needed to be able to explore

beyond the vicinity of existing knowledge. This study helps to establish that real options reasoning can inform such a search heuristic by helping organizations and managers to systematically explore business domains that are further away from established lines of business. The study contributes to resource dependence theory by showing how management of key resource dependencies such as access to corporate resources or management attention influence value creation. Further by analysing the value creation from redirecting and exiting ventures, the study contributes to the dynamic capabilities view in the strategic management.

Based on the findings of the dissertation I derive a number of practical implications for managers in the corporate, portfolio and venture level. The key finding of the study is that the value of ventures depends on the intrinsic value produced in a venture, and how the value is managed and widely used holistically in the firm. The first one is the responsibility of venture management and the latter one of senior executives in the firm. Both of these have clear managerial implications for the firm.

## **ACKNOWLEDGEMENTS**

The people who made this dissertation happen are many and talented, and it is a joy to be able to acknowledge them.

I would like to thank my supervisor and advisor Professor Eero Eloranta, without whom this project would not have been possible. My advisor, Eero, has an invaluable capacity to illuminate flaws in the logic and provide valuable intellectual and moral support. I would also like to thank Dr. Mikko Ketokivi my second, unofficial instructor, whose availability and excellence in research methods greatly helped me at the critical stages of the dissertation process.

Especially, I would like to express my deepest gratitude to Associate Professor Rita Gunther McGrath from Columbia University and Assistant Professor Thomas Keil from York University being the world-class external examiners. I would like to thank Rita about the relentless work on issues of theoretical rigor and consistency. Rita taught me to think critically about ‘received theories’ and got me excited about corporate venturing and strategy. I would like to thank Rita and Thomas for the encouragement, availability and insight on corporate venturing, which has helped me a lot and pushed the work further. I would like to thank you both, Rita and Thomas, working with you has been enjoyable and considerably improved this dissertation. I would also like to thank Dr. Mikko Kosonen from Nokia for the inspiring and challenging discussions, which contributed to the finalizing of this dissertation. Last, but not least I would like to thank Rita and Mikko for agreeing to act as my public examiners. Their interest and comments have helped to develop this work further.

I would like to thank Nokia Corporation, which I was able to research when others only dream of it. The help of practitioners, who gave their time and intellectual energy, was crucial. I especially would like to thank all of the previous and present managers at Nokia

Corporation, who took part in this research. For reasons of confidentiality, I cannot mention all the names. Also, I would like to thank Aino Sydes for her work on the English language, references and visual formatting of this dissertation. I would also want to thank all of you, with whom I have had the opportunity to work, discuss and exchange ideas within the process. This dissertation project received financial support from the Academy of Finland, the Foundation of Economic Education/Valmet Fund, The Marcus Wallenberg Foundation and Helsinki University of Technology. I would like to express my sincerest thanks for this support.

No acknowledgements section would be complete, of course, without mentioning the people who lived through the dissertation process with me. My greatest thanks go to my parents, Antti and Airi, for loving and moral support. I would like to thank my husband Pekka and sons Rudolf and Rafael, who shared the trials and delights, including many hours spent not doing the things they probably would have preferred. Five year old Rulle was sure that everybody is doing the dissertation and all the way worried that mother will be the last to finalize it. Three-year-old Rafu has lived his whole life with the dissertation, starting with post-graduate lectures at the age of two weeks. This work is dedicated to my children – Rulle and Rafu.

Espoo, May 2004

Taina Tukiainen

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# 1. INTRODUCTION

## 1.1. The Puzzle of Internal Corporate Ventures

Corporate ventures, those projects representing significant attempts by established firms to extend their domains into new areas, have long presented a fundamental puzzle. They are uncertain, producing unpredictable results in a world that values corporate predictability and reliability. They often do not deliver the results their sponsors' desire. They are often not valued within the context of a successful corporation, because their target customers or initial products are perceived as less relevant than established lines of business. They expose their parent firms to the risk of escalation of commitment, leading to initiatives that ultimately turn out to be expensive flops. The people that champion them are seldom appropriately compensated, even in cases of great success. One could be forgiven for thinking that decision-makers allocating resources to significant new ventures are behaving irrationally.

On the other hand, firms persistently make substantial investments in pursuing internal corporate ventures, and it is often described as the key process through which organizations renew their capabilities and maintain their competitiveness (von Hippel 1973; Fast 1977; Burgelman 1980, 1983a, 1983b, 1983c, 1985; Guth & Ginsberg 1990; Kanter, North, Bernstein & Williamson 1990; McGrath 1993; Miller & Camp 1985). Although evidence suggests that enthusiasm for venturing waxes and wanes over time (Fast 1977), firms do persistently engage in the activity on an ongoing basis. We thus confront the following puzzle. Despite the widely accepted recognition that corporate ventures are unlikely to work out as planned, firms engage in them anyway. Given the risks and expense of the venturing process, decision-makers must be convinced of their value to make such investments.

The fundamental contradiction of corporate venturing – that it is likely to lead to disappointment, and yet is widely practiced – motivates this dissertation. Using a sample of 37 corporate ventures from within the Nokia corporation, I will develop a taxonomy of

corporate venturing outcomes, showing among other things how even ventures that failed to meet their objectives contributed to the development of important corporate capabilities, to new knowledge that formed the basis for future successful innovation, and to the leadership skills and interpersonal networks of participants to the venturing process. The research here addresses a poorly understood aspect of the venturing process, namely its contribution to the bundle of resources and capabilities that underlie a firm's strategic capacity (Dess et al. 2003).

## 1.2. Research Question

To summarize, the primary research question in this thesis is:

*Do corporate ventures create benefits for their parent firms, even when outcomes are not what was intended when the ventures were initiated?*

The research problem can be broken into three sub-questions, which form the basis for the theoretical motivation for this dissertation. First, it is important to understand the range of possible outcomes that an investment in venturing might create for firm, both those intended by the investors and those that were not intended. This is a crucial link in the process through which previous resources affect strategy, which in turn influences resource accumulation (Bowman & Hurry 1993). Next, it is important to assess how these outcomes affected the firm – whether positively or negatively. This matters because considerable evidence suggests that valuable capabilities are often the result of an unintended but path-dependent process of resource accumulation, of which venturing represents one path (Dierickx & Cool 1989). Third, which factors in the venturing process are likely to be associated with what types of outcomes, based on the available data in my sample.

- 1. What are the possible outcomes for a firm from making investments in corporate ventures?**
- 2. How do the alternative outcomes affect the firm?**
- 3. Which factors in the venturing process influence which outcome will emerge?**

Finally, in seeking to make a normative as well as theoretical contribution with this dissertation, I divide the antecedents to the outcomes into factors that are largely exogenous to the firm, and those that are endogenous, or suitable for managerial intervention. Therefore, the fourth research question is:

- 4. Which of the influencing factors are subject to endogenous influence versus exogenous determination?**

### **1.3. Scope**

This study examines a population of 37 internal corporate ventures, representing all ventures in progress in the Nokia Venture Organization (NVO) of the Nokia Corporation between the time period 1998 to 2002. The main unit of analysis in this study is the venturing project itself, although I will explore the consequences of the process on the individuals who are part of the venture team, and the influence of firm-level strategy on the venture and of the venture on firm-level strategy as well, consistent with Burgelman's (1991) concept of both autonomous and autologous strategic processes at work in an intra-organizational ecology.

Nokia is particularly suitable for a study on the consequences of venturing for several reasons. First, the company has a fairly well organized way of identifying and tracking ventures. Unlike some companies in which ventures are operated as 'skunkworks' and

therefore not explicitly understood to represent significant firm-level initiatives, Nokia has a process for allocating resources to ventures, for categorizing the different venturing stages and for classifying key decision milestones as ventures progress. Second, Nokia competes in markets that are rapidly changing, in which innovation is essential to competitiveness over time. Thus if ventures make a contribution to the firm overall beyond the particular business results produced by a venture, the resulting resources and capabilities should be more visible than they would be in a firm in a more slowly changing industry. Third, Nokia senior management provided both access and critical evaluative data, giving me unique access to a population of within-firm projects that are notoriously difficult to study. Finally, because Nokia is generally regarded as a well-managed firm, we would expect it to be able to extract good value from its investments in venturing; meaning that if the phenomena that I seek to study are present anywhere, I should find evidence of them within Nokia.

#### **1.4. Research Approach and Methods**

To structure my inquiry into the outcomes of corporate venturing, I begin with a review of the received literature on the venturing process and its outcomes. This analysis concludes with a synthesis of the propositions that reflect the taken for granted assumptions in this literature. From these propositions, which represent relations between key constructs in the venturing literature, I then develop specific hypotheses to ascertain whether these propositions appear to reflect the Nokia venturing experience. In the course of developing hypotheses, I operationalized variables that render the study amenable to replication in other contexts. An unusual feature of this research is that it combines both qualitative observation and quantitative analysis with the intention of developing robust conclusions.

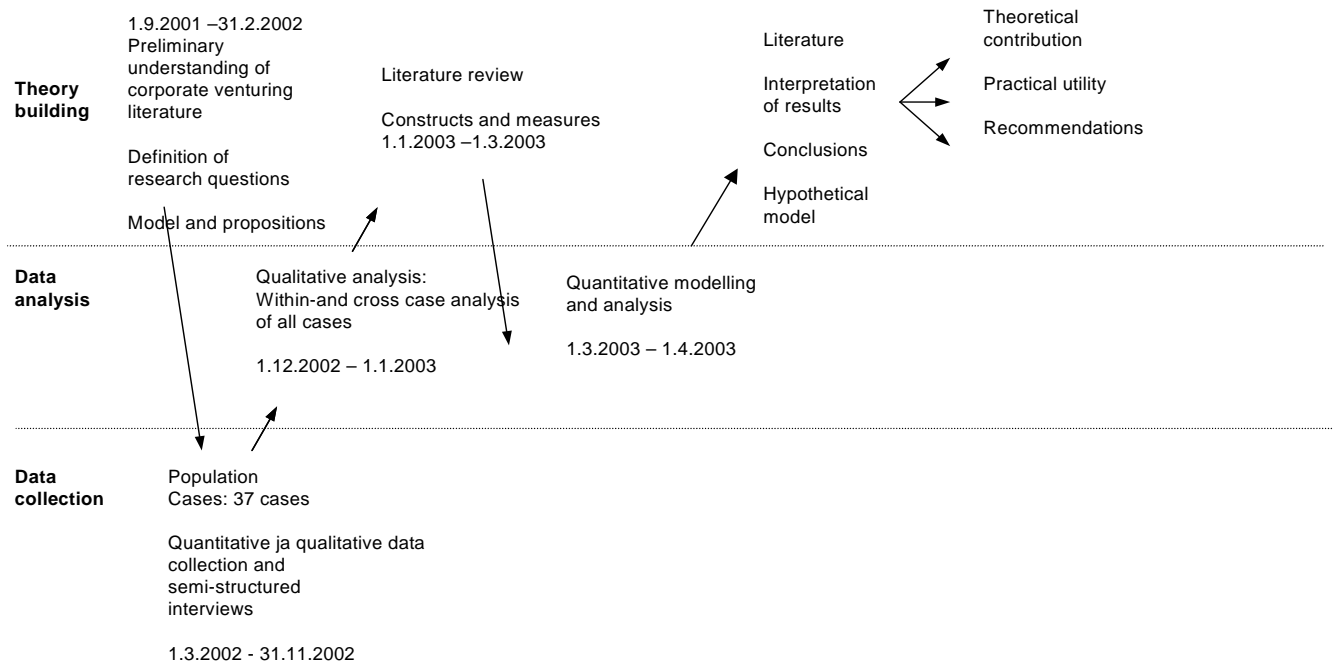
This study is thus a combination of deductive theory development, drawing from the received literature, and inductive development of new ideas based on my observations of the venturing process in Nokia.



## 1.5. Research Design and Process

Before the study, the primary researcher worked for Nokia for six years in new business development positions. At the start of the research the researcher took a three-year break to study the internal corporate venturing phenomenon. Thus, although I am knowledgeable about the company and its activities, I was not working within the venturing group during the data collection period. Naturally, however, readers should be aware of the potential for bias that my experience within the company represents.

Data collection was performed from 2001 to 2002. The study is both retrospective and real-time, meaning that data was collected about past activities in the ventures as well as about current and ongoing activities. Consistent with accepted practice for using case studies in empirical research, I developed a multiple embedded unit case-based design (Yin 1984; Eisenhardt 1989) covering the years from 1998 to the end of 2002. The process, which was undergone in this research, is described in below in figure 1-1.



\* based on the process model developed by Heikkilä (2000)

Figure 1-1: Research design in this study

## 1.6. Structure of the Dissertation

The structure of this dissertation is depicted in following figures 1-2 and 1-3. Chapter 1 describes the background and motivation for the research as well as research problem, scope and research approach, choice of methods, research design and structure of the dissertation. Chapter 2 reviews extant research relating to corporate venturing and the theories relevant to this study and presents the model and propositions. Chapter 3 describes the methods. This chapter presents the operationalization of theoretical propositions to variables that can be articulated as hypotheses. Chapter 4 introduces tests of the hypotheses and the empirical results of the study. Finally, chapter 5 discusses the conclusions of the research, the possible interpretations of the findings and their theoretical and practical contributions and implications. Lastly, limitations and directions for future research are described and discussed.

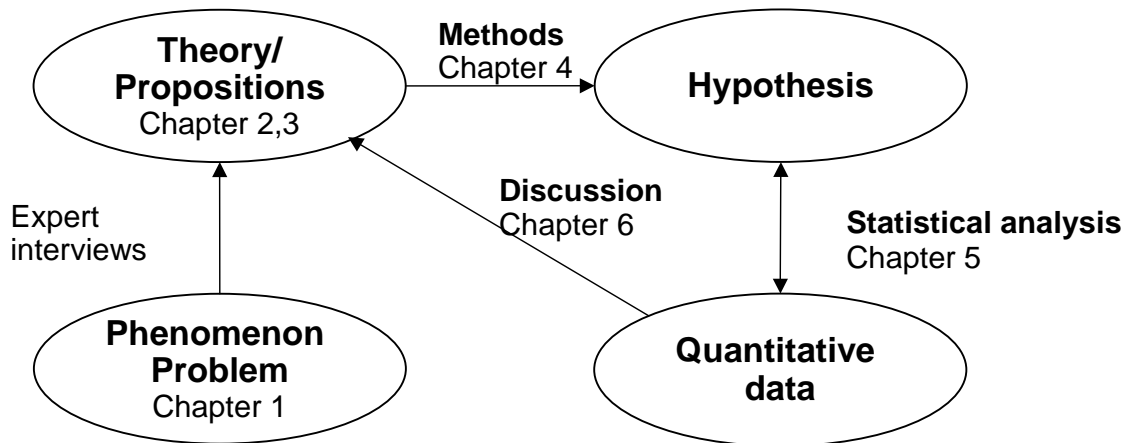


Figure 1-2: Structure of the research process (adapted from Niiniluoto 1983, Junttila 2000)

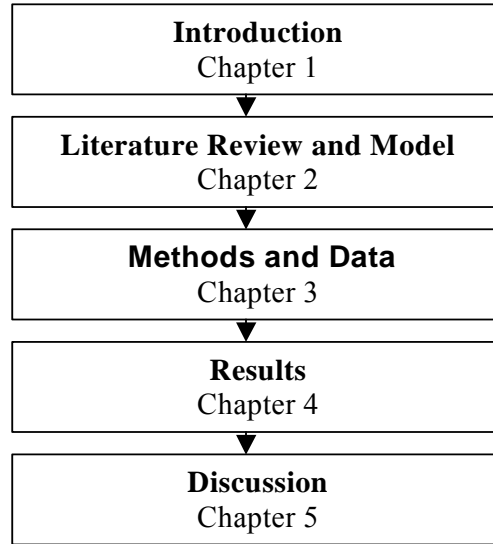


Figure 1-3: Structure of the study

## **2. TENSIONS IN THE THEORETICAL LITERATURE AND MODEL DEVELOPMENT**

In this chapter, I provide an overview of the received literature relevant to this study of venturing outcomes, and suggest points of disagreement and controversy within that literature. Based on the literature overview, I develop the key outcome and explanatory constructs based on the review of accepted theories with respect to the outcomes of the internal venturing process; challenges to these theories and the underlying assumptions made within the management literature about the investment and management heuristics that are relevant to the venturing decision.

As we shall see, several strands of literature in management suggest that ventures might yield useful outcomes even in the event of disappointing results. Despite relative acceptance of this point, researchers are sharply divided over several issues. Among these are the extent to which venturing outcomes are amenable to managerial influence as opposed to randomness or luck, the extent to which organizations are capable of developing heuristics for appropriately managing ventures, and the extent to which firms are able to change their strategic direction as a consequence of venturing activity.

### **2.1. Internal Corporate Venturing: What Is It?**

Corporate ventures, as understood in the literature, generally have several characteristics in common. Like other entrepreneurial phenomena, they represent attempts by actors to profit from their participation in future markets (Shane & Venkataraman 2000; Gartner, 1985), which are by definition uncertain. They are usually understood to represent attempts by established firms to engage in innovations with respect to their offerings, the markets they serve or the production capacities they use. Unlike other mechanisms for changing the resource configurations of firms (such as mergers or strategic alliances) corporate ventures represent attempts to create new resource flows that develop within the firm, usually in the form of specific projects (Guth & Ginsberg 1990). Early work that might be considered to

fall in the domain of corporate venturing tended to focus on the processes of R&D (for instance, Levin, Klevorick, Nelson & Winter 1984) and new product development. Later work emphasized the entrepreneurial nature of corporate ventures and often shifted from an emphasis on specific products to processes and activities of venturing.

The main difference between internal corporate ventures and independent ventures is that internal corporate ventures are financed, managed and owned by one corporation. Being inside the firm brings both benefits and challenges (Backholm 1999; Thornhill & Amit 2000). The benefits include access to corporate assets, resources, channels and brands. As many authors have pointed out, however, the assets of a parent firm may also become liabilities in the context of a new venture, limiting the extent to which a venture can develop, creating internal resource competition for it, or otherwise interfering with its potential development (Leonard-Barton 1992; Christensen 1997).

### Definitions

The key concepts of corporate venturing used in this research are defined in this subsection. While this chapter presents some of the definitions, the operationalizations used in the empirical part are described in detail in chapter 3.

#### Internal Corporate Venture and Venturing

The definitions of an internal corporate venture and corporate venturing have many variations (Sharma et al. 1999). In this study the following definition for an internal corporate venture and internal corporate venturing is used.

Business activity is defined as an internal corporate venture (Block & MacMillan 1993), when it: 1) involves an activity new to the organization, 2) is initiated or conducted internally, 3) involves significantly higher risk of failure or large losses than the organization's base business, 4) will be managed separately at some time during its life and 5) is undertaken for the purpose of increasing sales profit, productivity or quality.

Burgelman (1983) defined internal corporate venturing organizationally as a multi-stage process, in which different functional groups and hierarchical positions interact to define new business opportunities and to develop new business organizations in areas currently at the edge of, or outside, the corporate domain (Burgelman 1980). He further specified that corporate venturing aims at developing a new product/market base, around which a new business organization can be built, and which can be integrated into the overall corporate context after reaching maturity.

## **2.2. Research on Corporate Venturing: Background**

Over the years, enthusiasm for corporate venturing has waxed and waned. At least three different ‘waves’ can be identified in recent history of corporate venturing (Jolly & Kayamana 1990; Block & MacMillan 1993; Gompers & Lerner 1998). In the late 1960’s, venturing activities were pursued in order to create a ‘window on technology’ for parent firms. After a collapse in the market and the poor economic growth prospects of the 1970’s, investment in corporate venturing underwent a decline, and firms instead invested in other forms of diversification (Rumelt 1974). A second wave of sorts took place in the 1980’s, when corporate venturing was used as further ‘diversification tool’ for firms (Maula 2001:24). Following disappointment with the results produced by conglomerate corporate forms in the late 1980’s, the intrigue of corporate venturing activities also declined (Davis, Diekmann & Tinsley, 1994). A third wave took place during the latter half of the 1990’s when corporate venturing emerged again in a large scale. Many companies set up a corporate venturing unit with the objective of creating new businesses (Hamel & Prahalad 1990,1994; Christensen 1997). In contrast to internally developed ventures, corporate venture capital also became popular, with many organizations announcing the formation of venture funds, whether for technology acquisition or for outright profit. After peaking in around 2000, however, poor economic conditions once again resulted in a rapid decrease in the volume of corporate venturing in the beginning of the new millennium (Campbell, Birkinshaw, Morrison & Batenburg 2003).

Although diversification and corporate growth have long been on the agenda of researchers, particularly those interested in corporate strategy, the study of corporate venturing as an independent phenomenon was not manifest in a research stream of its own until the late 1970's (von Hippel, 1977; Roberts, 1980; Block and MacMillan, 1993). Pioneer corporate venturing research focused on diversification effects, the venturing process and structure (Fast 1977; Burgelman, MacMillan, Block & Narashima 1986; MacMillan & Day, 1987). Towards end of the decade and in the 1990's scholars began to study the financial outcomes and success factors for ventures (Miller, Wilson & Adams 1988; Siegel & MacMillan 1988; Zahra 1991,1993,1996; McDougall, Robinson & DeNisi 1992; Venkataraman, MacMillan & McGrath, 1992).

Over time, interest in ventures purely as vehicles for diversification or growth was complemented by researchers studying other consequences, such as the effect on firms' entry to and exit from industrial fields, the propensity of venturing firms to take risks, and how ventures featured in a firms' globalization strategy (Burgelman 1998; Guth & Ginsberg 1990; Covin & Slevin 1990; Stopford & Baden-Fuller 1994). On a more internally focused note, some scholars also began to study how to manage and champion ventures, often beginning with Bower's (1970) work on resource allocation (Sykes 1993; Davis 1994; Day 1994). With the emergence of the resource-based view of the firm as a key set of concepts in the strategy field, researchers additionally became interested in the relationship between venturing and the creation and utilization of a firm's capabilities, particularly as these influenced firms' heterogeneous ability to generate rents from their resources (McGrath, Venkataraman & MacMillan 1994; McGrath, MacMillan & Venkataraman 1995; Dougherty 1995; Sorrentino & Williams 1995).

As I have shown, in the general domain of activity termed 'corporate venturing' there have been many efforts to describe, catalog and understand the process. Despite these efforts, most scholars have concluded that important aspects of the activity remain unexplained (Brown & Eisenhardt 1995). There are still, for instance, crucial debates regarding the

motivation of firms to pursue ventures, how investments in ventures should be judged, what the outcomes of the venturing process really are and to what extent positive outcomes are a consequence of effective heuristics for the management of ventures as opposed to sheer luck. Let me next review some of the central debates with respect to these issues.

### **2.3. Alternative Views of the Motivation for Firms to Pursue Corporate Ventures**

Different authors, from different theoretical perspectives, have viewed firms' propensity to engage in venturing in ways that have inhibited the ability of researchers to develop a clear understanding of the process. Despite a broad consensus that venturing is one important vehicle through which firms attempt self-renewal or adaptation, scholars are divided over its effectiveness with respect to these objectives, and indeed over the motivation for venturing in the first place. I next briefly review the perspective on venturing offered by several central theories in the organizations literature, and show how they might lead to substantively different interpretations of the phenomena.

#### **2.3.1. Ecological Models – Creation of Variations in Response to External Stimulus**

In ecological models of organization (Hannan & Freeman, 1977; for a review see Aldrich, 1999), new organizations are formed in response to an environmental signal of opportunity. Entrepreneurs in this framework enter their markets with a more-or-less given level of 'fitness' of their organizations to the opportunity environment they encounter. In order to obtain resources from this environment, entrepreneurs manage their firms to create reliable, replicable performance that is of value to certain customer sets. Over time, two fundamental changes in the environment occur. First, as entrepreneurial firms continue to enter the new opportunity space, it eventually becomes too crowded to support them all, and some firms, facing resource constraints, withdraw from the market or combine with other firms, a phenomenon called 'density dependence'. Survivors of this process grow to become larger firms. In the course of this development, they put in place systems and processes that essentially rigidify those properties that allowed them to become successful. When faced



with an exogenous shock or a shift in the environment, they may well attempt to change, however powerful inertial forces make the success of such a change unlikely.

An important construct in the ecological tradition is 'structural inertia' (Hannan and Freeman, 1984). Structural inertia refers to the cost and risk of making a significant change to the resource combinations in place within a given firm. Major changes, such as those which might occur as the result of a new venture, destroy the efficiency of established routines, alienating customers. In the short term, the organization's performance can drop significantly. Thus, as the structural inertia argument goes, before a venture is able to produce longer-term returns, a firm in the short run will collapse. Hannan and Freeman (1984: 150) sum up the argument in this way: "in a world of high uncertainty, adaptive efforts...turn out to be essentially random with respect to future value."

Despite many attempts to test the structural inertia hypothesis empirically, little support has emerged for it. Indeed, as Baum (1996: 106) notes, "organizations change frequently in response to environmental changes, and often without any harmful effects". On the other hand, neither is there strong empirical support that an organization that seeks to venture has a better chance of surviving in dynamic markets than one that does not, although this is an assertion which is frequently made in the normative literature on management under uncertainty (see for instance, Brown and Eisenhardt, 1998). Although anecdotal evidence offers plenty of support for the principle that ventures can lead to significant growth, and firms such as Proctor and Gamble, Intel, Microsoft and others are applauded for their success, statistically we still do not know if these are a function of good luck or good management.

### 2.3.2. Slack Search Models

Somewhat more optimistic than the ecological view of structural inertia is the perspective from behavioral learning theory which suggests that firms engage in 'slack search' (March & Simon 1958) in response to problems and opportunities identified by bounded rational

actors seeking to achieve performance goals within the firm. Well designed adaptive firms in this framework allow some resources to reside at operational levels within the firm, so that actors at those levels can pursue those initiatives that seem promising to them, often without direct approval or supervision by more senior level actors. Slack search is consistent with the venturing process as described by Burgelman (1983) and Kanter (1988) who have emphasized the importance of small relatively unsupervised teams (such as skunk works) and a certain degree of “foolishness” in the venturing process (March, 1988).

The theory of slack search has certain face validity, in that it seems to conform to many well-accepted tales of how important opportunities were discovered by firms. 3M’s Post-It note, Apple’s McIntosh, and many R&D based innovations appear to have bubbled up through this method. Slack search, however, similar to the ecological argument, leaves the researcher without a compelling answer to the distinction between luck and strategy in explaining outcomes of corporate venturing. For one thing, local learning is associated with myopia (Levinthal & March 1993), such that learning locally can inhibit organization-wide discovery of insights. Further, because learning processes tend to be incremental, they can induce competence traps (Levitt & March 1988) and inhibit significant innovations from emerging through the venturing process, leaving firms vulnerable in the face of a required long leap in a ‘rugged landscape’ (Levinthal 1997).

### 2.3.3. Resource Dependence-Based Models

Another categorization of motivations to venture is associated with organizational responses to an external threat to the ongoing flow of resources. Bowman (1982) for instance discovered a seeming anomaly: that poorly performing firms appeared to take on more risky projects than firms that were performing well. Such behavior has been linked to certain cognitive biases; such as the lack of motivation to engage in venturing when all is going well, and an increased propensity to look to venturing as the answer when things are going badly. The so-called ‘threat rigidity’ response (Staw, Sandelands & Dutton 1981) found that firms facing perceived threats were likely to continue to pursue existing

strategies that had generated resources in the past, even if when examined objectively a change in strategy might seem called for.

In the corporate venturing/innovations literature, the most common way threat rigidity responses play out is for a firm to engage in ventures with the potential to improve a threatened core business, often to an exaggerated extent. Thus, Cooper and Smith (1992) found that when faced with a technological challenge, the response of incumbent firms was almost invariably to redouble efforts to improve the existing business, with the hope of successfully defending it against a novel alternative. Harrigan (1980) for instance, found that firms in the ice-cutting business improved efficiency by several orders of magnitude when faced with the threat of refrigeration.

The dilemma here is that sometimes the base business simply cannot remain competitive when faced with a technologically or otherwise superior alternative. Tushman and Anderson (1986) for instance, explored how various kinds of technological discontinuities affected incumbent firms. What they found was that in cases in which a firm's essential competencies were complementary to the new technology (a competence-enhancing innovation), incumbents tended to remain in strong positions, while changes that required the development of new competencies tended to favor new entrants (because they were competence destroying). Henderson and Clark (1990), building on this idea observed that when changes developed that affected components of a system, the ventures of incumbents were successful. When the changes were 'architectural' however, involving shifts in the linkages between components, firms were unable to adapt their systems to cope.

An influential recent extension to this model can be found in the work of Christensen (1997) who argues that the fundamental explanation for when an incumbent will remain effective and when it will suffer is a function of resource dependence (Pfeffer & Salancik 1978). Specifically, when ventures require a firm to meet the needs of attractive, good customer segments who will respond to an innovation by being prepared to support better margins, an incumbents' ventures are likely to succeed. On the other hand, when a firm faces challenges

in its markets that require it to appeal to less attractive customers with lower-margin offerings, they are unlikely to be able to muster the internal political support for such ventures to be effective, and will tend to lose out to new entrants. Christensen terms these ‘disruptive’ technologies that make growth possible at the low end of markets.

These models for venturing all place enormous emphasis on the role of venturing in helping organizations’ mount a response to an environmental challenge, for the most part, a threat. They take a political and resource-allocation intensive view of the process through which ventures gain support within the firm, and place enormous emphasis on the view of ventures that key decision-makers take. Among the contributions these models have made to our understanding of corporate venturing is to introduce several contingencies, such as target customer segment, nature of linkages between technologies, and managers’ cognitive biases, to our understanding of when ventures are likely to be sought by firms.

In a manner reminiscent of the ecological model, these theories are rather pessimistic about the ability of a firm to effectively adapt through venturing if an external change devalues their existing capabilities. However, it is clear that many firms do engage in such behavior – for instance through entering into lower-end markets, creating separate divisions that can face off against competitors, creating partnerships with firms possessing the necessary complementary capabilities, making acquisitions of smaller firms and so forth. What is still missing is a clear theoretical depiction of the conditions under which firms can turn the incentive structure of resource dependence to their advantage in a venturing context (although Christensen and Raynor in their recent (2003) book have developed a useful normative perspective on this problem).

#### 2.3.4. Real Options-Based Models

A final perspective on the motivation to undertake corporate ventures that I will address here can be thought of as the ‘real options’ perspective (Bowman & Hurry 1993; Dixit and Pindyck 1994). Real options are the organizational analogue of options investments in

financial markets, in which an investor makes a small investment that conveys the right, but not the obligation, to make a further decision in the future, such as the right to buy or sell an underlying security. In contrast, real options are investments in real assets, such as the type of investments firms might make in a new venture. Because the future value of such an investment is unknown and because theoretically at any rate investing in a venture does not commit a firm to make the follow on investments that would be required to commercialize the venture, several authors have argued that corporate ventures can be thought of as a particular kind of real option for the firm (Mitchell & Hamilton 1988; Kumaraswamy 1996; MacMillan & McGrath, 2000; McGrath, 1997).

Firms are motivated to invest in ventures in this perspective because by using options logic, they can truncate the downside risk of their ventures (by retaining the right to terminate or redirect them) while maintaining access to the upside potential these ventures bring, and which the firm can invest in should conditions prove favorable. The odds are thus potentially skewed in the direction of an investing firm, as options investing can provide preferential access to future opportunities (Bowman & Hurry 1993) relative to firms that do not invest. Any venture thus has a component of its value that can be attributed to the present value of future cash flows generated by the venture, and a component that represents its option value, usually described as value from opportunities that are not known at the time the initial investment was made. Among the benefits of using options reasoning is that it provides an economic logic for observed behavior in the venturing area.

Options reasoning is distinct from several of the other perspectives in that uncertainty plays a pivotal role in the operation of the theory. By making investments, either reducing or waiting for the reduction of uncertainty and taking decisions sequentially, firms can make better decisions with respect to substantial resource commitments. Option value generally increases under conditions of high uncertainty, because the downside (the cost of the option) remains fixed, while the upside can vary substantially). In a sharp contrast to more behavioral models (in which incremental, path-dependent search is emphasized), options models provide the logic under which firms might undertake 'long shots' (Morris, Teisberg

& Kolbe 1991). Thus, predictions from options theory might be that an options oriented firm would fund more small ventures, abandon more ventures along the way and invest in more ventures that are somewhat distant from the existing business than would a non options oriented firm (McGrath, Ferrier & Mendelow 2004). Options theory also places failures and disappointments squarely at the center of theory, maintaining that low-cost failures can be beneficial to firms (McGrath 1999).

The real options perspective on venturing is not without its controversies. For one, deriving a robust option valuation has proven to be rather a daunting undertaking (Trigeorgis, 1997), with the result that many scholars exploring the perspective rely on managerial heuristics rather than quantifications. Another significant controversy concerns the actual capacity of firms to contain their downside losses after making an initial toehold investment. Reuer and Leiblein (2000) found for instance that contrary to the predictions of options logic, firms did not use international joint ventures to contain their downside risk. Adner and Levinthal (2004) go even further, suggesting that by and large firms are unable to contain their downside risk by abandoning ventures. Having made a commitment to a venture, political factors and personal coalitions will justify its continued progress, leading at best to a poor fit with options theories and at worst to escalation of commitment to a failing venture.

#### **2.4. Outcomes of Corporate Ventures**

The theories we have explored with respect to the motivation for firms to engage in venturing have in common the recognition that under conditions of uncertainty it is not always possible to accurately anticipate the outcome. At the same time, particularly in empirical studies, outcome measures have tended to reflect some definition of venture 'success.' As McGrath (1999) has argued, an exclusive focus on the desirability of success and the anti-failure bias this induces can lead to significant misunderstanding of the entire process through which ventures contribute to a firm's strategy.

Interestingly, a variety of possible outcomes that are strategically beneficial have been attributed to ventures in the literature, even though they are not strictly speaking successful. One is learning. Maidique and Zirger (1985) for instance found that successful ventures often followed after ventures that were deemed to be failures. Garud and Nayyar (1994) found that firms' ability to retain ideas and capabilities within their boundaries across time offered substantial benefits, even if at the time they were developed there was no apparent use for them. A second outcome falls into the broad category of capability development – through venturing firms can create new capabilities and routines that may or may not be useful in their original application, but which can eventually offer advantages in other applications. Winter (1995) for instance finds that replication of capabilities is a key driver of profitability. As a specific case in point, Hoy and Shane (1998) for example focused on the idea of franchising, in which franchisees pay to benefit from the capabilities built by the franchiser. A third outcome that is often implicit in discussions of the consequences of venturing is the effect upon the individuals engaged in it. By exposing people to the new business development process, firms in effect create real-time learning experiences for individuals with potentially important developmental consequences.

These outcomes aside, more commonly emphasized results of venturing concern simple survival: did the venture continue or not? Indeed, this is often used as a dependent variable in studies of venturing. Another more common metric is the tangible output of the investment in venturing, such as new patents or inventions (Walker, Kogut & Shan 1997; Katila 2002). The most important question here is how does investment in venturing contribute (or not) to the performance of the parent firm.

#### 2.4.1. How do Ventures Contribute to Parent Firm Strategy?

The relation between corporate venturing and the performance of the firm has been of intense interest both among academics and in practice. Factors contributing to the success or failure of the individual venture have been among the most studied areas in corporate

venturing literature (Keil 2000). The corporate perspective or corporate outcomes is the most addressed area, but it has not been empirically studied to a great extent.

Ventures have many outcomes in different dimensions: as an individual venture, in corporate levels or financially and non-financially. Therefore, the venture may have outcomes, some of which are positive even if the venture 'fails' financially (McGrath 1995). Some examples of these positive venture outcomes are finding new opportunities for the firm, pointing out dead ends, developing people, creating assets for future offerings, creating image and producing spin-offs or other sold-out arrangements. This stream of research uses venturing and ventures as a tool for opportunity finding or as a tool for reducing uncertainty in the new and unknown business and technology areas of the firm.

Ventures produce tangible and intangible outcomes. Tangible outcomes are easy to identify and measure. Examples of tangible outcomes are new businesses, products, features, new technologies, prototypes, studies, 'white papers', patents and intellectual property rights. Intangible outcomes are easy to identify, but more difficult to measure. Examples of intangible outcomes are organizational and personal competences, capabilities and their development. Understanding the intangible outcomes, as well as the development of intangible outcomes into tangible ones, is essential because venturing and intangible outcomes by definition are building the paths for the future success of a company.

The challenge is to establish reliable and valid measures for different kinds of performances (Keil 2000:62). The most traditional measure of new venture success has been survival or venture continuity. Venture survival, or continuity, as an only measure of success is problematic because survival measures the success from an individual venture point of view, but does not provide any information on corporate level outcomes or value creation and therefore about real performance or efficiency of the venture (Biggadike 1979). Other measures, which are used to measure the new venture success, are traditional accounting measures such as growth, sales, profitability and return on investment. These accounting measures are also problematic if used as an only measure of venture success, because



overall all venturing activities require significant time span (a couple of years) before they reach profitability (Biggadike 1979). Miller, Wilson and Adams (1988) argued, that investment, cash flow, change in the market share and returns to stockholders are typically not applicable for presenting a comprehensive picture of the venture. McGrath (1993) suggested the perceivable performance measure. Zahra (1991,1993,1996) has pointed out the importance of recognizing that both financial and non-financial measures change during the life of a new venture.

Earlier research suggests that venture performance should be assessed in the market, parent firm and competitive context (McGrath 1995; Shortell & Zajak 1988). McGrath (1995) suggested a performance measure of three elements. The ventures should be successful in the markets, they should be internally successful, and they should perform well in a competitive environment. Venture performance in market context reflects the ability of the venture to provide valuable offering to its customers. Venture performance or value creation in parent firm context reflects the organizational impact of the venture internally. Competitive performance reflects the success of the venture in the competitive environment.

According to extant research, venture performance can be classified by many dimensions. One way to classify is to divide the outcomes into financial and non-financial ones. Another way is to divide the outcomes into individual venture outcomes, which could also be called direct or first-order performance, and to corporate level outcomes, which could be called indirect or second-order performance.

The individual venture or direct venture performance studies include new business creation, growth and profitability. Indirect venture performance studies cover the corporate level outcomes like competence development, learning through exploration and renewal aspects (Keil 2000). These indirect venture performance studies include concepts like knowledge, learning and innovativeness, which are difficult to operationalize. Zahra (1991,1993,1996) pointed out that even though some studies have established links between the direct and indirect study concepts, they have failed to define the distance of indirect performance from

direct performance. Zahra further argued that one essential effect of corporate venturing might be the creation and diffusion of new knowledge, skills and capabilities for the organization. Corporate venturing may help to create competences that are necessary to renew the corporation. McGrath, Venkataraman and MacMillan (1994) propose a multi-stage model of relations between corporate venturing and performance. They argue that venturing is one mechanism through which firms gain insight into and access to firm-specific resources that may give them competitive advantage. They also discovered that the rents from corporate venturing arise from development of causal understanding. Depending on the path used, the corporate ventures may reduce uncertainty in ways that are specific to the firm, thus developing a sustainable competitive advantage, while uncertainty continues to apply for its competitors (Amit & Shoemaker 1993; McGrath, Tsai, Venkataraman & MacMillan 1996).

In general, most of the existing studies have focused on financial success of the ventures. Due to the uncertain, knowledge intensive, competitive, stochastic and boundary crossing nature of the venturing process, ventures have faced difficulties in achieving this financial success (Kanter 1985; Maidique & Zirger 1985). Previous studies have not focused adequately on understanding the differences in venture versus corporate level as well as financial versus non-financial outcomes. Ventures may be considered successful if they develop valuable tangible (such as business and products) or intangible assets (like new capabilities) for future offering to the firm.

#### 2.4.2. Towards a Multidimensional View of Venture Performance

Based on the corporate venturing and innovation literature reviewed above, I will divide venture performance to a) venture continuity b) value creation and c) invention outcomes. Venture continuity or survival has been selected because it is the most often used measure of individual venture success. Value creation comprises the venture and corporate level outcomes. The value creation outcomes are divided to 1) organizational level direct outcomes, in other words business and products created, 2) organizational and group level

indirect outcomes business, strategy and technology capabilities created and 3) personal development including personal experiences, competencies and capabilities created. The invention outcome has been selected according to venture literature, especially innovation literature, to measure the created inventions or innovative nature of a venture. The existing studies have used patents as a measure of innovation. In this research the patents are used as a measure of inventions (Walker, Kogut & Shan 1997; Katila 2002) and products are used as one measure of value creation or innovation (Katila 2002).

The developed model of multidimensional outcome is illustrated in figure 2-1 below.

## Outcome

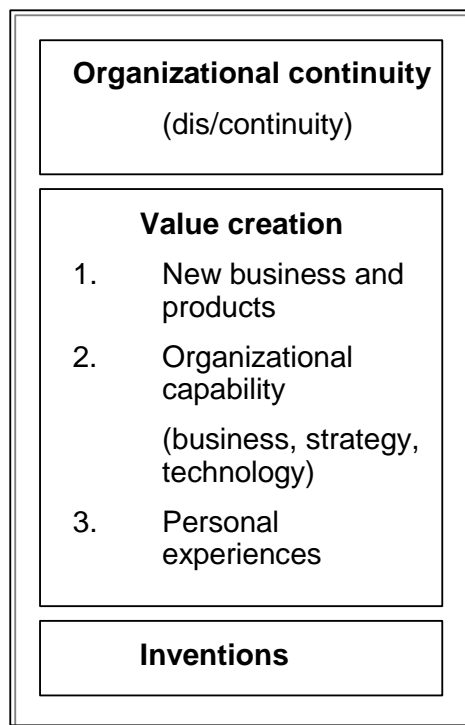


Figure 2-1: Multidimensional venture outcome

### 2.4.3. Factors Influencing Venture Outcomes

Within the corporate venturing literature a large body of work has analyzed factor influencing venture outcomes. Factors can be classified as business, firm and venture level factors. The business environment characteristics, such as uncertainty including industry lifecycle, market and customer environment and its dynamism and hostility, have been found to affect venture performance (Zirger & Maidigue 1990; Covin & Slevin 1990; Zahra 1991,1993,1996; McGrath 1993). Table 2-1 presents some of the business factors and their effect on performance.

Table 2-1: Business success factors

<b>Business factors</b>	<b>Factor</b>	<b>Author</b>	<b>Effect</b>
<b>Uncertainty</b>	Market technology and uncertainty	McGrath 2000	Effect on optimal strategy and performance
	Industry life cycle	Covin & Slevin 1990	Positive on growth and profitability Negative on structure
	Munificence	Zirger & Maidigue 1990	Positive on overall success
	Competitive hostility	Covin & Slevin 1989	Negative on growth

The parent firm characteristics like corporate strategy, organization and structure, management; stock ownership as well as learning and legitimacy have an effect on venture performance (Shortell & Zajak 1988; Zahra 1991,1993,1996; Stopford & Baden-Fuller 1994). Table 2-2 presents some of the firm factors and their effect on performance.

Table 2-2: Firm success factors

<b>Firm factors</b>	<b>Factor</b>	<b>Author</b>	<b>Effect</b>
<b>Legitimacy</b>	Parent hostility	Zirger & Maidigue 1990	Negative on overall success
		Shortell & Zajak 1988	Not found
	Munificence	Zirger & Maidigue 1990 Tsai, MacMillan & Low 1991	Positive on overall success
	Solving problems of resources and strategy	Dougherty & Hardy 1997	Not found
	Resource-relatedness	von Hippel 1977	Positive
		Chandler & Hanks 1994  Miller & Camp 1985; Roberts & Berry 1985; Sykes 1986,1990; Ellis & Taylor 1988; Block & Ruff 1986  Hobson & Morrison 1983	Positive  Positive  Negative
Rule violation, reframing	Dougherty 1992,1995 Dougherty & Heller 1994	Positive	
<b>Strategy</b>	Strategy conformance	Geletkonycz & Hambrick 1997	Positive
		Lawless & Andersson 1996	Negative
	Redirections of a venture	Block & MacMillan 1985	Positive
	Value and cost advantage	McGrath & Venkataraman & MacMillan 1996	Positive
Building upon the firm's existing market, technology and product competencies	Zirger & Maidigue 1990	Positive	

<b>Firm factors</b>	<b>Factor</b>	<b>Author</b>	<b>Effect</b>
<b>Strategy</b> (contd.)	Ability to connect new products with organizational resources, processes and strategy	Dougherty and Hardy 1996	Positive
	Wide strategic breadth	Shrader & Simon 1997 McDougall, Covin, Robinson & Herron 1990 (1992)	Negative Not found
	Conservative generalist strategy	Romanelli 1989	Negative
<b>Learning</b>	Previous failures	Maidigue & Zirger 1985	Positive
<b>Management</b>	Management support <ul style="list-style-type: none"> <li>• constant, visible, long-term</li> </ul>	Von Hippel 1977, Zirger & Maidigue 1990	Positive

Venture characteristics are the most studied area in corporate venturing and in SME studies. The earlier corporate venturing research and SME studies have found many factors affecting performance. These SME studies may or may not be applicable to the internal corporate venturing environment. For example, the following factors have been found to affect the performance of the venture: 1) entrepreneur and team characteristics like proficiency or management and industry specific know how, prior experience and R&D competence, 2) size and age of the venture, 3) founding processes and 4) social interaction. Social interaction or networking is based on the fundamental assumption that with trust, relations and interactions the venture may positively influence its future. In addition, learning from mistakes has been studied and found to possibly affect future venture success (McGrath 1995). Table 2-3 below presents some of the venture factors and their effect on performance.

Table 2-3: Venture success factors

<b>Venture factors</b>	<b>Factor</b>	<b>Author</b>	<b>Effect</b>
<b>Management</b>	Management proficiency	Block & Ruff 1986	Not found on perceived performance
		McGrath, Tsai, Venkataraman & MacMillan 1996	Positive on future rents
<b>Prior experience</b>	Previous positions of venture managers	Von Hippel 1977 Stuart & Abetti 1986	Negative Positive (start-up)
	Experience in venturing	von Hippel 1977	Positive
	Experience in venturing (parent organization)	Shortell & Zajak 1988	Positive on survival, negative on profitability
	Technical performance	Zirger & Maidique 1990	Positive
	R&D competence	Zahra 1991,1993,1996 Dowling & McGee 1994 Day 1994	Positive on growth
			Positive Positive
	Previous position of managers	Day 1994	Negative on hierarchical position Positive on principal champion
	Marketing originated	Block & Ruff 1986	Positive
Marketing competence	Zirger & Maidique 1990	Positive	

<b>Venture factors</b>	<b>Factor</b>	<b>Author</b>	<b>Effect</b>
<b>Prior experience</b> (contd.)	Manufacturing competence	Zirger & Maidigue 1990	Positive
	Production originated	Block & Ruff 1986	Positive
<b>Prior experience</b> (contd.)	Experience of parent organization	Shortell & Zajak 1988	Positive/negative
	R&D intensity (patents)	Zahra 1991,1993,1996	Positive
<b>Age</b>	Age of the venture	Zahra 1991,1993,1996 Lawless & Andersson 1996 Dowling & McGee 1994	Positive Positive Positive
<b>Size</b>	Size of the venture	Tsai & MacMillan & Low 1991  Damanpour 1996	Not found on profitability, positive on growth Positive on innovations
<b>Persistence and maturity</b>	Redirections of a venture	Block & MacMillan 1985	Positive
	Fully developed business plan	MacMillan 1987	Negative
	Explorative nature of strategy	Lumme 1999	Positive (start-up)
<b>Social interaction</b>	Internal relations	Miller & Spann & Lerner 1991 Yli-Renko 1999 Tsai & Ghoshal 1998	Not found Positive (start-up) Positive
	External relations	Geletkanycz & Hambrick 1997	Negative



## **2.5. Processes for Managing Uncertain Projects**

Corporate venturing activity has been conceptualized as a process (Venkataraman et al. 1992) in which ventures are understood to go through a linear sequence of stages (Keil 2000:57). A major difference between the various process models is the number of stages. Initially these models identified two phases.

George and MacMillan (1985) identified two different phases: the venture creation and momentum stages. The venture creation phase mainly consisted of preparing and undertaking the project. The momentum phase was preparation for the competitor attack. The Hornsby model was a similar two-stage model: a phase before the decision and a phase after the decision, the latter being the so-called implementation phase (Hornsby, Naffziger, Kuratko & Montagno 1993).

Venkataraman et al. (1992) developed a model of four generic stages, which include 1) venture definition, 2) venture penetration, 3) contagion and 4) institutionalization. In this model the new element was contagion. In venture penetration the focus is on the market entry. In the contagion phase the focus changes to growth targets. Institutionalization means the need to integrate the venture with the existing corporate structures, in other words to stabilize the venture in the context of the organization (Venkataraman et al. 1992). Gnyawali and Grant (1996) extended the model by four different learning types: re-inventive, formative, adjustive and operating learning.

Block and MacMillan (1985,1993) developed a detailed 10-stage process model consisting of:

1. Completion of concept and product testing,
2. Completion of prototype,
3. First financing,
4. Completion of initial platform tests,
5. Market testing,
6. Production start-up.
7. Bellwether sale,
8. First competitive action,
9. First redesign or redirection and
10. First significant price change.

In summary, many of these internal venturing models seem to be theoretical concepts, and they are conceptualized as a sequence of progressive linear stages. While the above-mentioned models assume a linear progression, also non-linear models exist.

According to Burgelman, a process model that takes organizational dimension and strategic decision-making processes into account at different levels of the organization both simultaneously and sequentially is more appropriate. Burgelman states that definition and impetus are ‘core processes’ and strategic and structural context are ‘the overlaying processes’ in venture development (Burgelman 1980). He distinguishes three levels and roles for corporate managers in venturing activities: top, middle and bottom. He further states that many problems result from the fact that related strategic activities take place at different levels in the organization (Burgelman 1980). The levels of management and strategy making processes of internal corporate venturing, as proposed by Burgelman, are depicted in figure 2-2.

	Definition	Impetus	Strategic context	Structural context
<b>Top</b>	Monitoring	Authorizing	Rationalizing	Structuring
<b>Middle</b>	Coaching	Strategic building	Delineating	Negotiating
<b>Bottom</b>	Technical need linking	Strategic forcing	Gatekeeping Idea generating Bootlegging	Questioning

Figure 2-2: Levels of management and strategy making processes in corporate venturing (adopted from Burgelman in 1984)

Other models that may need to be included in internal corporate venturing models are innovation process models. The first innovation models were the technology push or market pull models (Rothwell 1994). After technology push and market pull models followed the integrated models, which coupled the market needs with development of technology. The next models were sequential or parallel innovation models integrating innovation into new product development process. Further innovation process models took into account the network of actors. Most of these innovation models are implementable to incremental innovations, which assumes that existing market and a fit of the product into this market are available (Tushman & Anderson 1986; Keil 200:61).

Radical innovations or innovations that create new markets are more difficult to describe within the previous models. Dominant design research is one attempt to fill this gap (Anderson & Tushman 1997; Tushman & Anderson 1986).

Van de Ven and Polley (1992) in turn formulated a twelve-stage innovation process model. The stages are grouped into three periods: 1) initiation, 2) development and 3) implementation or termination periods. This model assumes that the innovation development is explorative in nature.

The initiation period begins when clear need for change has been identified. This period consist of preparation and conceptualization of the innovations (gestation, shock, plans). When the preparation and conceptualization has been done, development of innovations may begin. The development period includes proliferation, mistakes and setbacks. This means that in exploration and production phase also mistakes and setbacks are possible. This further means that the criteria of success and failure may change. When success and failure alternate employees will fluidly engage and disengage in the project. Top managers and investors as well as relations with other units and organizations are key players in this phase. Also necessary infrastructure needs to be developed. The project may end in implementation or termination. Implementation includes the adaptation phases (Van de Ven & Polley 1992). The Van de Ven model is presented in the following figure 2-3.

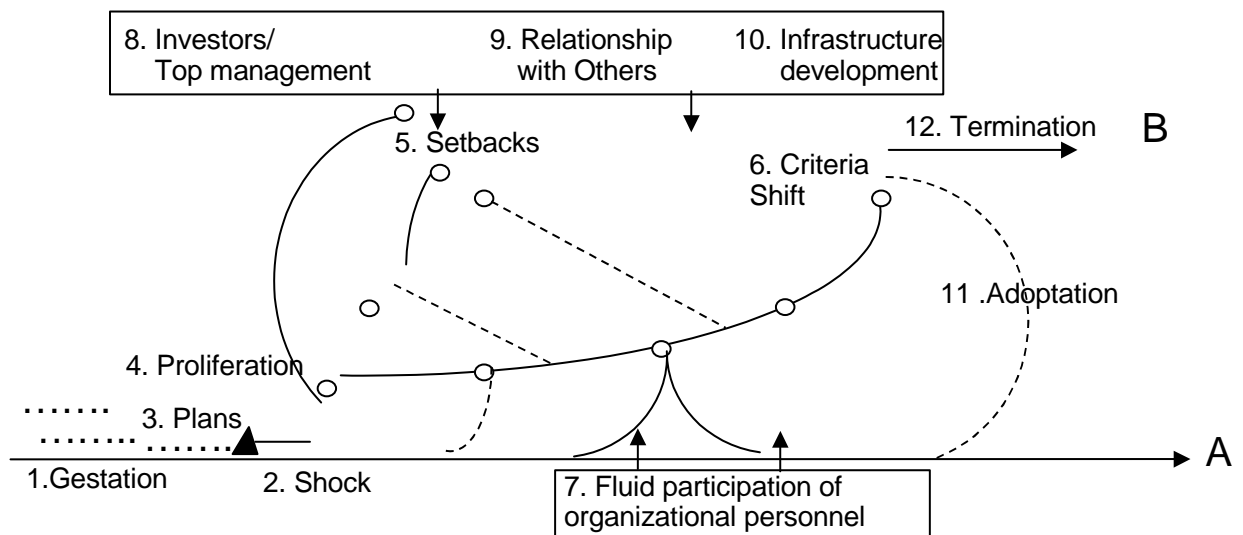


Figure 2-3: Key components of innovation process by Van de Ven 1999

Based on the literature review, the process models have evolved from simple two-stage linear models to more complex and sequential process models and structures. Most of the models have focused solely on venturing and do not take into account the crossing of boundaries between ventures and existing businesses.

## **2.6. Model and Propositions**

### **2.6.1. Relevant Constructs from the Theoretical Perspectives**

As the brief overview of venturing literature has shown, the motivation of firms to engage in venturing and factors that influence the venture outcomes have been characterized in different ways within several important theoretical traditions in management. These theories emphasize different constructs as being of primary importance. The ecological model strongly emphasizes opportunity in the environment as a motivator for entrepreneurial behavior and the shift of those opportunity spaces as the motivator of firms to seek adaptive responses, such as corporate ventures. The environment external to the firm is thus a key construct. Models of slack search, in contrast, focus their attention on factors within the firm to explain both pursuit of and success of corporate ventures. The availability of lower-level resources that teams who can access the assets of the corporation can capitalize on encourage local search for new opportunities. Resource-dependence theory, while having an emphasis on the firm-environment interaction in common with the ecological perspective, is mainly concerned with the incentive problem. Because firms depend on externally generated resources for their survival, they have incentives to respond to the key external constituencies (primarily customers) that provide these resources. These incentives are thus translated to processes and heuristics within the firm, constituting simple operational rules, such as ‘respond to the needs of your best customers.’ The real options model, although relevant at the level of corporate-wide decision-making, is seen to have the most direct applicability to heuristics at the level of managing a particular venture. Thus, ventures being managed with a real options sensibility might incorporate heuristics such as ‘invest a small amount initially and scale up investment only as uncertainty-reduction warrants’, ‘check for the validity of assumptions at key milestones’ and ‘be prepared to abandon or redirect the venture in the event that assumptions are not validated.’

In this study I am integrating factors from these perspectives. The key construct in this research is venture outcome. Based on ecology and options reasoning, slack search and

dependency theory, I divide the key explanatory constructs to venture environment, firm internal environment and firm external environment. Further I divide the factors inside these environments to venture factors, firm factors and business factors. The key constructs are depicted in the figure 2-4 below.

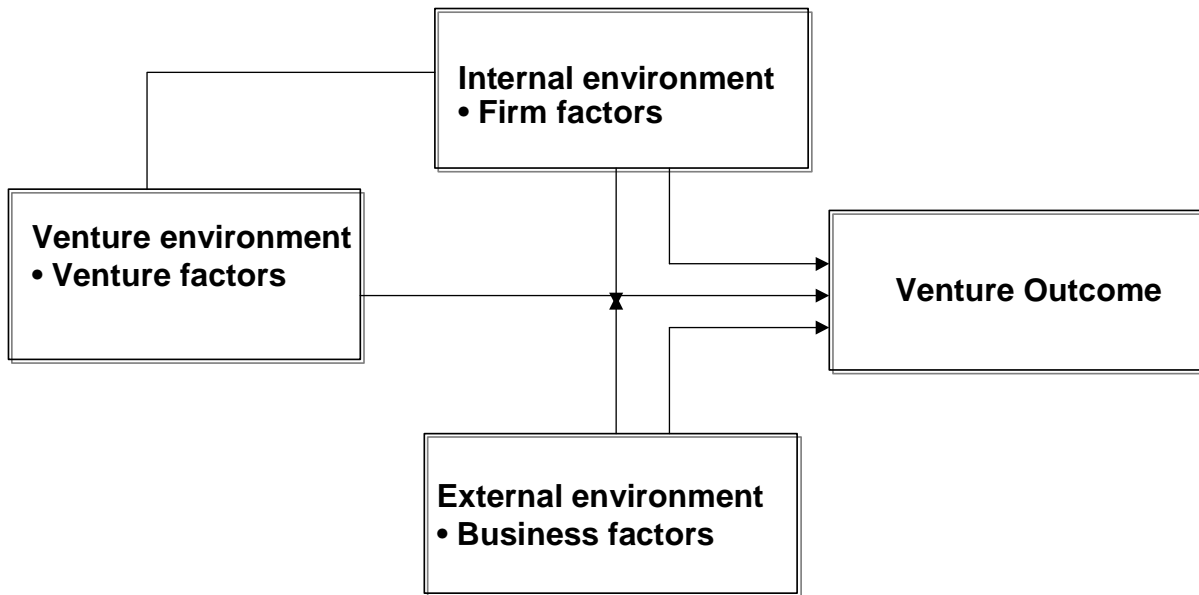


Figure 2-4: Key constructs

Based on theories reviewed and the factors influencing the outcomes presented in tables 2-1, 2-2 and 2-3, I select the following factors to this research. Based on slack search research, I select the venture factors: 1) team capability, 2) access to assets (by social interaction), 3) venture idea origin and 4) size. The venture factors are treated as exogenous, that is given and not explainable factors in this study. This view is selected due to the fact that venture factors are the most studied area in internal corporate venturing literature. Based on resource dependence theory the firm factors selected for the model are 1) strategic relatedness between the venture and the corporate strategy, 2) management priority and 3) persistence with ventures. Strategic relatedness is taken as an exogenous factor and the others, management priority and persistence, as endogenous factors. Based on ecology and options

reasoning, I select market and technology uncertainty as the business factors. Business factors are treated as exogenous factors.

The aim is to test how especially venture, firm and business factors interact and how these interactions jointly, rather than individually, influence the venture outcome. The model is expected to contribute to an understanding particularly of the effect of venture and firm level mechanisms and relations on the venture outcome. The model and factors are depicted in figure 2-5 below.

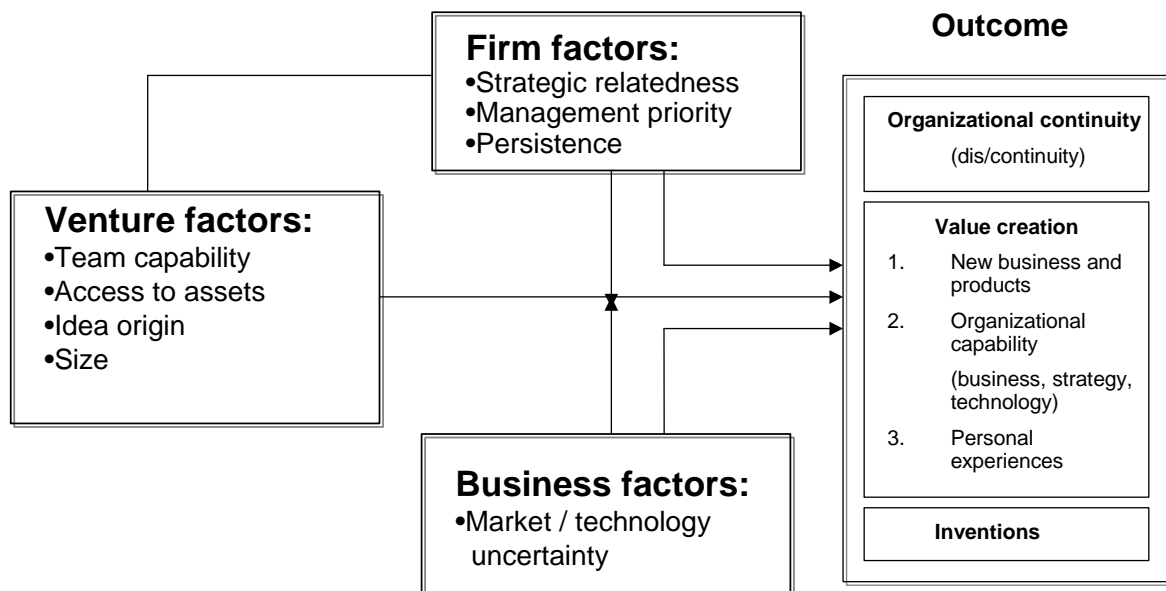


Figure 2-5: A multidimensional view of venture performance

### 2.6.2. Development of the Propositions

The degree of relatedness of the venture to the corporate strategy refers to the degree of newness of the venture to the organization or strategy. It has been argued that relatedness may vary from being closely related to being completely unrelated to the present activities of the organization, which leads to variation in the challenge provided and the learning required for effectively managing the internal corporate ventures (Block & MacMillan

1993; Sorrentino & Williams 1995; Sharma & Chrisman 1999). When the venture dynamically develops further, also closeness or relatedness between the venture and the corporate strategy may change. Resource dependence theory suggests that if a venture supports the current flow of resources to the firm, it is more likely to be continued than a venture, which cannot claim to support the current strategy of the firm.

Senior managers play a critical role in enabling new ventures to grow and develop, while maintaining a necessary balance with the organization's ongoing businesses (Block & MacMillan 1985). The involvement of senior management is essential to successful venturing (Block & MacMillan 1985). On the other hand, priority and sponsoring are related to the degree of formal authorization of the venture. Zahra (1991,1993,1996) has suggested that ventures may vary from being formal or induced (sponsored by an organization) to being informal or autonomous (entrepreneurial efforts based on employees' initiative without formal organizational sponsorship). Day (1994) supported this view by 'top-down', 'bottom-up' and 'dual-role champions'. The challenges and opportunities may vary according to the mode of sponsorship. For example, as concerns autonomous entrepreneurial efforts, the role of an organizational champion is extremely important, whereas it may not be as critical in the case of formally induced efforts (Pinchot 1966; Burgelman 1983; Kanter 1983; Covin & Slevin 1990; Sharma & Chrisman 1999). Therefore, I argue that the overall senior management priority affects the persistence of the individual ventures. Management priority may or may not have a direct effect on the venture outcomes. Therefore, I propose:

**Proposition 1 a:** The higher the strategic relatedness between the venture and the corporate strategy, the higher the management priority.

**Proposition 1 b:** The higher the management priority, the higher the persistence to continue the venture.

The firm factors relatedness propositions are shown in figure 2-6 below.



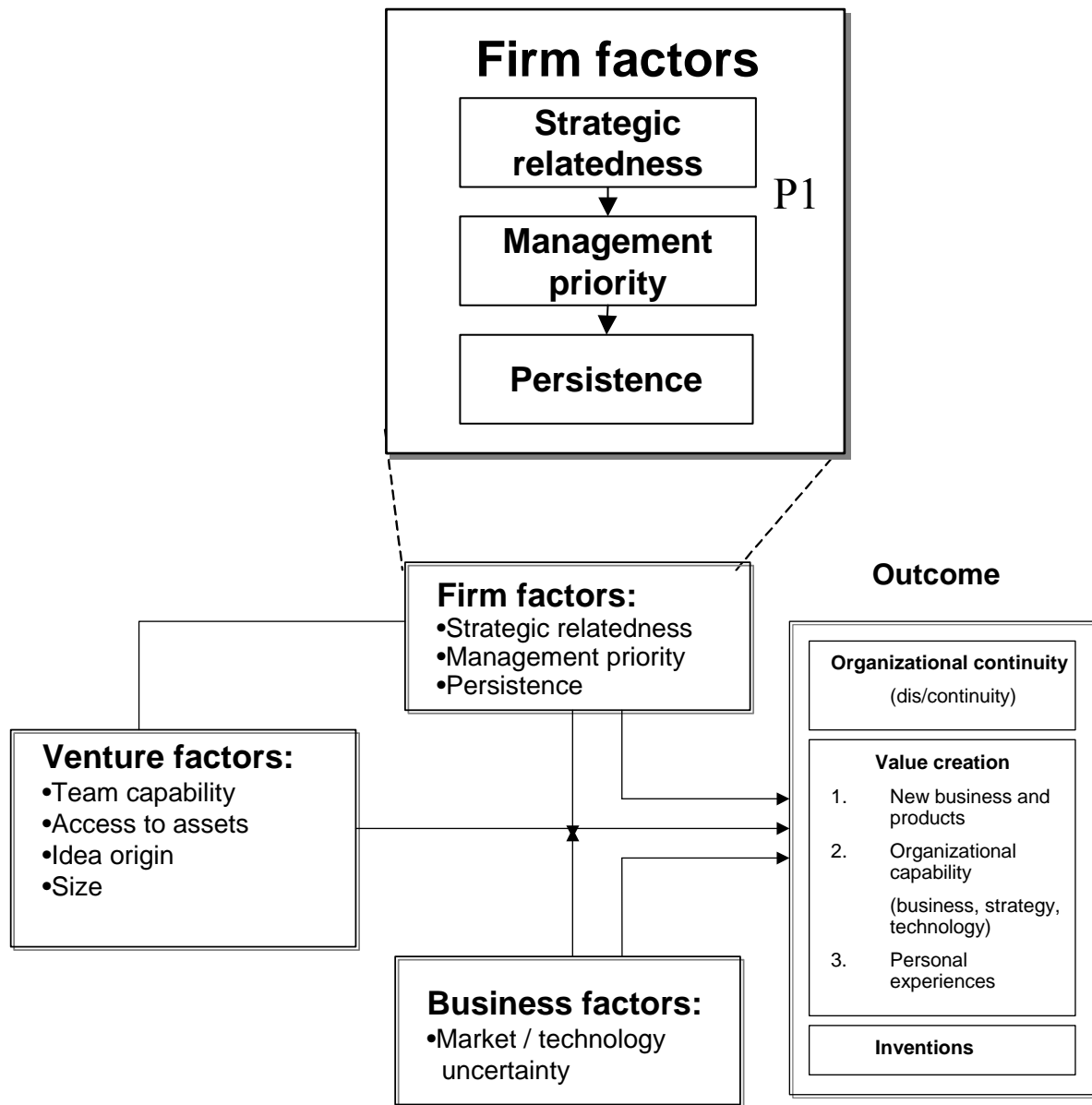


Figure 2-6: Proposition 1

Based on resource dependence theory the corporate ventures are dependent on the firm environment. The firm factors have an effect on venture establishment and on venture development. The venture factors, more specifically team capability, access to assets, idea origin and size, may have relations with the firm factor persistence of management with a

venture. This follows from the reasoning that ventures may influence their own future by team capability, social access, idea and size of the venture. Therefore, I propose that

**Proposition 2:** The venture and firm factors are positively related to one another.

Propositions 1 and 2 together imply that venture factors are related to firm factor persistence. This relation is depicted in figure 2-7.

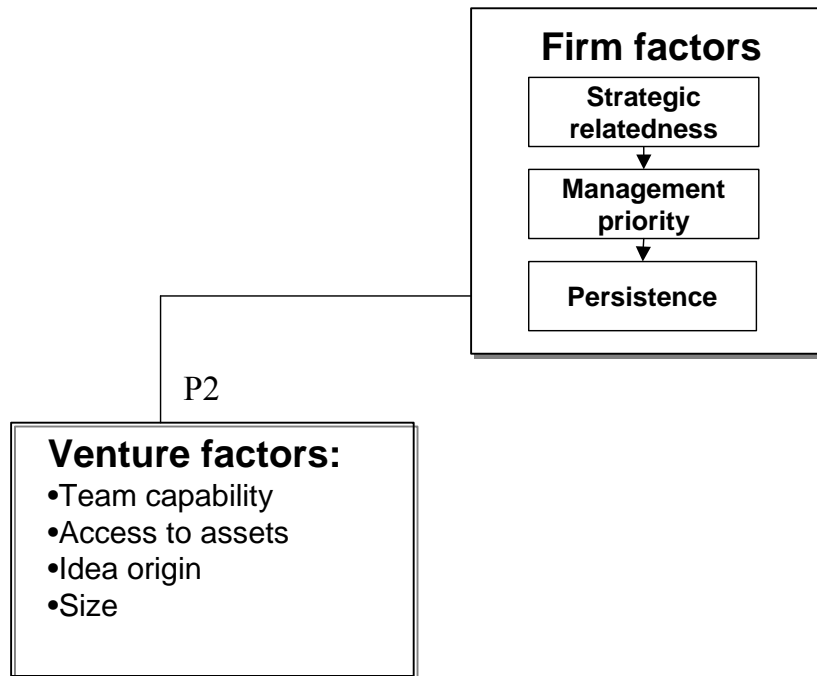


Figure 2-7: Proposition 2

In detail the venture factors, more specifically team capability, access to assets, idea origin and size, may have relations with the firm factor persistence of management. The subsequent propositions are shown in more detail in table 2-3 below.

Table 2-4: Proposition 2 in detail

<b>Number</b>	<b>Proposition</b>
<b>Proposition 2a</b>	The higher the team capability, the higher the persistence of management.
<b>Proposition 2b</b>	The higher the access to assets, the higher the persistence of management.
<b>Proposition 2c1, 2c2</b>	The closer idea origin is to the core of the firm, the higher/lower the persistence of management.
<b>Proposition 2d</b>	The bigger the size of the venture, the higher the persistence of management.

Based on the theory of slack search I argue that internal corporate ventures may build their competitive advantage on the basis of the resources they control, such as team capability, access to assets, size and idea. Prior research on corporate venturing and small and medium size enterprise (SME) studies has found that one of the key contributors is the venture manager together with the core venture team. The extant research finding is that the proficiency of management and industry specific know-how, prior experience and R&D competence are key success factors in ventures (von Hippel 1977; Block & Ruff 1986; Stuart & Abetti 1986; MacMillan 1987; Shortell & Zajak 1988; Zirger & Maidique 1990; Day 1994; Dowling & McGee 1994; McGrath, Tsai, Venkataraman & MacMillan 1996; Zahra 1991,1993,1996). In this research I define this proficiency of the venture manager and core team as a team capability.

In respect of team capability, the existing research has suggested that prior competence and principal role in research and development, marketing and production contributes to success of the venture (Zirger & Maidique 1990; Day 1994; Dowling & McGee 1994; Zahra 1991,1993,1996). In contrast, it has been found that the higher the prior organizational position of the venture manager, the lower the success potential of a corporate venture (von Hippel 1977; Burgelman 1984; Day 1994). This is explained by the fact that such high prior organizational position may present insufficient knowledge of new technologies and limited ability to manage a venture with fundamentally different needs than the existing business

units (Burgelman 1984). In addition, it has been found that one predictor of success was the extent to which the firm, not the members of the ventures, had direct prior experience in the market for which the product from the new venture was intended (von Hippel 1977).

In understanding the dimensions of team capability in closer detail, the key question is what is the role of prior experience as well as recent and old knowledge in explaining the success of the venture. Several theoretical arguments support the use of prior experience as well as both recent and old knowledge. Some researchers have argued that firms should build on the most recent technological foundations to enhance innovation (Katila 2002). Various authors have stated learning may prove to be the most important source for sustainable competitive advantage (Teece, Pisano & Shuen 1997; Sanchez & Heene 1997). It has also been found that if knowledge ages, it becomes obsolete and no longer matches the demands of the environment (Thomson 1967; Eisenhardt 1989). Organizations tend to focus on recently created knowledge, although that knowledge is easily available for anybody, since older knowledge is often more difficult to access and build on (March 1991; Argote 1999; Katila 2002).

In fact, many products are novel combinations of ideas discovered in different times (Katila 2002). Although exploratory research has a key role in knowledge creation, exploitation also plays a role. The firms and the corporate ventures can differentiate themselves not only by the extent to which they explore new things, but also by the extent to which they master the old ones (Schumpeter 1934; Katila 2002). Therefore, the critical issue for the firm and the corporate ventures is how they search and use old and new knowledge, which affects new innovation. Understanding the use of recent and old knowledge is one of the key dimensions of team capability.

I define the team capability as consisting of proficiency of the venture manager and core team. In this study, the proficiency consists of use of prior experience and recent and old knowledge. I argue that venture team capability affects the venture outcomes. Therefore, I

propose that the higher the team capability, the higher the probability of venture continuity and value outcomes.

The venture needs to have access to assets especially to corporate management, decision-making, existing businesses and other ventures. According to the previous research, quality of interaction and trust with corporate management facilitate the access and increase the knowledge transfers as well as desired decisions (Nahapiet & Ghoshal 1998; Tsai & Ghoshal 1998; Yli-Renko 1999).

Building on the literature review above, I argue that access to corporate resources and management, which I in this study define and call access to assets, is an important venture factor influencing the venture outcomes. Therefore, I propose that the better the access to assets, the higher the probability of venture continuity and value outcomes.

If this view ‘the history of the firm tends to predict the future of a firm’ is applied to the internal corporate venturing environment, the question is what is the role of organizational origin of the ideas and how does the idea origin affect the success or failure of the venture. The idea origin refers to the organizational genotype of the venture (Nelson & Winter 1982; McKelvey & Aldrich 1983). Selznick (1957) emphasized the influence of organizational founders on the success of the organizations. In contrast, Stinchcombe (1965) stressed the influence of environmental conditions in the development of organizations (Romanelli & Tushman 1994). Selznick and Stinchcombe together argued that organizations tend to capture the characteristics of organizational founders, people and environments surrounding the organization (Romanelli & Tushman 1994). Also in the small and medium size enterprise (SME) studies the founding processes and the relationship between venture performance and the prior organization of the entrepreneurs have been one of the research interest areas (Freaser & Willard 1988; Cooper 1991).

Based on the literature review above, particularly if applied to the internal corporate venturing environment, it could be stated that the idea origin of the venture including the

people and founding organization has influence on the development of the venture. However, there are very few or nearly no studies on the origin of the ventures in internal corporate venturing environment. I propose that the closer the origin of the venture is to the core of the firm, the higher/lower the probability of venture continuity and value outcomes.

Prior corporate venturing research has found that the size of the venture affects venture performance (Tsai, MacMillan & Low 1991; Damanpour 1996). Hitt et al. (1990) have argued that size affects innovation positively because large organizations have more financial slack and therefore opportunities, better marketing skills, more research capabilities and existing product development experience.

However, large organizations have also been said to inhibit innovation because large organizations are more formalized, managerial behavior is more standardized, inertia is higher, and the managerial commitment to innovations is lower. Even if large organizations are argued to have more control over the external environment, they are also more bureaucratic and less flexible, unable to change and adapt quickly, and tend to have impersonal working environments (Hitt et al. 1990; Damanpour 1996:695). In contrast, small organizations are argued to be more innovative and flexible, have greater ability to adapt and improve, and are easier at accepting and implementing change (Mintzberg 1979,1994).

Based on the literature review above, the research results on how size affects performance of organizations and ventures are mixed. Internal corporate venturing research has found that venture size has positive effect on innovations measured by patents granted (Damanpour 1996). However, Tsai, MacMillan & Low (1991) found that venture size has no effect on profitability, but has a positive effect on growth. I propose that the larger the size of the venture, the higher the probability of venture continuity and value outcomes.

Taken together I propose:

**Proposition 3:** The better the venture factor, the better the venture outcomes.

This impact is shown in figure 2-8.

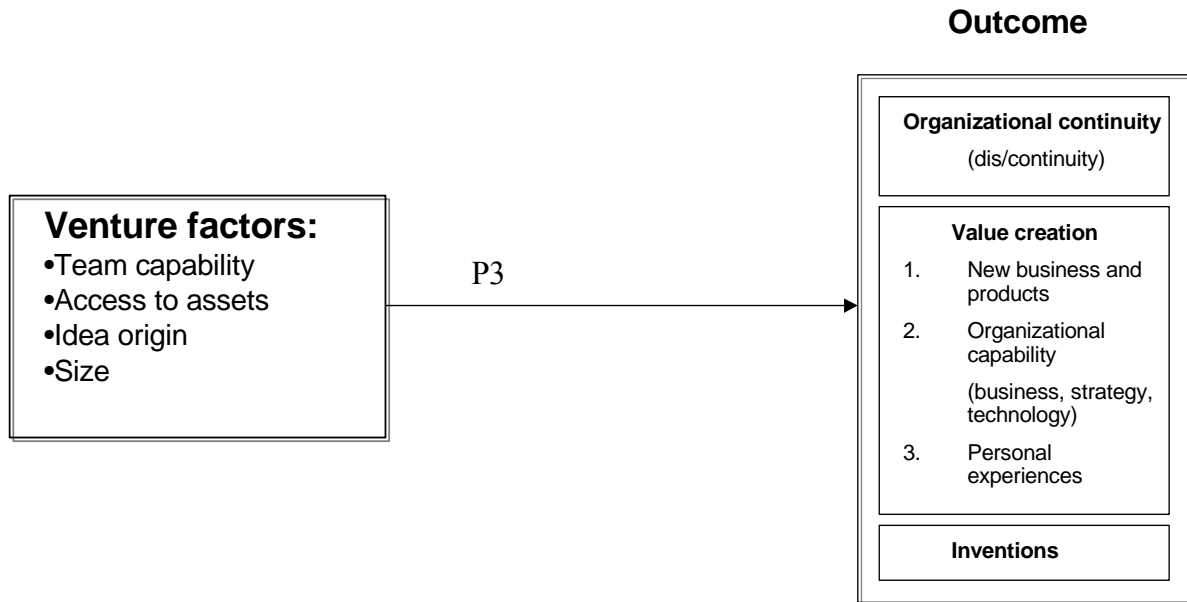


Figure 2-8: Proposition 3

The detailed propositions are shown in table 2-5 below.

Table 2-5: Proposition 3 in detail

Number	Proposition
<b>Proposition 3a</b>	The higher the team capability, the higher the probability of venture continuity and value outcomes.
<b>Proposition 3b</b>	The better the access to assets, the higher the probability of venture continuity and value outcomes.
<b>Proposition 3c1, 3c2</b>	The closer the idea origin is to the core of the firm, the higher/lower the probability of venture continuity and value outcomes.
<b>Proposition 3d</b>	The bigger the size of the venture, the higher the probability of venture continuity and value outcomes.

According to research on corporate venturing, in companies with successful venturing programs, the mind-set of senior managers should be persistent and long-term oriented (Block & MacMillan 1985; McGrath 1996). At each milestone, if faced with challenges to the venture, the senior managers' mind-set is rather how to change direction of the venture than whether or not to proceed.

Business strategy and concept matures along the venture process (Block & MacMillan 1985). The venture strategy is explorative by nature and will develop over time. In contrast, fully developed business strategy or plan in the beginning does not guarantee anything or could vice versa affect venture development negatively (MacMillan 1987). Because the nature of a venture is explorative, the ventures need a persistent attitude from the management. Development of ventures requires a goal-oriented mind-set (MacMillan 1987).

An important issue is to tie the new venture initiatives to the strategies of the firm. Firms with clear vision and intent pursue the ideas and ventures persistently, which will lead to better venture results (Hamel & Prahalad 1990,1994). I argue that persistence is one of the key factors directly and contingently affecting the venture outcomes. I propose:

**Proposition 4:** The firm factors and the venture outcomes are positively related to one another.

Propositions 1 and 2 together imply that selected firm factor persistence has a direct effect on the venture outcome. This impact is depicted in figure 2-9.



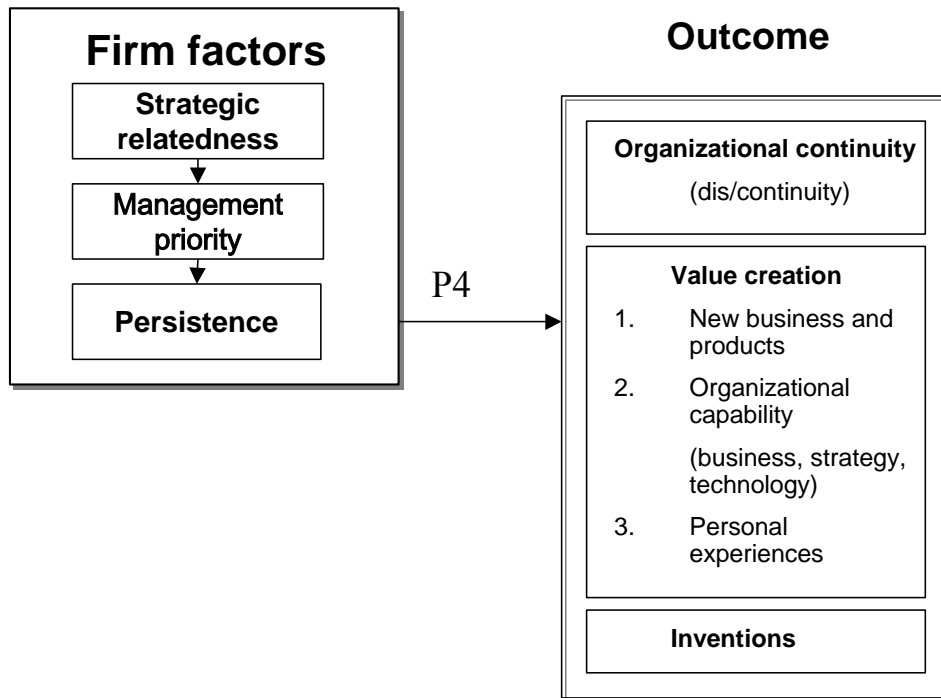


Figure 2-9: Proposition 4

Building on ecology reasoning, the effectiveness results from fitting characteristics of the firms to the external environment leading to higher performance. In this proposition the ecology reasoning is applied to corporate ventures by fitting ventures to internal firm environment. The firm environment as the internal selection environment that ventures face affects the relationship between venture factors and venture outcomes. I propose:

**Proposition 5:** The higher the venture factor, the better the venture outcomes. This effect is moderated by firm factors.

This dependency is shown as figure 2-10.

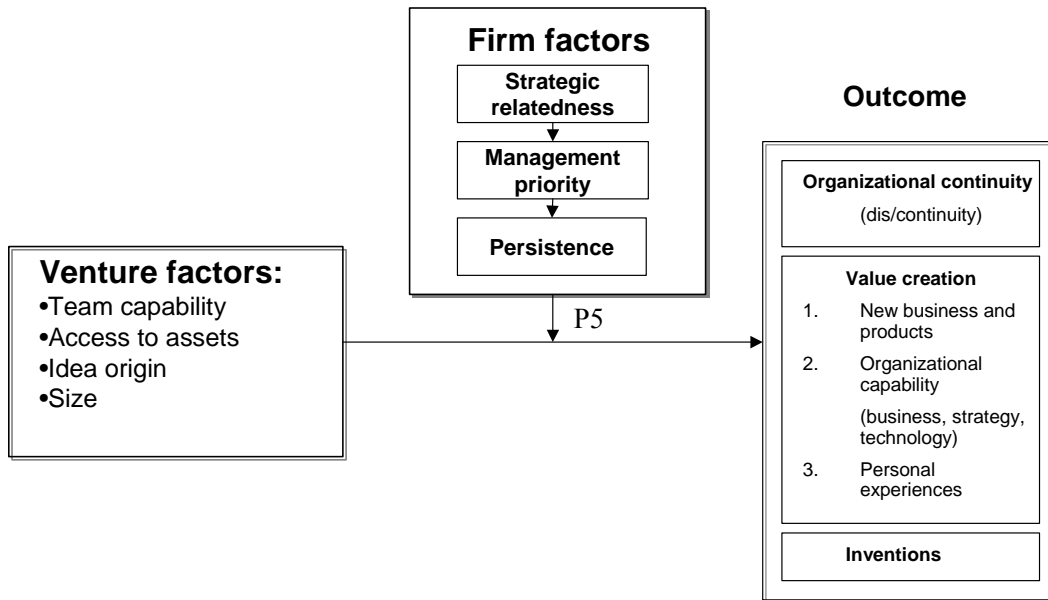


Figure 2-10: Proposition 5

Taking into account the propositions 1 and 5 together, the detailed propositions are depicted in table 2-6 below.

Table 2-6: Proposition 5 in detail

Number	Proposition
<b>Proposition 5a</b>	The higher the team capability, the higher the probability of venture continuity and value outcomes. This effect is moderated by firm factor persistence.
<b>Proposition 5b</b>	The better the access to assets, the higher the probability of venture continuity and value outcomes. This effect is moderated by firm factor persistence.
<b>Proposition 5c1, 5c2</b>	The closer idea origin is to the core of the firm, the higher/lower the probability of venture continuity and value outcomes. This effect is moderated by firm factor persistence.
<b>Proposition 5d</b>	The bigger the size of the venture, the higher the probability of venture continuity and value outcomes. This effect is moderated by firm factor persistence.

The ventures are option-like, which makes uncertainty a key factor in decision-making according to options reasoning. Firms design their structures and decision processes to be compatible with the degree of environmental uncertainty. Therefore, uncertainty has substantial impact on the development, introduction and commercialization of entrepreneurial opportunities. The level of uncertainty defines the value of the initiative. The greater the uncertainty, the more value the activity or option is worth (McGrath 1996). In contrast, Hoskinsson (2001) argues that high market uncertainty increases the probability of failure of a venture.

In this study uncertainty is defined as lack of information about future events, so that alternatives and their outcomes are unpredictable. Uncertainty is divided into technology and market uncertainty. Technology uncertainty means ambiguity about whether one technology of the company can deliver the promise made to and fulfils the needs of the customer. Market uncertainty means ambiguity about the type and extent of customer needs that can be satisfied. Uncertainty and the degree of newness in the market place are closely related concepts in internal corporate venturing. The dimension of newness may vary from simply imitative to potentially 'frame-breaking' or disruptive (Stopford & Baden-Fuller 1994). Frame-breaking or disruptive means the ideas and ventures are completely new to the marketplace, and even create new markets. The firm is a pioneer and faces considerably greater challenges, but also higher uncertainty and risks in consequence (Sharma & Chrisman 1999). I propose that market and technology uncertainty are the key business factors affecting venture outcome:

**Proposition 6:** The greater the level of market and technology uncertainty, the lower the level of venture outcomes and higher the probability of venture discontinuity.

This relation is depicted as figure 2-11.

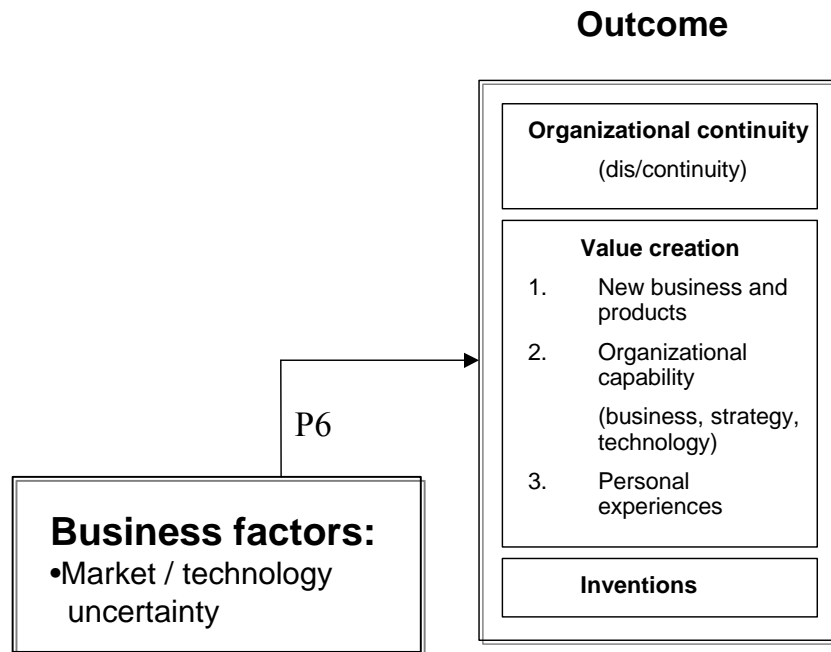


Figure 2-11: Proposition 6

The detailed proposition 6 is depicted in table 2-7 below.

Table 2-7: Proposition 6 in detail

Number	Proposition
<b>Proposition 6a</b>	The greater the level of market uncertainty of the venture, the lower the level of venture outcomes and higher the probability of venture discontinuity.
<b>Proposition 6b</b>	The greater the level of technology uncertainty of the venture, the lower the level of venture outcomes and higher the probability of venture discontinuity.

In this proposition the ecology reasoning is used to fit corporate ventures to external business environment. The business environment as the external selection environment and especially uncertainty affects the relationship between venture factors and venture outcomes. I propose:

**Proposition 7:** The higher the venture factor, the better the venture outcomes.  
The effect is moderated by business factors.

This contingency is presented as figure 2-12.

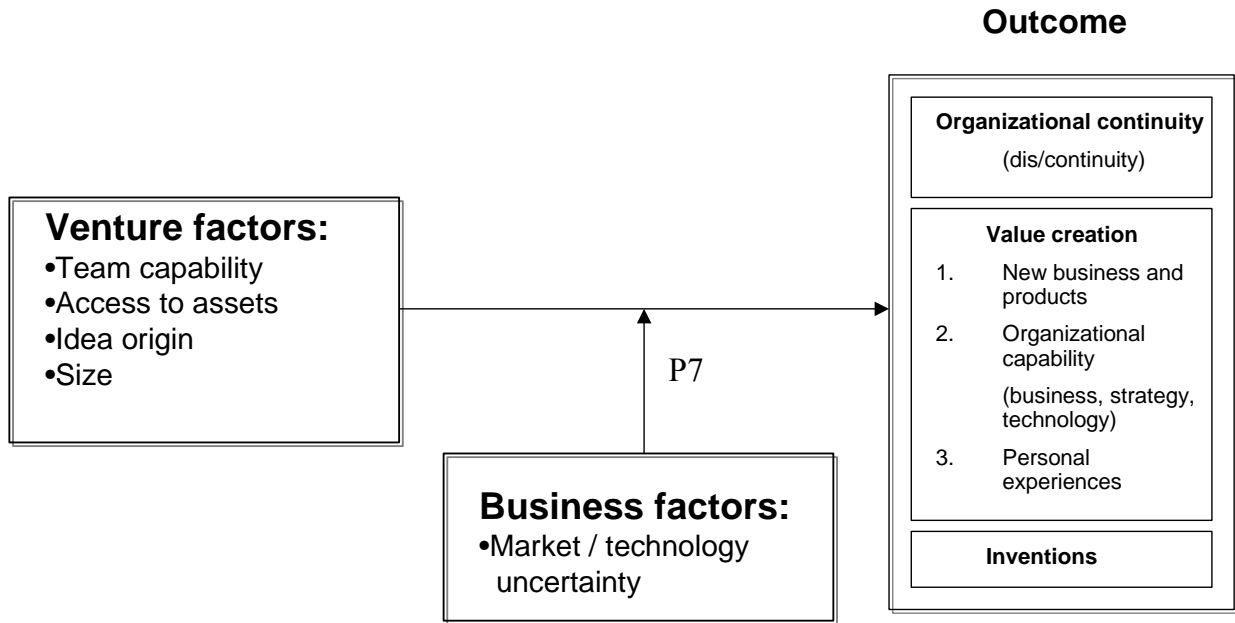


Figure 2-12: Venture and business factors contingent effect on venture outcome

The detailed proposition 7 is depicted in table 2-8 below.

Table 2-8: Proposition 7 in detail

Number	Proposition
<b>Proposition 7a</b>	The higher the team capability, the higher the probability of venture continuity and value outcomes. This effect is moderated by technology/market uncertainty.
<b>Proposition 7b</b>	The better the access to assets, the higher the probability of venture continuity and value outcomes. This effect is moderated by perceived technology/market uncertainty.

Number	Proposition
<b>Proposition 7c1, 7c2</b>	The closer idea origin is to the core of the firm, the higher/lower the probability of venture continuity and value outcomes. This effect is moderated by technology/market uncertainty.
<b>Proposition 7 d</b>	The bigger the size of the venture, the higher the probability of venture continuity and value outcomes. This effect is moderated by technology/market uncertainty.

## 2.7. Summary

Building on the literature review on resource dependency theory, slack search and ecology and option reasoning the model and seven propositions were developed as depicted in figure 2-13 below.

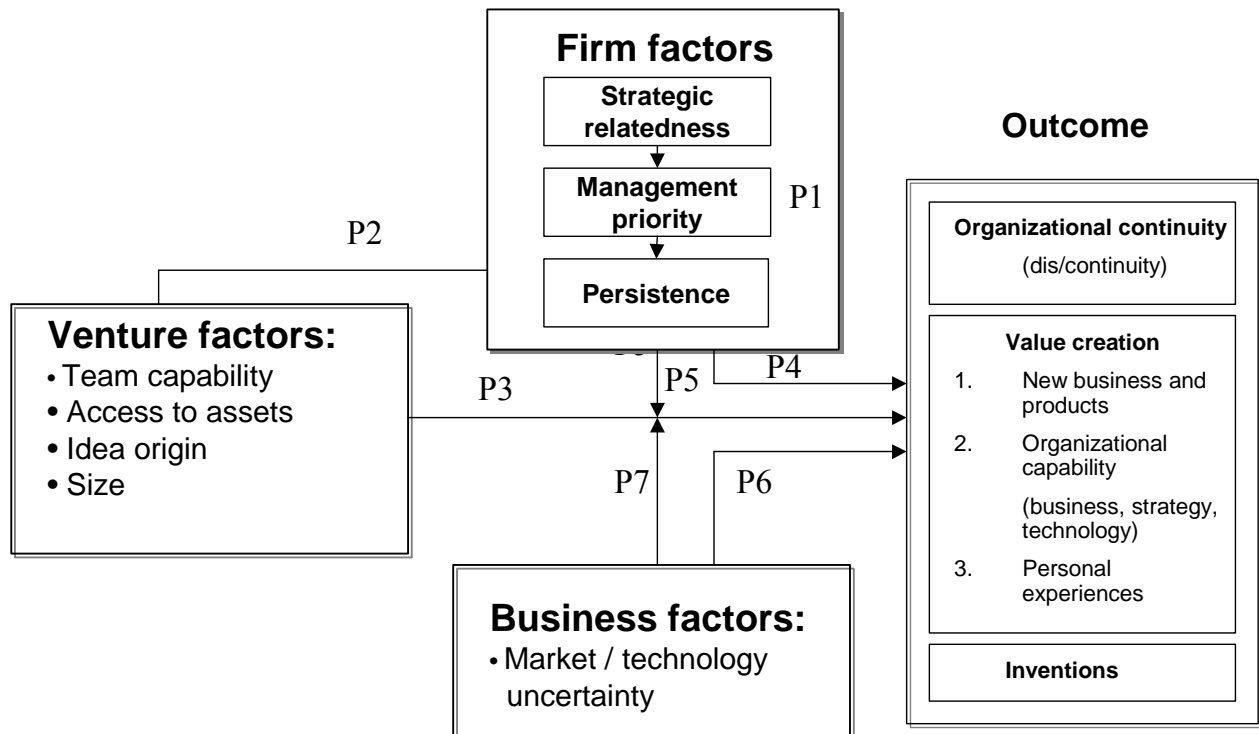


Figure 2-13: Model and propositions

### **3. METHODS AND DATA**

This chapter discusses the overall method, data and study context used in the present study. First, the method and research environment are discussed. Second, the operationalizations of propositions to hypotheses are explained, and why the selected way to operationalize has been chosen is discussed. The boundaries of the selection are also discussed. Third, the operationalization of variables, scales used, selection criteria and boundaries of selection are discussed in further detail. Fourth, the data collection and detailed data is explained. Fifth, the statistical methodology used is briefly presented. Finally, the chapter discusses the various elements of reliability, validity and generalizability and how these elements have been taken account in the present study.

#### **3.1. The Method**

This chapter describes the method used in the present study. This study applies the conceptual analytical and nomothetic approaches. The selected approach includes that the conceptual model and propositions are developed on the basis of extensive review of research and theoretical approaches and model developed, which was reviewed in chapter 2. In this chapter, the theoretical propositions are operationalized to hypotheses by adopting variables/measures from existing research if available, and by developing new measures if not available.

In this research the theory is viewed as a system of constructs and variables in which the constructs are related to each other by propositions and the variables are related to each other by hypotheses. The whole system is bound by the theorist's assumptions. In general, according to Bacharach given the range of phenomena encompassed by individual theories, a theory with a higher ratio of hypotheses to propositions is preferable to one with a lower ratio. This means that a theory, where each proposition covers five hypotheses is preferable

to one, where each proposition only covers one or two hypotheses (Bacharach 1989). Components of a theory are depicted in figure 3-1 below.

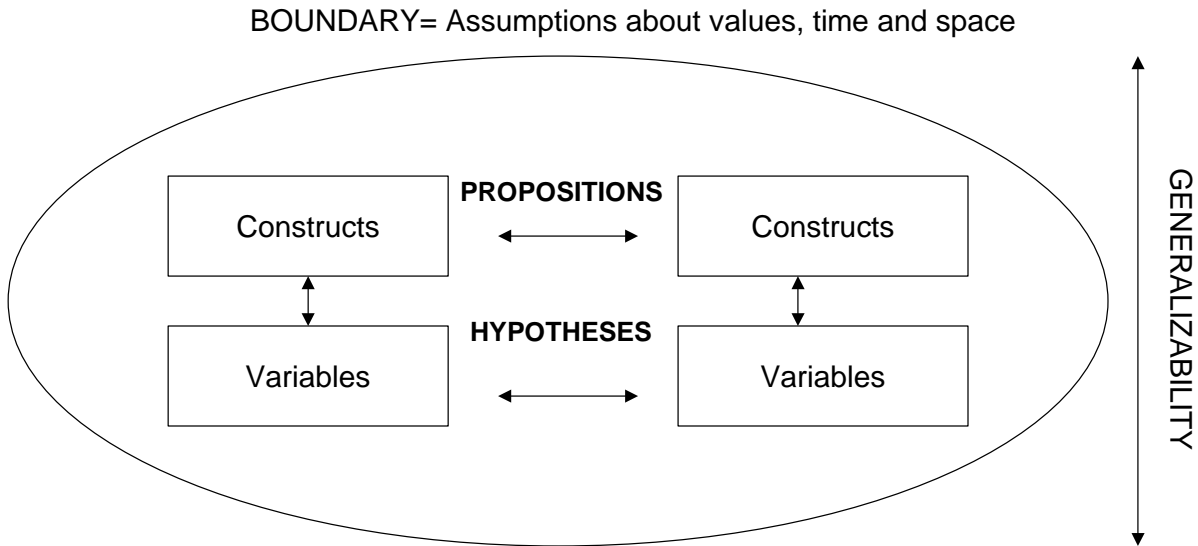


Figure 3-1: Components of a theory by Bacharach 1989

Empirical Research and the Sample

Clark, Chew and Fujimoto (1987) pointed out that ‘any study of the development process faces several problems in acquiring data’. On one hand, publicly available information on ventures or research and development projects either is not project-specific or detailed, or does not contain a complete record of data, or does not provide any evidence on the performance or outcomes. On the other hand, a lot of information on ventures and research and development projects is confidential.

The empirical part of this dissertation is based on multiple ventures from a single, global company in information and communication technology sector. The cases vary by different dimensions, which are discussed in detail later. However, they did not vary by the organizational structure of the firm. The study context might have influence on the results.



The study sample consists of an entire population of 37 ventures in Nokia. The ventures vary by many dimensions, for example venture age, size and performance. The smallest venture has one (1) person and the largest has one thousand four hundred (1400) employees (see table 3-1). The data includes ventures over the time from the year 1998 to 2002. A short summary of the ventures is included in Appendix 1. For reasons of confidentiality, the ventures are named by the cities in the world only, and the detailed information of individual projects may not be released in a public document.

Table 3-1: Venture information regarding the sample

<b>Venture</b>	<b>Size (people)</b>	<b>Number of interviews</b>
Zurich	2	2
Paris	1	1
Prague	1	1
Bonn	70	5
Warsaw	1	1
London	10	3
Budapest	30	4
Copenhagen	15	6
Berlin	0	2
New York	40	3
Tallinn	153	5
Vienna	2	2
Bratislava	20	4
Hollywood	5	2
Rome	8	2
Helsinki	15	3
Madrid	1	1
Milan	1	1
Delhi	4	4
Vancouver	1	1
Barcelona	27	4
Tokyo	8	2
Montreal	10	3
Sapporo	5	2
Stockholm	10	4

<b>Venture</b>	<b>Size (people)</b>	<b>Number of interviews</b>
Atlanta	5	2
Athens	2	1
Melbourne	2	2
Oslo	12	2
Seattle	2	2
Dallas	10	3
Riga	2	2
Singapore	5	3
Munich	2	2
Sydney	400	6
Boston	1400	6
Phoenix	10	5
<b>Total: 37</b>		<b>104</b>

In the empirical part of this dissertation the data was collected through 1) semi-structured interviews with venture managers and management teams, feedback sessions, as well as 2) the venture's internal documents including business plans, project plans and budgets. The semi-structured interviews were conducted by two researchers (Appendix 1), which increased the reliability and internal validity of the research. The interviews were also taped and transcribed. Interviews typically lasted from 1.5 hours to 4.5 hours. In each case a final venture report and a case report for this research was written based on the interview data. Each venture history comprises the data of venture background and development (qualitative and quantitative), outcomes (qualitative and quantitative) and key learning (qualitative) of the venture. The case report was longitudinal covering data from multiple points in time. The report was e-mailed to all sources for their review, comments and corrections as well as for validation. All of the available material is collected in the created database. Based on the case studies the main variables were objective and available. The objective measures include measures like number of people, amount of investments, age of the venture, process phase, idea origin, team prior experience, number of filed patents, continuity and business and products created.

The perceptual measures were quantified by an expert group of people consisting of three senior managers, who were responsible for the portfolio of ventures, and two researchers. The corporate level management team, which was responsible for managing and leading the portfolio of ventures, defined and valued the variable management priority. This kind of evaluation was based on the gatekeeper evaluation, in which the people who are in control of the access performed the evaluation. These kinds of measures in this study are access to assets, strategic relatedness between the venture and corporate strategy, technology/market uncertainty and new capabilities created in organizational, team and individual levels. These measures were also checked with the venture managers. Inter-rater agreement was calculated to establish reliability. Inter-rater agreement was on an acceptable level exceeding 73 % in all of the perceptual measures.

Although the ventures vary a lot in respect of many variables, they do not vary in respect of the organizational decisions, or substantially the development phase of the venture. The selected ventures are either operating in an own business unit (continuing as a venture), transferred to existing businesses (continuing), discontinued/closed as a venture or spun out. None of the continuing ventures in the sample is in the early development phase any more. All of the variables are measured practically at the same development phase for different ventures in a cross-sectional manner. If the ventures were discontinued, the measurement of the variables was performed in the end of the venture lifetime, not in the chronological time. For a couple of continuing ventures or business units, the measurement was done in the end of 2002. The quantitative data is retrospective and data is collected at endpoint of time in venture lifecycle, which might be different for different ventures. However, the measurement point is between the year 1999 and 2002.

The hypotheses are tested empirically using statistical inference and discussed in detail in next chapter 4. Quantitative statistical analysis is used to test whether the hypotheses between the variables are supported by the data. The possible moderating and mediating effects are also tested. The validity and reliability of the study is carefully assessed and analyzed.

### **3.2. Description of Business, Firm and Venture Environment of the Sample**

The venture sample of this dissertation is an entire population of multiple 37 ventures from a single, global company in information and communication technology sector. In this section this research sample environment together with the business, firm and venture characteristics is described in detail consisting of years from 1998 to 2002. The description covers the firm specific organizational and structural issues that might have some influence on the results of the research.

#### **3.2.1. Description of Business Environment from 1998 to 2002**

The economy, especially stock market was booming in the latter half of the 1990's. A considerable economic boom and growth occurred. At the boom of the economy the main growth drivers were the technology companies and start-ups, especially in the information and telecommunications technology sector. In the telecommunications sector, for example, the growth of mobile phones and networks was strong between the years 1998 to 2000. In year 2000 the stock market crashed and a sudden downturn occurred. The hype was gone and investors wanted solid signs of success. The investors were suspicious of plainly technological opportunities. For example, the Wireless Application Protocol (WAP) standard and the first visions of mobile Internet were introduced a few years earlier during the boom, but they failed to capture the market in the beginning of 2000.

These economic fluctuations, upturns and downturns, have a direct effect on most of the public companies. For example, the growth of the telecommunications sector saturated after the market crash. After 2000 the whole economy experienced at first a short-term uncertainty, which continued as a longer-term uncertainty until 2003.

The interest of this analysis is in the telecommunications sector and especially in wireless telecommunication. Traditionally the wireless telecommunication business is divided to

1) handsets and 2) network or infrastructure business. These two businesses vary considerably in business logic, needs of customers and business operations.

There has been substantial competition in handsets and a lot of players in the market. However, defined by market share, amount of sales and profits the three major players, Nokia, Motorola, and Ericsson divided the major market from 1998 to 2000. In the infrastructure field the same players, Ericsson, Nokia and Motorola were also the major players.

After 2000 the list of major players changed from three to five. In handsets the active and biggest major players were Nokia, Motorola, Siemens and Samsung. For example in 2001, the handset market shares in detail comprised of Nokia 38 %, Motorola 17%, Samsung 11%, Siemens 10%, Sony-Ericsson 7%, leaving only 17% outside the top five players. Even though the mobile phone market got saturated after 2000, the profitability of the main players has not decreased dramatically. The main change has occurred in the profitability of the infrastructure business. All of the players had profitability problems in 2002.

Growth in the telecommunications business was enabled by standardization of the mobile networks and terminals in the 1990's. It could be argued that the decisions of the European Telecommunications Standards Institute (ETSI) and the American National Standards Institute (ANSI) have enabled the overall growth of the telecommunications business. From an European perspective 1) the ETSI agreement of Global System for Mobile communications (GSM) standard and GSM commercialization in Europe, Asia and Latin-America and 2) the ETSI agreement upon a third generation mobile phone standard have great importance to the industry. They have had a significant effect on the industry and industry growth in the latter half of the 1990's and in the beginning of 2000. The same applies for ANSI decisions in the United States, which favored the American players and approach.

The standardization and the convergence of information, telecommunications and content industry, have driven the new business and venture creation in the end of the 1990's and in the beginning of 2000. The main drivers have been 1) standards and technologies, 2) wireless data 3) mobile entertainment and 4) mobile services.

The standards and technologies like GSM, GPRS (General Packet Radio Service), UMTS (Universal Mobile Telecommunications System) or WCDMA (Wideband Code Division Multiple Access) or simply third generation mobile phone standards, WAP, Bluetooth (an open standard for mobile short-range data and voice communication) and Symbian (a protocol for a standard operating system for the mobile industry) have offered new business opportunities to existing and new players as well as for start-ups and ventures (EVLI 1999, 2000, 2001). The mobile services and entertainment including, for example, games, video, music, images, movies, and chat offered opportunities to the start-ups and ventures. Wireless data was estimated to be the major growth area for the industry in 2000's (Arthur Andersen, JPMorgan, IPDC, EVLI).

### 3.2.2. Description of Firm Environment from 1998 to 2002

In this subsection the firm environment of sample ventures is described in years 1998 to 2002. The description covers the firm specific organizational and structural issues that might have some influence on the results of the research. The venture sample covers the entire population of multiple 37 ventures in Nokia.

Nokia is an international telecommunications corporation with net sales in 1998 of 13 326 million Euros, in 1999 of 19 772 million Euros, in 2000 of 30 376 million Euros, in 2001 of 31 191 million Euros and in 2002 of 30 016 million Euros. Globally the group employed a total of 41 091 people in 1998 and by the end of 2002 the number was 52 714. The company was strongly positioned in the areas of 1) handsets and 2) infrastructure consistently expanding its market shares. Nokia runs focused research and development programs in Europe, Asia-Pacific and the United States. Nokia is the world's largest manufacturer of

mobile phones. It is also a leading supplier of GSM/DCS cellular networks. In addition, Nokia is a significant supplier of other telecom-related products. As a global leader in telecommunications technology, Nokia develops and manufactures wireless handsets, networks and systems (Nokia Annual reports 1998-2002).

Established in 1865, Nokia has developed from a paper making company initially to a traditional conglomerate manufacturing multiple diverse products in electronics industry. The company later focused on telecommunications and became one of the world's leading mobile communication companies. Nokia shares are listed in Helsinki (since 1915), Stockholm (since 1983), London (1987), Paris (1988), Frankfurt (1988) and New York (1994).

#### *Nokia in Years 1998 through 2002*

The Nokia stock price has had upturns and downturns between the years from 1998 to 2002. It seems that stock price fluctuations follow the overall global stock market development. The following figure 3-2 provides information about stock price development in Euros in Nokia from 1998 to 2002.

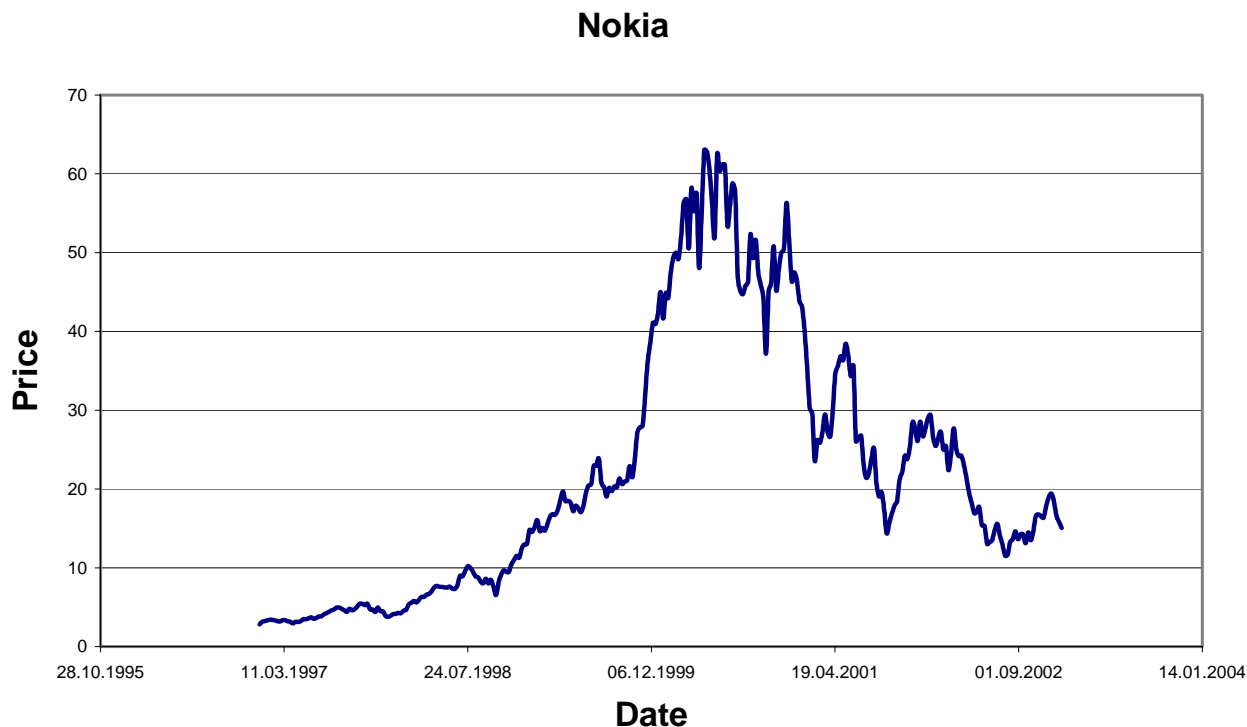


Figure 3-2: Nokia stock price development from 1998 to 2002

From 1998 to 2002 Nokia consisted of two major business groups: 1) Nokia Telecommunications, 2) Nokia Mobile Phones. The other operations and divisions were Nokia Ventures Organization and a separate research unit, Nokia Research Center.

Nokia Networks was the driver of sales and profit in the beginning of 1990's. The year 1998 made a change. Nokia Mobile Phones became the world's largest mobile phone manufacturer and driver for the group sales and profit. The growth of Nokia and especially Nokia Mobile Phones continued in 1999 and in 2000. Nokia was the only telecom equipment manufacturer that was strong in both handsets and infrastructure, having a competitive operating margin of around 20 %.

In the beginning of 2001 the economic slowdown affected the industry. However, Nokia achieved strong performance in a difficult environment. Nokia was the only mobile handset



manufacturer to make a profit. The mobile phone market saturated in 2001 and in 2002. The overall growth of the market from 2001 to 2002 was only 5 %. However, Nokia reached the targeted 40% market share in 2002. As the handset market matured, increasing software content and wireless data in handsets and mobile services was presented as one potential source of additional growth (EVLI 1991-2001). Nokia needed a new growth area to achieve its growth targets.

### 3.2.3. Description of Venture Environment from 1998 to 2002

In this subsection the venture environment of the sample ventures is discussed. The venture sample covers the entire population of 37 Nokia ventures, which have been managed separately in a separate venture division at some time during their lifetime. This discussion covers the firm specific organizational and structural issues that might have some influence on the results of the research.

As described earlier, the business environment was characterized as uncertain, complex and advanced-technology environment having fluctuations, up- and downturns, based on stock market development. The firm environment was characterized as being one of the world's leading mobile communication companies having a focused corporate strategy. The firm needed the new growth areas to achieve its growth targets.

Following from the growth need of the firm, Nokia Ventures Organization was established in 1998. The target of Nokia Ventures Organization was to explore new business areas facilitating future growth and boosting Nokia's long-term business development. At first, Nokia Ventures Organization included two business units: Wireless Business Communications focusing on the development of new wireless solutions to corporate customers, and Wireless Software Solutions focusing on the development of software products based on the Wireless Application Protocol (WAP) standard. In the beginning, the Ventures Organization also encompassed the Wireless Service Applications, which focused on new solutions for wireless environment, at that stage especially in the health care

business. In the health care business a product, Wellmate was developed as a health care tool for personal management of chronic diseases. It was later spun out as not relevant to core businesses. In addition, Nokia Ventures Organization comprised the Silicon Valley - based Nokia Ventures Fund focused on start-up businesses and technologies globally, and a number of new internal ventures under development. The detailed description of the thirty-seven (37) ventures researched in this study is given in Appendix 1.

In 2002, the goal of the Nokia Ventures Organization was to identify and develop new business ideas outside Nokia's current focus, and to contribute to the growth and renewal of existing core businesses. The division included two established businesses: 1) Nokia Internet Communications, which provides Internet Protocol (IP) security and virtual private networks and 2) Nokia Home Communications, which designs and manufactures digital communication solutions for home environment. Nokia Ventures Organization also incorporated Nokia Venture Partners, an independent venture capital firm investing in mobile and IP-related start-up businesses; the Insight and Foresight group, which identifies new business opportunities; and New Growth Businesses, which develops strategic new ideas into sustainable businesses internally, as well as the Nokia Early Stage Technology Fund, which provides seed financing for business ideas generated within Nokia. In 2002, Nokia Ventures Organization presented 1 % of Nokia net sales (Nokia Annual report 2002).

The internal ventures were developed using a disciplined staged decision process. Ventures had to pass several formal decision points and continuation decisions were made at these decision points. Ventures were frequently reviewed also between decision points. Reviews were carried out by the venturing board that acted as an advisory board and decision maker together with the managers driving the ventures. Venturing process was called V-process and milestones were named V0, V1, V2, and V3. The description of this venturing process and venture development is depicted in figure 3-3 below.

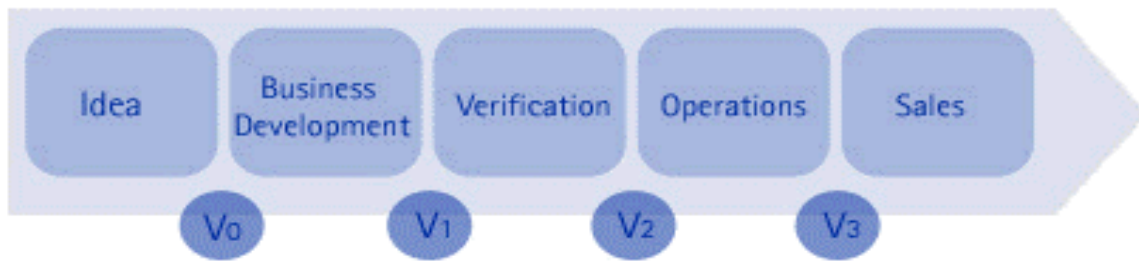


Figure 3-3: The V-process used in venture development

The venture is officially established at milestone V0. The purpose of the milestone is to check whether the business opportunity is worth investigating further to next milestones. The commitment to continue this venture and increase the headcount is obtained at milestone V1. The purpose of this milestone is to ensure that the idea, identified customer segments, product concepts and business model form a solid basis for a viable business. Milestone V2 is the official firm business commitment or approval to new business, and approval to have direct market exposure. The purpose of the milestone is to verify that the assumptions behind the business idea are valid and the probability for the venture's success is high. At milestone V3 the venture is a fully operational business with volume sales.

From the internal corporate venture development point of view, the eras of internal corporate venturing may be divided into four main phases:

- **Phase 1:** From 1998 to 2000
- **Phase 2:** The first half of 2000
- **Phase 3:** Second half of 2000
- **Phase 4:** From 2001 to 2004.

Phase 1 consists of the establishment of the separate internal corporate venture unit, Nokia Ventures Organization, in mid 1998. The time was entrepreneurial and innovative. Many initiatives were started, both related and unrelated to the corporate strategy. In the beginning

of the second phase in 2000 the venture portfolio was carefully evaluated based on the corporate targets. Some of the earlier initiatives were terminated. At the same time, many new ideas flowed down and new ventures were established to the business focus areas. The third phase in the second half of 2000 was called change process. The change process was strategic re-evaluation and redirection in nature. The venture portfolio was carefully evaluated. Many of the remaining earlier ventures were terminated, but hardly any new ventures were established. Lastly, the fourth phase was the selective initiation of new internal corporate ventures.

As a summary, the firm specific organizational and structural issues might have some influence on the results of the research. In the research period such characteristics include 1) the highly focused corporate strategy of the firm, 2) strong cash position, 3) the centralized Finland-based decision-making, 4) the high decision-making power of existing business units and divisions, and 5) technology driven corporate culture.

### **3.3. Operationalization**

In this section the constructs and derived variables are described and defined.

#### **3.3.1. An Example of Constructs and Variables**

At first, I use the following short story of one of the ventures to illustrate the theme.

The opportunity of the venture was to use a mobile communication competence from vertical business system to build the horizontal wireless telephony layer above the IP (Internet Protocol) network. The idea was initiated in the existing network and terminals business units and developed further (*idea origin*). First key decision in 1998, was to redirect and consolidate former work of WLAN work, especially GSM Internet Office (GIO) together (persistence measured by redirection first). Based on the earlier experience of the venture teams, having done much similar types of projects before, the capability of the team was

expected to be high (*team capability measured by earlier prior experience*). The key team based on the earlier connections had interactions with corporate management and high level of trust and therefore access to corporate assets (*access to assets*).<sup>1</sup>

This venture was the first initiative to implement VoIP (Voice over Internet Protocol) and WLAN in terminal products, in order to complement network product offerings, and to provide competitive and attractive product portfolio that fosters rapid deployment of VoIP and WLAN systems to corporations (*new market with high market uncertainty, old technology with low technology uncertainty*). ‘This was planned like SAP’, which produces IPT business evolution by 1) building the end-to end solution and platform, 2) continuing to add value by quality of service, call features (IP Centrex), applications, virtual private networks, bandwidth on demand, multiple router selection and dynamic routing as well as with location based services. The venture products included both: network and terminals. After the change in venture management, the direction changed (*persistence measure by redirection second*).

The strategic relatedness between the venture and corporate strategy was close in the beginning of the venture. Technologically the venture represented the core capabilities of the firm. However, it may be stated that in the middle of the venture-life the strategic relatedness of the venture was uncertain based on the new market orientation. In contrast, the strategic relatedness was clear and close in the end of the venture (*strategic relatedness*).

The venture target was ambitious with long-term growth at the expense of short-term prudence. The venture grew rapidly in two and half years from

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<sup>1</sup> In the research the perceptual measures like the team capability and access to assets were evaluated by an expert group of people consisting senior/corporate managers, who were responsible for a portfolio of ventures.

initial of 50 persons to over 1400 persons in Finland and USA (*size of the venture*). Started 1/98 and excelled in venture process (*milestone V2*). The venture was redirected and 250 people were transferred to existing business unit in autumn 2000 and another 250 people to other business unit in the beginning of 2001 (*persistence measured by redirection third*). The groups were later, in 2001, consolidated together with a new mission, which may be considered the fourth redirection of this venture (*persistence measured by redirection fourth*), (*duration/age*) (*continue in the firm; the venture transferred to existing businesses and was one key contributor in a new business unit formation*).

The venture created about 20 products like D2II dual mode WLAN/GSM card, which generates sales (*value creation measured by business and products*). The venture created new capabilities for firm like WLAN technology implementation, IP security, IP telephony, understanding of corporate market needs, which are used in existing business units (*value creation measured by technology and market capabilities*). In addition, the venture represented the innovative nature by 48 patents, which were filed in (*inventions measured by patents*). In addition, the venture recruited several key persons in software, telecom and related business field to the firm. The people and highly qualified personnel were transferred and contributing to the existing businesses (*value creation measured by personal experiences and capability developments*).

The operationalizations from constructs to variables are described in detail in the following subchapters.

### 3.3.2. Operationalization from Constructs to Variables

This subchapter focuses on the operationalization from constructs to variables and measures. For adequate scope, the variables included in the theoretical system must sufficiently, although parsimoniously, tap the domain of constructs and propositions in question, while the constructs and propositions must, in turn, sufficiently tap the domain of the phenomenon in question (Bacharach 1989).

The constructs used in this empirical study include constructs related to venture outcomes and venture, firm and business factors influencing the outcome. The aim was to select constructs based on their relevance to tap the domain of the phenomenon. As stated earlier building on the literature review, I define a multidimensional outcome and divide the venture performance to a) venture continuity b) value creation and c) invention outcomes. Based on the literature review, I classify the venture success factors into 1) business, 2) firm and 3) venture factors. Venture factors consist of venture team capability, access to assets, venture idea origin and venture size. The firm factors are strategic relatedness between a venture and corporate strategy, management priority and persistence. The business factors are technological and market uncertainty. Based on earlier research, the other researchers might have selected outcome and influencing factors differently.

The selected constructs are operationalized to variables in table 3-2 below. The aim was to select variables based on that they tap the domain of constructs in question. Table 3-2 below presents the theory linkage used between the constructs and variables.

Table 3-2: Constructs and variables

<b>Construct</b>	<b>Sub-constructs</b>	<b>Variable</b>	<b>Linkage</b>
<b>Venture outcomes</b>	Organizational continuity	Continue in the firm	Block & McMillan 1985
	Value creation	New business	Block & McMillan 1985 McGrath, Venkataraman & MacMillan 1996
		New products	Block & McMillan 1985 Walker, Kogut & Shan 1997, Katila 2002
		New organizational capability	Kogut & Zander 1992 Crossan, Lane & White 1999 McGrath 1993
		Personal experiences and new capabilities	Kogut & Zander 1992 Crossan, Lane & White 1999 McGrath 1993
Inventions	Number of patents filed-in	Zahra 1996, Silvermann 1999 Ahuja & Katila 2001	
<b>Firm factors</b>	Strategic relatedness	Fit in the corporate strategy	Pennings et al. 1994 Woo et al. 1992
	Management Priority	Importance perceived by management	Block & McMillan 1985
	Persistence	Redirections	Block and McMillan 1985 McGrath 2000



<b>Construct</b>	<b>Sub-constructs</b>	<b>Variable</b>	<b>Linkage</b>
<b>Venture factors</b>	Team capability	Team prior experience	Block and McMillan 1993 Sykes 1986 von Hippel 1977
	Access to assets	Relations and trust	McKinley, 1992
	Idea origin	Source of the idea	Selznik 1957 Stinchcombe 1965
	Size	Number of People	Damanpour 1996 Tsai,McMillan& Low 1991
<b>Business factors</b>	Market Uncertainty	Market related risk	McGrath 2000
	Technology Uncertainty	Technology related risk	McGrath 2000

I elaborate on the selection of variables next. The reasoning behind the operationalization of outcome variables was an attempt to measure corporate and venture outcomes with similar measures. Venture continuity or survival is the most often used measure in corporate venturing research. In this research the internal corporate venture continuity is expanded to cover the continuity in the firm environment. This requires that the key aspects of the venture continue in the firm in one organizational form or another. The value creation is operationalized to new business, products and capabilities on organizational and personal level. The reasoning behind this was an attempt to capture the tangible outcomes, new business and products, and intangible outcomes, new capabilities, with similar measures. In the measurement of inventions the most often used variable, number of patents, is used. In the model and in this research, the inventions and product innovations are separated. This is due to the thought that based on the existing literature it is not clear that similar factors affect the creation of patents and products.

The reasoning behind the operationalization of venture, firm and business factors was an attempt to capture the constructs with the variables that best describe and measure the reality. Objective variables are used whenever possible. The objective measures have without exception established a way to operationalize the construct. If using objective variables was not possible, the perceptual variables were used with the reasoning that the evaluation is based on the 'gatekeeper' approach, meaning that the people who are in control of the variable also perform the evaluation.

### 3.3.3. The Definition of Variables and Scales

The derived variables are operationalized, defined and scales discussed in table 3-3 below.

Table 3-3: Definitions of variables

Construct Variable		Definition and scale	Abbreviation
<b>VENTURE OUTCOME</b>	<b>Organizational Continuity</b> Continuity in a firm Type of continuity	Discontinuity (D) means that the venture is closed by official decision. Continuity (C) means that the venture continues in the firm form or another. This continuity/ discontinuity measure is ordinal.  The continuity variable includes in detail: 1) ventures that continue as a venture (V), 2) ventures that are transferred to existing business units or divisions (T) and 3) spin-offs, where the firm has a share (S).	C= Continue D= Discontinue
	<b>Value creation</b> Business and products, Strategic, business and technology capabilities in organizational level Personal experiences and capabilities	Value creation has three variables: B= Business and products (new), C=Strategic, business and technology capabilities in organizational level and P=Personal experiences and capabilities.  The values are inclusive from bottom-up, i.e. C=Strategic, business and technology capabilities on organizational level include P=Personal experiences and capabilities; and B=Business and products (new) contains C=Strategic, business and technology capabilities in organizational level and P=Personal experiences and capabilities.  B= Business and new products are measured by amount of sales and/or new products created. The option is selected if any revenue and/or products are generated.  C= Strategic, business and technology capabilities in organizational level are measured with amount or depth of new	B= Business and new products C=Strategic, business and technology capabilities in organizational level P=Personal experiences and capabilities N=Nothing

Construct Variable		Definition and scale	Abbreviation
		<p>understanding of the market, customer, new business creation, and/or technology. The criteria was that organizational capability has to be widely recognized inside the firm and more than five (5) persons working in the area full-time.</p> <p>P=Personal experiences and capabilities consists of perceived personal experience and capability creation by the venture team themselves. The criteria was that 80 % of the key members of the venture team had to be able to state that what they have learned in the venture.</p> <p>The measure of value creation is ordinal.</p>	
	<p><b>Inventions</b> Number of patents filed-in</p>	<p>The number of filed patent applications is used as one measure of invention.</p> <p>Number of patents filed in is a metric measure.</p>	
<b>FIRM FACTORS</b>	<p><b>Strategic relatedness</b> Fit to the corporate strategy</p>	<p>If the domain of the venture or name is mentioned in the shared corporate strategy, is the fit to the corporate strategy defined into close or related (C) and otherwise being far away or unrelated (F). The comparison between is done in the end of the venture or if venture is continuing by the end of 2002.</p> <p>Strategic relatedness is an ordinal measure.</p>	<p>C= Close/related F=Far/Unrelated</p>
	<p><b>Management priority</b> Importance perceived by management</p>	<p>Management priority reflects the importance perceived by senior management. This variable is measured by the perceived priorities given by senior management in Spring 2002.</p> <p>The measure is ordinal.</p>	<p>0= No or little interest, 1=Interest and 2= High interest</p>

Construct Variable		Definition and scale	Abbreviation
	<p><b>Persistence</b> Redirection</p>	<p>The redirection as a measure reflects the active and dynamic decision-making and leadership.</p> <p>Venture redirection is measured by the number of scope changes during the venture development facilitated by senior management. The number of redirections or focus changes varies from 0 to 4.</p> <p>The measure is metric.</p>	<p>Number of redirections</p>
<p><b>VENTURE FACTORS</b></p>	<p><b>Team capability</b> Team prior experience</p>	<p>The venture team's prior experience of similar types of projects is scored as high, medium and low.</p> <p>High (H) means more than one (1) of the similar types of projects by the key team. Medium (M) means one (1) of the similar types of projects done by the key team. Low (L) means none of the similar types of the projects done by the key team.</p> <p>This is an average of key team's scores.</p> <p>This measure is ordinal.</p>	<p>H= High track record of similar type of the projects</p> <p>M= Medium track record of similar type of the projects</p> <p>L= Little or no track record of similar type of the projects</p>
	<p><b>Access to assets</b> Relations and trust</p>	<p>Relations and trust is measured by quality of relations, and trust to corporate and senior management and scored as high, medium and low.</p> <p>High (H) means excellent or good relations and trust to corporate and senior management of the key team. Medium (M) means average level of relations and trust corporate and senior management of the key team. Low (L) means that there are little or no relations and trust corporate and senior management of the key team.</p>	<p>H= Excellent or good relations and trust for the key team</p> <p>M= Medium level of relations and trust for the key team</p> <p>L= Little or no relations and trust for the key team</p>

Construct Variable		Definition and scale	Abbreviation
<b>VENTURE FACTORS</b> (contd.)		The measure is ordinal.	
	<b>Idea origin</b> Source of the idea	Idea origin measures where the idea comes from. Idea origin is categorical and either from existing business units/strategy process (B) or from other sources (O).  The measure is ordinal.	B= Idea from existing business/strategy process  O= Idea from other sources
	<b>Size of the venture</b> Number of people	The size of the venture is measured by the number of people that were staffed in a venture directly at the end of the venture.  The measure is metric.	
<b>BUSINESS FACTORS</b>	<b>Technology uncertainty</b>	In general: Technology uncertainty is scored as high, medium and low. High (H) means that the technology is new and no implementation exists globally. Medium (M) means, that the technology exists, but the target combination is new. Low (L) means, that the technology is used and products are available.  The scoring is done in the end of the venture.  The measure is ordinal.	H= Technology is new and no implementation exists globally  M=Technology exists, but the combination is new  L= Technology is used and products are available
		Firm view: Technology is categorized old (O), if the firm uses technology already and new (N) if the firm does not use this technology.	O= Technology is used by the firm  N= Technology is not used by the firm

<b>Construct Variable</b>		<b>Definition and scale</b>	<b>Abbreviation</b>
<b>BUSINESS FACTORS</b> (contd.)	<b>Market uncertainty</b>	<p>In general: Market uncertainty is scored as high, medium and low. High (H) means that the market does not exist. Medium (M) means, that a market exists, but is under fast development. Low (L) means, that a market exists and offerings are standardized. Low can also be described as ‘me too’ strategy implementation.</p> <p>The scoring is done in the end of the venture.</p> <p>The measure is ordinal.</p>	<p>H= Market is not existing</p> <p>M= Market exists, but under fast development</p> <p>L=Market exists and products are standardized</p>
		<p>Firm view: Market is categorized old (O), if the firm has ‘access’ and channel to the market, and new (N) if the firm does not have access and channel to the market.</p>	<p>O= Firm has access and channel to the market</p> <p>N= Firm does not have access and channel to the market</p>

Scales and Measures Categorization

Some of variables were difficult to quantify, which meant substantial effort in developing coding protocols with which to analyze the ventures in that dimension. This essentially involved searching the existing literature to label and quantify. The quantitative measures are both 1) objective like the number of people and time and 2) perceptual like prior experience or relations and trust (H high, M medium, L low). In order to increase both the reliability and validity of the measures, the perceptual measures were quantified by an expert group of people consisting of senior managers who are in control of the variables. Inter-rater agreement was calculated and these measures were also checked and reviewed by the venture managers. All inter-rater agreements exceeded 73 %.

The quantitative measures can be categorized into objective and perceptual. The quantitative measures can be further categorized to interval, nominal and ordinal ones. The categorization is described in the following figure 3-4.

Interval	Nominal	Ordinal	MEASURES
	Technology/market (O,N) Strategic distance (C,F)	Relations and trust (H,M,L) Team prior experience (H,M,L) Technology/market uncertainty (H,M,L) Management priority ( 0,1,2)	↑ <b>Perceptual</b>
Venture redirections (amount) Duration ( time) Amount of investment Number of people Number of filed patents in	Idea origin ( B,O) Continuity ( D,C)	Value creation (B,C,P) Team prior experience (H,M,L) Process phase (V0,V1,V2)	↓ <b>Objective</b>

Figure 3-4: Measures categorization to interval, nominal and ordinal measures



### 3.3.4. Operationalization of Propositions to Hypotheses

In this section I operationalize the propositions to the hypotheses based on the earlier discussion on the constructs and derived variables. Table 3-4 below presents a summary of the operationalization of propositions to hypotheses and the used variables in the research.

Table 3-4: Summary of the propositions operationalized to hypotheses and variables

<b>Propositions</b>	<b>Hypothesis</b>	<b>Independent variable</b>	<b>Dependent variable</b>
P1a: The higher the strategic relatedness between the venture and the parent firm corporate strategy, the higher the management priority to continue the venture.	H1a: The higher the perceived strategic fit between the venture and the parent firm corporate strategy, the higher the importance by management.	Strategic fit	Importance by management
P1b: The higher the management priority, the higher the persistence to continue the venture.	H1b: The higher the importance by management, the more redirections are done.	Importance by management	Redirections
P2: The venture and firm factors are positively related one another.	H2a: The higher the prior venture management experience of similar types of projects, the higher the probability of redirections.	Team prior experience	Redirections
	H2b: The higher the perceived level of internal relations and trust by management, the higher the probability of redirections.	Relations and trust	Redirections
	H2c: The closer the perceived idea origin is to the core of the firm, the higher the probability of redirections.	Source of the idea	Redirections

<b>Propositions</b>	<b>Hypothesis</b>	<b>Independent variable</b>	<b>Dependent variable</b>
	H2d: The larger the number of people, the higher the probability of redirections.	Number of people	Redirections
P3: The better the venture factor, the better the venture outcomes.	H3a: The higher the team prior experience of similar types of projects, the higher the probability of venture continuity and value outcomes.	Team prior experience	Continuity Value creation Patents
	H3b: The higher the perceived level of internal relations and trust by management, the higher the probability of redirections, the higher the probability of the venture continuity and value outcomes.	Relations and trust	Continuity Value creation Patents
	H3c: The closer the perceived idea origin is to the core of the firm, the higher the probability of venture continuity and value outcomes.	Source of the idea	Continuity Value creation Patents
	H3d: The larger the number of people, the higher the probability of venture continuity and value outcomes.	Number of people	Continuity Value creation Patents
P4: The firm factors and the venture outcomes are positively related on another.	H4: The more redirections, the more probable the venture continuity and creation of value outcomes.	Redirections	Continuity Value creation Patents

<b>Propositions</b>	<b>Hypothesis</b>	<b>Independent variable</b>	<b>Dependent variable</b>
P5: The higher the venture factor, the better the venture outcomes. This effect is moderated by firm factors.	H5a: The higher the team prior experience of similar types of projects, the higher the probability that the venture will create valuable outcomes. This effect is moderated by redirections.	Contingent effect: <i>Team prior experience</i> , Relations and trust, Source of the idea Number of people  Redirections	Value creation Patents
	H5b: The higher the perceived level of internal relations and trust by management, the higher the probability that the venture will create valuable outcomes. This effect is moderated by redirections.	Contingent effect: Team prior experience, <i>Relations and trust</i> , Source of the idea Number of people  Redirections	Value creation Patents
	H5c: The closer the perceived idea origin is to the core of the firm, the higher the probability that the venture will create valuable outcomes. This effect is moderated by redirections.	Contingent effect: Team prior experience, Relations and trust, <i>Source of the idea</i> Number of people  Redirections	Value creation Patents

<b>Propositions</b>	<b>Hypothesis</b>	<b>Independent variable</b>	<b>Dependent variable</b>
	H5d: The larger the number of people, the higher the probability that the venture will create valuable outcomes. This effect is moderated by redirections.	Contingent effect: Team prior experience, Relations and trust, Source of the idea <i>Number of people</i>  Redirections	Value creation Patents
P6: The higher the business factors, market and technology uncertainty, the lower the venture outcomes.	H6a: The higher the perceived market uncertainty of the venture, the higher the probability of the venture discontinuity and outcomes.	Market uncertainty	Continuity Value creation Patents
	H6b: The higher the perceived technology uncertainty of the venture is, the higher the probability of the venture discontinuity.	Technology uncertainty	Continuity Value creation Patents
P7: The higher the venture factor, the better the venture outcomes. The effect is moderated by business factors.	H7a: The higher the team prior experience of similar types of projects, the higher the probability that the venture will create valuable outcomes. This effect is moderated by perceived technology/market uncertainty.	Contingent effect: <i>Team prior experience</i> , Relations and trust, Source of the idea, Number of people  Technology/ market uncertainty	Value creation Patents

Propositions	Hypothesis	Independent variable	Dependent variable
	H7b: The higher the perceived level of internal relations and trust by management, the higher the probability that the venture will create valuable outcomes. This effect is moderated by perceived technology/market uncertainty.	Contingent effect: Team prior experience, <i>Relations and trust</i> , Source of the idea, Number of people  Technology/ market uncertainty	Value creation Patents
	H7c: The closer the perceived idea origin is to the core of the firm, the higher the probability that the venture will create valuable outcomes. This effect is moderated by perceived technology/market uncertainty.	Contingent effect: Team prior experience, Relations and trust, <i>Source of the idea</i> , Number of people  Technology/ market uncertainty	Value creation Patents
	H7d: The larger the number of people, the higher the probability that the venture will create valuable outcomes. This effect is moderated by perceived technology/market uncertainty.	Contingent effect: Team prior experience, Relations and trust, Source of the idea, <i>Number of people</i>  Technology/ market uncertainty	Value creation Patents

The derived hypotheses are integrated into the multidimensional model and the derived model is described in figure 3-5 below.

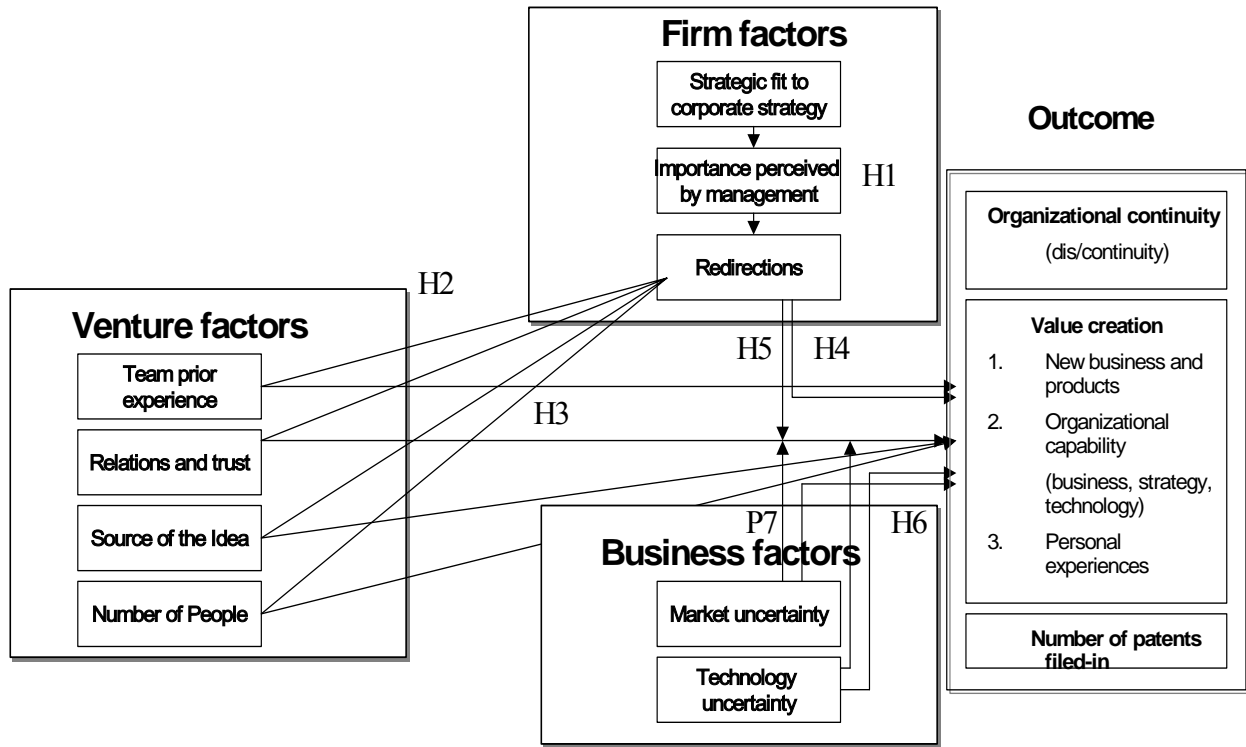


Figure 3-5: The integrated model and hypotheses

### 3.4. Data Analysis Techniques Used

This subsection describes in short the data analysis techniques used in the research.

#### Contingency Tables

The contingency tables or two-way frequency tables test the relations between two variables. Contingency tables are used especially to test and illustrate relations between two categorical variables. In this research contingency tables are used to test the firm factors relations with each other and firm factors relations with continuity outcome.

### Multiple Linear or Classical Regression Analysis

In this research, multiple linear regression analysis (Hair, Anderson & Tatham 1995) is used to examine the relations between the venture and firm factors. Multiple linear regressions are also used to analyze direct and contingent effects of venture, firm and business factors on outcome, when the outcome is metric. The use of multiple linear regression analysis was considered appropriate, because the aim of the analysis was to examine the relative contribution of each independent variable to each other or to the metric outcome. In addition, the quality of the data met the requirements of metric or appropriately transformed data.

### Multiple Logistic Regression Analysis

In the study, logistic regression analysis (Hair, Anderson & Tatham 1995) is used to examine and analyze direct influence of the venture, business and firm factors on the continuity outcome, which is ordinal and has only two values.

### Ordinal Regression Analysis

In this research, ordinal regression is used to examine and analyze direct influence of the venture, business and firm factors on the value outcome, which is ordinal and has three values.

Ordinal regression is a multivariate technique for estimating the probability of an event or identifying variables, where the multiple linear regression or logistic regression cannot be used. The ordinal regression method is to be used, if the variables are predicted to be of ordinal scale having more than two values. Clogg and Shihadeh (1994) defined the *cumulative or ordinal logit model* for a strictly ordinal dependent variable with  $K$  levels as follows:

$$\log \left[ \frac{1 - \Pi_k}{\Pi_k} \right] = \alpha_k + \beta_k x$$

where  $\Pi_k = P(Y < k)$ , for  $k=1, \dots, K$ . The  $\Pi_k$  thus defines the cumulative distribution function of the dependent variable  $Y$ . A common restriction to obtain model parsimony is  $\beta_k = \beta$ , that is, the slopes are fixed as parallel for the different levels of the dependent variable.

### 3.5. Reliability and Validity Analysis

In this research, considerable attention has been paid to ensuring the reliability and validity of the results. The propositions have been developed based on existing theories. Related earlier research has been used when developing the constructs and the derived variables and measurement items. Statistical methods have been selected carefully. However, the small sample size of 37 ventures required some compromises in statistical methods and analyses. Finally, the results and conclusions have been carefully analyzed to ensure their feasibility. As a summary, the reliability, validity and generalizability are presented in table 3-5. In the following sections, reliability, validity and generalizability of the research are discussed.

Table 3-5: Reliability, validity, and generalizability

Reliability	<ul style="list-style-type: none"> <li>* Reliability of data sources</li> <li>* Reliability of measures</li> </ul>
Validity	<ul style="list-style-type: none"> <li>* Face validity: constructs conforms to common understanding of the concept</li> <li>* Content validity: constructs covers all relevant elements of the concepts</li> <li>* Construct validity: construct theoretically reflect the phenomenon under study               <ul style="list-style-type: none"> <li>* Convergent validity: different measures of the same constructs are correlated</li> <li>* Discriminant validity: constructs of the study are conceptually distinct</li> </ul> </li> <li>* Criterion-related validity: results are in consonance with theory and previous results               <ul style="list-style-type: none"> <li>* Concurrent validity: measure is allocated with previously validated measure</li> <li>* Predictive validity: measure predicts another measure as predicted in theory</li> </ul> </li> </ul>
Generalizability (external validity)	<ul style="list-style-type: none"> <li>* Representativeness</li> <li>* Theoretical generalizability</li> </ul>



### 3.5.1. Reliability

Reliability refers to the degree to which results are consistent across repeated measurements (Bollen 1989). Two dimensions of reliability are discussed: 1) reliability of the empirical data and 2) reliability of construct measurement.

The analysis in the present study is based on the primary data collected from the key team of the ventures (venture manager and management team) and corporate senior management. This is because of the lack of available secondary data covering all measures of interest in this study. Several methods were used to ensure reliability of the self-reported data. First, the main methods used to minimize errors and biases, and thus increase reliability, were to use two researchers to do the research and to interview many respondents from each case side. Second, in order to maximize reliability of the data, the data was collected from key informants of the ventures; venture managers and management teams, who can be considered to be the most knowledgeable about the venture of interest. Third, the data of the relational characteristics was collected from the management of these ventures, who can be considered to be most knowledgeable of these relational facts. Fourth, reliability of the data was improved by complementing the primary data with various complementary sources of data whenever possible. All of the findings were checked through secondary data sources like business plans, budgets and milestone review reports. In other words, the triangulation method was used to check the data. Fifth, another way to increase reliability of the research was to document everything precisely, especially the data but also phases and processes of the study.

The data includes both objective and perceptual measures. The reliability of the objective measures (e.g. patents) is not a concern. The perceptual measures are more challenging from a measurement point of view. To increase reliability of the construct measurement of the perceptual measures in this research, in addition to self-reported data, the perceptual measures were quantified by an expert group of 5 people consisting of the senior management and researchers. Inter-rater agreement coefficients were calculated to establish

reliability. Inter-rater agreement was on an acceptable level exceeding 73 % in all of the perceptual measures. These measures were also checked and reviewed by venture managers themselves. Table 3-7 presents and describes the reliability in detail at every construct, variable and measure level.

### 3.5.2. Validity

Validity refers to the extent of use of a measurement instrument and how well it measures what it purports to measure (Nunnally & Bernstein 1994:83). In order to improve the validity of the present study, previously validated measures have been used when possible. Face validity refers to the extent a construct confirms a common understanding of the related concept. Face validity was ensured by extensive review and development of the constructs and measurement items used in previous literature; the measures were discussed and pre-tested in practice with senior and venture management, as well as with academics with experience in the relevant fields. The measures are in line with common understanding.

In the following the validity of constructs is discussed in detail divided into two dimensions: 1) content validity, and 2) criterion-related validity (Nunnally & Bernstein 1994).

#### Content validity

Content validity refers to the extent to which ‘an empirical measurement reflects a specific domain of content’ (Bollen 1989). Constructs should adequately cover the key aspects of the concepts. Several methods were used to ensure and test this content validity. First, an extensive literature review was conducted to understand the phenomena and identify the key constructs. The constructs were developed based on earlier research and discussions with corporate venturing experts and academics. The theoretical and industry-related relevance of the constructs is evident. Second, the earlier validated constructs and measurement items were used whenever possible, in order to improve the content validity. Third, new constructs and measurement items were developed on the basis of theory and earlier research. Fourth, if two or more concepts are unique, then the valid measures of each should

not correlate too highly. The measurement level correlation matrices of metric measures was examined in order to identify high correlations. The comprehensiveness of the measurement items is discussed in detail in chapter 3 overall. Table 3-7 presents and describes the validity in detail at every construct, variable and measure level.

#### Criterion-related validity

Criterion-related validity refers to the extent results are in consonance with theory and previous results. Criterion-related validity refers to the extent to which accepted independent measures of key constructs are correlated to the dependent measures utilized in the study. This can occur either 1) predictively or 2) concurrently (Nunnally & Berstein 1994). Predictive validity is not relevant for this research, because this project does not permit the passage of time. In this study concurrent validity was considered, which refers to the extent the measure is associated with previously validated measures. The measure of prior experience had been validated by von Hippel 1979, Shortell and Zajac 1988 and Zahra 1996. The measure of relations and trust (social interaction) has been validated in other environments by Tsai & Ghoshal 1998 and Yli-tenkari 2001. The measure number of people has been validated by Damanpour 1996. The source of the idea was consistent with the theory of Selznick 1957 and Stinchcombe 1965. These venture measures correlated significantly in the present study indicating concurrent validity. Similarly, the firm factors and business factors were consistent with earlier findings providing further evidence of concurrent validity. Table 3-6 below presents and describes the validity in detail at every construct, variable and measure level.

Table 3-6: Reliability and validity analysis in detail

MEASURES	RELIABILITY Rate of agreement	VALIDITY Content and construct validity	VALIDITY Criterion-related validity
<b>VENTURE FACTORS</b> * Team prior experience (H,M,L)	Based on self-reports Inter-rater reliability (78%) expert panel	<b>Theoretical and industry relevance available</b> used venture manager prior experience effect on venture success by von Hippel 1979, Zortel & Zajac,	Consistent with earlier findings Zahra 1996
* Relations and trust (H,M,L)	Inter-rater reliability (76%) expert panel	used as a measure of social interaction by Tsai & Ghoshal 1998, Ylirenko 2001	Consistent with earlier findings
* The source of the idea (B,O)	Inter-rater reliability (90%) expert panel Self-reports	used theory by Selznick 1957, Stinchcombe 1965 Cooper 1979	Consistent with theory
* Number of people	Financial statement figures/official figures	used as measure of size by Damanpour 1996 Tsai, McMillan, Low 1991	Consistent with earlier findings
<b>FIRM FACTORS</b> * Fit to the corporate strategy (F,C)	Inter-rater reliability (86%) expert panel (mentioned in strategy)	used as a measure of strategic relatedness of various authors Strategic fit by Thornhill and Amit 2000	Consistent with earlier findings
* Importance perceived by Management (0,1,2)	Management panel	used as a concept of management interest and support by Block and McMillan 1985	Consistent with earlier findings
* Redirections (0-4)	Inter-rater reliability (86%) expert panel Self-reports	redirections needed, based on the explorative nature of the ventures by Block & McMillan 1985	Consistent with earlier findings * new measure
<b>BUSINESS FACTORS</b> * Technology Uncertainty (O,N) (H,M,L)	Inter-rater reliability (76%) expert panel	used earlier as a measure of uncertainty by Mc Grath 2000	Consistent with earlier findings
* Market Uncertainty (O,N) (H,M,L)	Inter-rater reliability (73%) expert panel	used earlier as a measure of uncertainty by McGrath 2000	Consistent with earlier findings
<b>CONTINUITY (C,D)</b>	Official firm decisions	used as a measure of organizational outcome by Block & McMillan 1985	Consistent with earlier findings
<b>VALUE CREATION</b> (B,C,P) B Business, products C Organizational capabilities P Personal experiences capabilities	Business, products are * official figures; others: *org./ 'recognized' in firm * personal/self-reporting	the parts of the model used as a measure of outcome by Cooper 1979, Block & Ruff 1986, Dougherty, Maidique & Zirger, McGrath	Consistent, but the model new
<b>NUMBER OF PATENTS FILED-IN</b>	Patents filed in; ex- and internal reliability	used as a measure of innovative outcome and as a measure of R&D intensity by Zahra 1996, Silvermann 1999, Ahuja & Katila 2001	Consistent with earlier findings

### 3.5.3. External Validity

External validity or generalizability refers to the extent the results of the study can be generalized. Yin (1989) stated, that there are two types of generalizations: 1) statistical and 2) theoretical or analytical.

The present study has certain limitations as regards external validity. In this study the model and propositions are developed based on existing research. The propositions are operationalized to hypotheses and tested with a sample of 37 ventures. It may be argued that there is a limitation regarding the external validity as a result of sample selection. The sample of 37 ventures was limited to a specific global firm in an industry representing the characteristics of a fairly young, dynamic advanced-technology environment. However, it is worth mentioning that the sample actually represents the population of ventures in that specific firm at the time of the research. Generalization on statistical grounds is possible, but strictly valid only to the study firm.

On the basis of theoretical or analytical generalization, the results may be considered generalizable to the internal corporate venturing theory and to similar kinds of environments. However, to get fully established and obtain rigorous position the theory definitely calls for extensive evidence and requires future research. The external validity of the study is discussed in detail in chapter 'Limitations'.

## **4. ANALYSIS AND RESULTS**

This chapter presents the empirical results from the analysis. The interpretation of the results is discussed in the next chapter. In this section these hypotheses are tested and analyzed. First, descriptive analyses of the factors of the sample are reported. The objective is to create a clear picture of the factors of the ventures. The analyses are presented based on 1) venture, 2) firm, 3) business, and 4) venture outcome factors according to the model developed. Second, results from the statistical analyses are presented. The correlations are presented and the relations of the factors with one another are discussed. The hypotheses are tested empirically using statistical methods.

### **4.1. Descriptive Analysis of the Ventures**

This descriptive analysis is based on the data variables used in this study. The purpose of this analysis is to give an overview of the firm and the sample of ventures. Firstly, characteristics discussed in this section include venture factors like age, size, origin, team capability and relations and process. Overall the variables of the ventures are heterogeneous. Secondly, the firm factors are described, such as strategic fit of ventures to the corporate strategy, interest perceived by management and persistence with ventures measured by redirections. Thirdly, the section gives an overview of the business factor uncertainty, which is divided to technology and market uncertainty. Fourthly, venture outcomes are discussed. The key in the analysis is how the ventures fit to their firm and business environment and how that affects various venture outcomes.

#### 4.1.1. Description of Venture Factors

##### *Age of the Ventures*

The most traditional way to define the age of a venture is to measure the duration between the establishment of a venture and the end of the venture or study period, which in this study was in the end of 2002. The further requirement for ventures was also that organizational continuity or discontinuity was clear. At the time of the study, the mean age of ventures was

18.32 months (ca. 1.5 years), the minimum age 3 months, maximum 43 months and standard deviation 9.384. Of these ventures sixty-five percent (65 %) were between two to 18 months of age, see table 4-1 below. Based on the data, it seems evident that the maximum timeline for a venture is 1.5 years to show business evidence in internal environment to survive.

Table 4-1: Age of the ventures

<b>Months from</b>	<b>Total amount</b>	<b>Proportion</b>
0-6	4	11 %
7-12	7	19 %
13-18	13	35 %
19-24	6	16 %
25-30	4	11 %
31-36	1	3 %
37-42	2	5 %
	37	100 %

Size of the Ventures

The size of the ventures was measured both in terms of the number of employees and amount of used investments in a venture. Later the number of employees in the venture was used in the statistical analysis as a measure of size. The size of the ventures varied from 1 to 1400 employees at the end of the venture. On average, the ventures had 62 employees and standard deviation was 326.17 (see table 4-2). However, most of the ventures were small, 51% of the ventures had only five or fewer employees, as can be observed from table 4-2.

Table 4-2: Venture sizes by number of employees

<b>Number of employees</b>	<b>Number of ventures</b>	<b>Proportion</b>
0-5	19	51%
6-10	7	19 %
11-20	4	11%
21-30	2	5%
31-60	1	3%
61-100	1	3%
101-200	1	3%
201-400	1	3%
401-	1	3%
<b>Total</b>	<b>37</b>	<b>100 %</b>

Idea Origin

The idea originators for ventures are divided to existing business units and other sources. The ideas of existing business unit also include the ideas generated in the strategy process. The other sources include the corporate research and venturing unit ideas. In summary, most of the venture ideas, 73 %, originated outside the existing businesses in corporate research and venturing. About one fourth of the ideas, 27 %, originated in existing business units, as shown in table 4-3. However, the ideas originated inside the business generated most of the value, in other words business and products, and ideas outside the business most of the inventions.

Table 4-3: Idea origin

<b>Idea origin</b>	<b>Total number of ventures</b>	<b>Proportion</b>
Business	10	27%
Other	27	73%
<b>Total</b>	<b>37</b>	<b>100%</b>



### The Venture Teams

The teams of the ventures are characterized by two variables: 1) the venture team prior experience and 2) relations and trust. Of the venture teams, 75 % had prior experience of similar types of projects and 24 % of the ventures had no prior experience of similar types of projects, as expressed in table 4-4. As for relations and trust, 54% of ventures had medium or high level of relations and trust and 46 % of ventures had a low level of relations and trust with corporate and existing business unit management (table 4-5).

Table 4-4: The venture management prior experience

<b>Team prior experience</b>	<b>Number of ventures</b>	<b>Proportion</b>
High	16	43%
Medium	12	32%
Low	9	24%
Total number	37	100%

Table 4-5: Access to assets

<b>Social interaction</b>	<b>Number of ventures</b>	<b>Proportion</b>
High	9	24%
Medium	11	30%
Low	17	46%
Total number	37	100%

### Technology, Market and Service Ventures

The ventures are categorized to technology, market and service driven ventures. The ventures may change category during their lifetime because of redirections. The venture scope was measured at the end of the venture. Of the ventures 54 % were market and service oriented and 46 % technology ventures, see table 4-6. In summary, the split between the market and technology orientation is around half each.

Table 4-6: Venture scope categorization

<b>Venture scope</b>	<b>Total number of ventures</b>	<b>Proportion</b>
Technology	17	46 %
Market	12	32 %
Service	8	22%
Total	37	100%

### Venture Process

Figure 4-1 presents an overall picture of all the ventures in time and process dimensions. The ventures were developed according to the used venturing V-process and milestones named V0, V1, V2, and V3. The study period from 1998 to 2002 consists of four (4) venture phases, as follows:

- **Phase 1:** From 1998 to 1999, characterized by ‘initiation of internal corporate venturing operations’
- **Phase 2:** The first half of 2000, characterized by ‘portfolio evaluation and business focus areas ‘
- **Phase 3:** The second half of 2000, characterized by ‘change process’
- **Phase 4:** From the year 2001 onwards, characterized by ‘selective initiation of new ventures’.

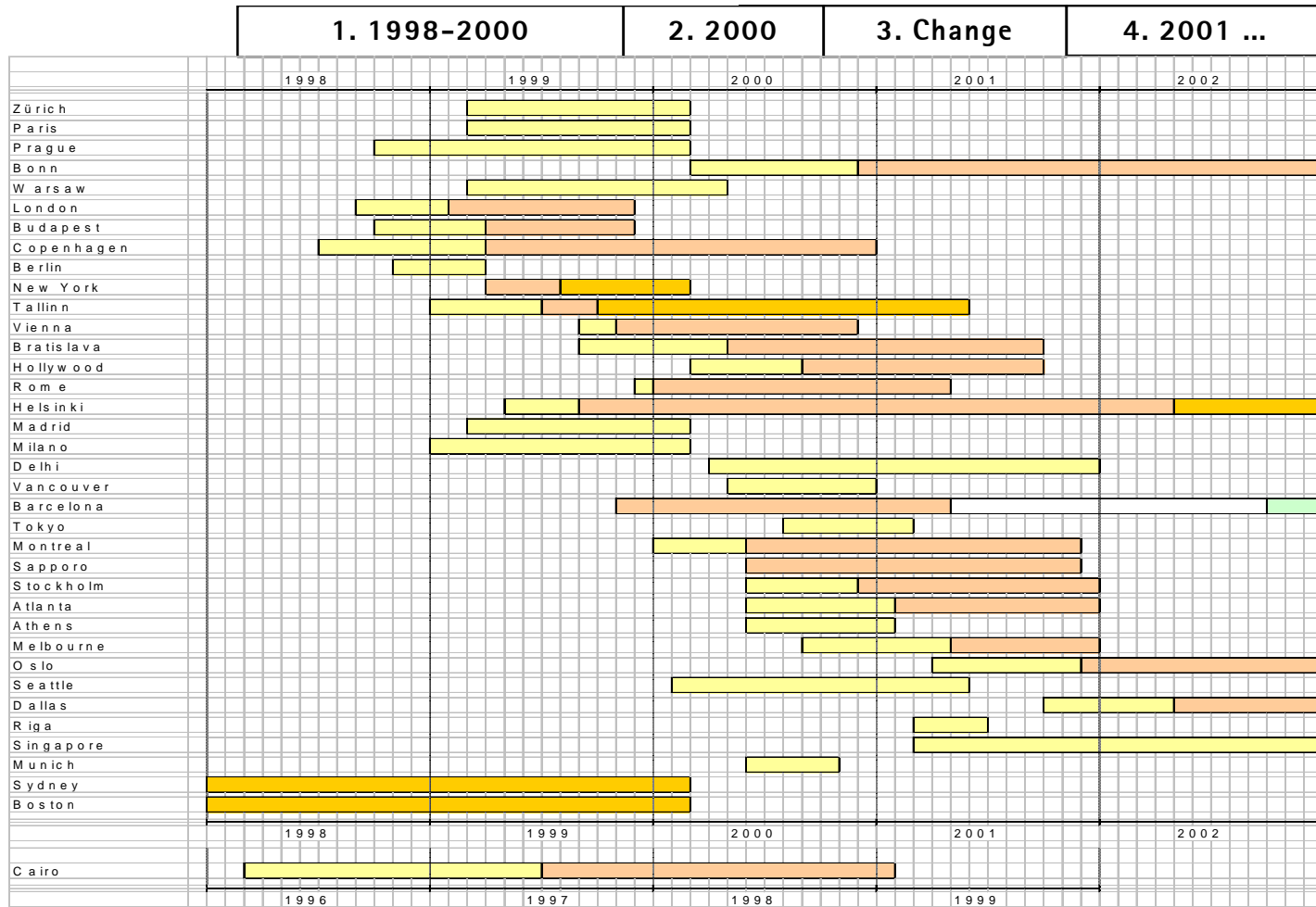


Figure 4-1: Ventures by time and milestones

### Venture Decisions at Each Milestone

The venture progress was measured by a predefined set of venture milestones (V-milestones). The first milestone was V0, at which the venture was officially established. The second milestone was V1, at which the commitment to go on and increase the headcount was obtained. The third milestone was V2, at which the official firm business commitment or approval to new business was assured. The highest milestones that the ventures have passed are described in table 4-7. In total, 24 % of the ventures obtained an official business commitment from the firm and reached the V2 milestone.

Table 4-7: Highest venture milestones reached

<b>Milestones</b>	<b>Total number</b>	<b>Proportion</b>
V0	14	38%
V1	14	38%
V2	9	24%

The venture decisions by each milestone are described in more detail in figure 4-2. Of the ventures 62 % continued from V0 onwards. Of the rest five percent were spun-in to main business units and 33 % were closed. At the V1 milestone, 24 % of the ventures continued from V1 towards V2. In contrast, 11 % were spun-in to main business units, two percent were spun-out and 22 % of the ventures were closed. Subsequently, at the V2 milestone, 5 % of the ventures continued to go further, 8 % of the ventures were spun-in to main business units, three percent were spun-off, and five percent were closed.

In summary, around two thirds of the ventures continued from VO to V1 and around a fourth of the ventures from V1 to V2. At the same time, around a third of the ventures were closed at each decision point. The other organizational arrangements like spin-ins to main businesses and spin-outs seem relatively similar in size at different decision points. The spin-ins to existing businesses seem to present an important finding.

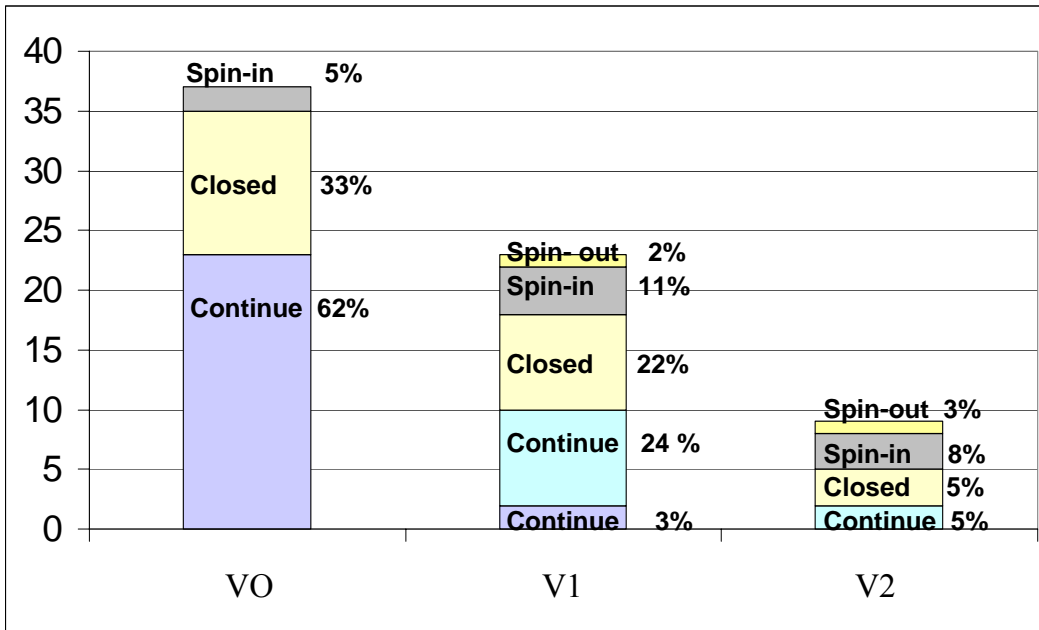


Figure 4-2: Venture decisions in V0, V1, V2

#### 4.1.2. Description of the Firm Factors

##### *Fit to the Corporate Strategy*

Managers have long faced the question how closely to tie the internal ventures to the corporate strategy or existing scope of businesses. Whether the fit of ventures to the corporate strategy is an important question at all has also been challenged. In this research, fit of ventures to the corporate strategy was divided to related (close) and unrelated (far). The fit may change during venture lifetime. The fit is measured at the end of the venture by way of comparing the venture scope to the corporate strategy. However, it should be noted that corporate strategy in the firm studied has not changed dramatically in the study period from 1998 to 2002. Of the sample ventures 43 % fit closely to the corporate strategy and 57 % were considered unrelated having no fit to the corporate strategy.

### Importance Perceived by Management

Regarding the priorities and importance of ventures, senior management of the venturing entity was asked to define the priorities between the ventures in the Spring 2002 by consensus-based scoring. The management was found to have medium interest in 70 % and high interest in 16 % of the ventures.

### Venture Redirections

Ventures in an uncertain environment apply the process of experimental exploration. By learning and developing products iteratively the venture increases its probability of success. Iterations comprise introducing the early version of a product or experiment to an initial market, learning from experience, modifying the product and market approach based on this learning, and trying again with better understanding and lower uncertainty of markets.

The redirection as a measure reflects active and dynamic decision-making and leadership. Venture redirection is measured by the number of scope changes during the venture development facilitated by senior management. Redirections are related to the age of the venture and the venture process. This means that the older the venture is and the higher the stage in the venture process, the more probable that the venture has gone through some redirections. The actual number of redirections in the 37 ventures varies between one and four. The mean was 1.86 and standard deviation 0.948.

All of the ventures made redirections during the venture lifetime. In addition, 57 % of the ventures were redirected from two to four times (see table 4-8).

Table 4-8: Number of venture redirections

<i>Number of Venture redirections</i>	<i>Total number of ventures</i>	<i>Proportion</i>
1	16	43 %
2	13	35 %
3	5	14%
4	3	8%
Total	37	100%

#### 4.1.3. Description of Business Factors

##### Technology and Market Uncertainty

Uncertainty is one of the key issues in internal corporate venturing in a separate venturing division. The uncertainty of ventures is categorized as high, medium or low based on technological and market uncertainty. In figure 4-3, all the thirty-seven ventures are described based on market and technological uncertainty. Each circle in the figure presents a venture and the size of the circle is scaled to represent the size of the effort. The level of market uncertainty was medium or high in 85 % of the cases. The level of technology uncertainty was low to medium in 86 % of the cases, as presented in figure 4-3. In interpretation of the portfolio analysis there is only one small positioning option initiative, scouting options ventures have been too large in size compared to target, and platform launches have been too many and too small. However, it should be noted that the uncertainty analysis was done based on current understanding, thus not presenting the original assessment when the ventures were launched. For instance, initially planned platform launches have turned out to be scouting options and vice versa. In addition, all of the ventures could be categorized as “high technological uncertainty”, if observed in a population of more traditional businesses.

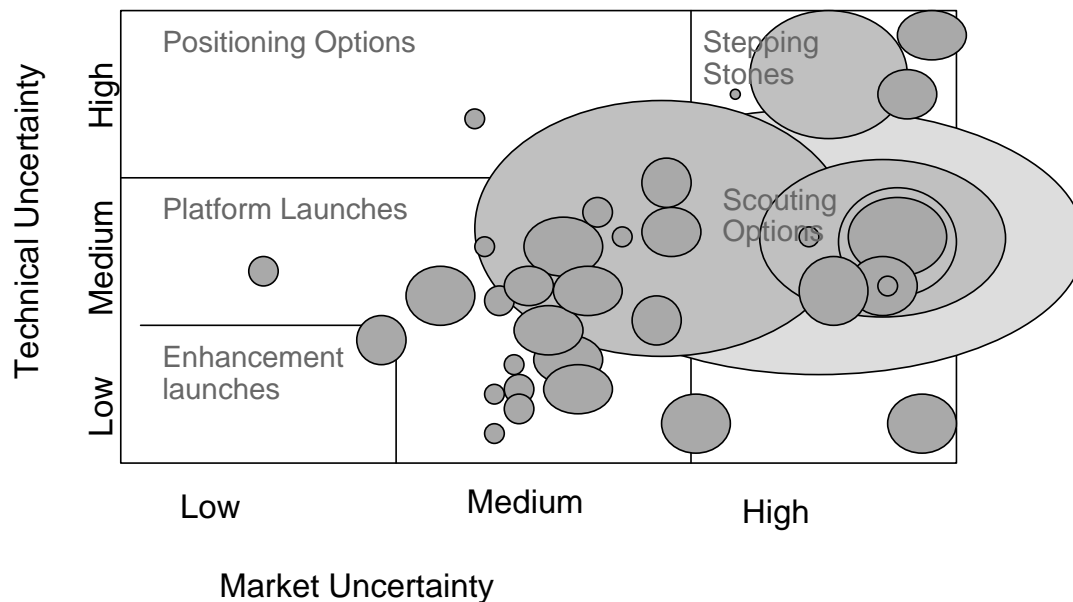


Figure 4-3: Technology and market uncertainty by McGrath and MacMillan (2000)

In this sample, at the time of establishing the venture unit the target of the ventures was to create new technology to a new market. However, measuring the final venture business scope later, in 65 % of the ventures the targeted market was new and in 38 % of the cases the used technology was new. Most of the cases, 43 %, were using old technology targeting a new market, as presented in table 4-9.

Table 4-9: Final venture business scopes of the sample

	Market	
Technology	New	Old
New	22%	16%
Old	43%	19%



#### 4.1.4. Description of Venture Outcomes

##### Organizational Continuity

Figure 4-4 presents an overview of different idea sources and the final organizational destination of the ventures. Idea sources are strategy process, existing business units, research unit, venturing unit and earlier business units described on the left in figure 4-4. A venture combines ideas from various sources. In the study the main idea source has been identified and it has been used in further analysis. Organizational destinations are new separate business units, existing business units, a new unit within an existing business unit, research unit, spin-outs and continuation as a venture or termination as described on the right in the figure 4-4.

Figure 4-4 depicts the complexity of and ventures interdependency on the firm environment. The origin of most of the ventures is in the research unit. A majority of the ventures have been closed in the study period. The figure also shows that some of the later ventures have been born of the earlier ones like Bonn and Bratislava, which might not have been established, had the earlier ventures not existed (figure 4-4 (a)).

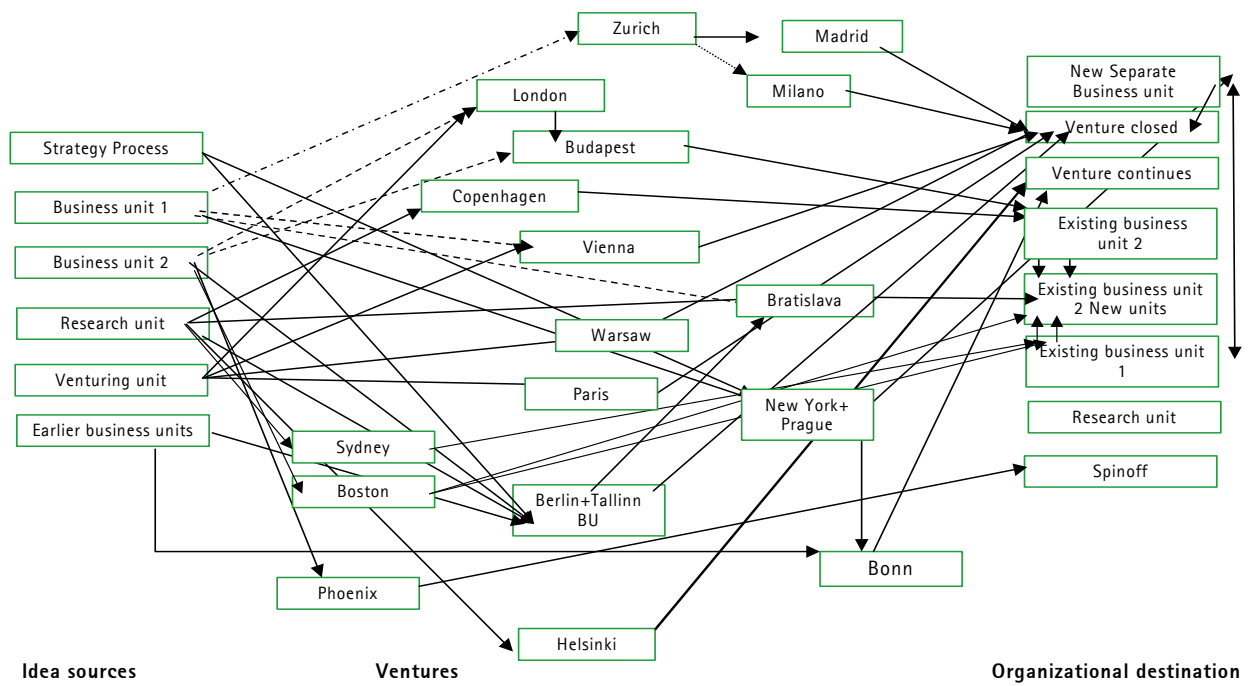


Figure 4-4 (a): Idea sources of ventures and final destinations (part 1)

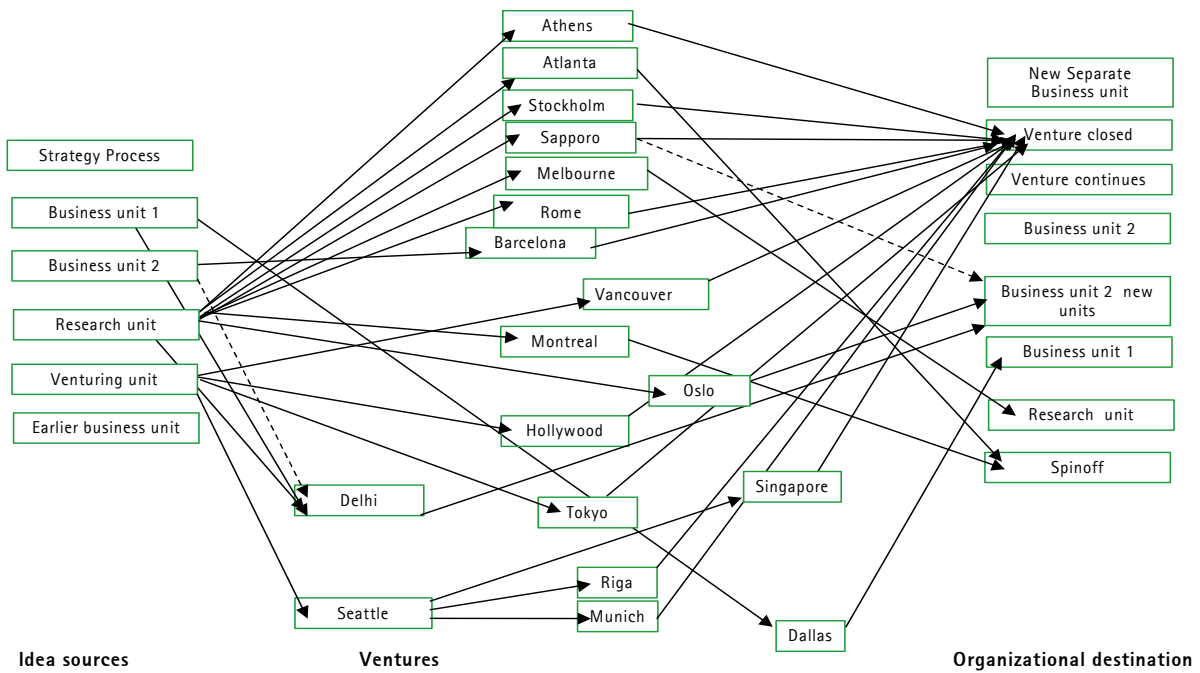


Figure 4-4 (b): Idea sources of ventures and final destinations (part 2)

### Multidimensional Outcome: Organizational Continuity, Value Creation and Inventions

Detailed description of the venture outcomes in each venture is described in Appendix 1. The multidimensional outcome is presented in figure 4-5. The multidimensional outcome consists of organizational continuity, value creation and invention outcome.

#### Organizational Continuity

Organizational continuity is presented in figure 4-5, which shows that 38 % of the ventures studied continued in the corporation and 62 % were discontinued or divested. Continuity consists of continuation as a venture inside the firm (8%), spin-in to the main business (25 %) and spin-offs, where the firm had a share (5%).

#### Value Creation

Value creation was divided into 1) business and products, 2) organizational capabilities and 3) personal experiences. In all of the ventures personal experiences and/or capabilities were developed. The criteria for organizational capability is that the capability needs to be widely recognized inside the firm and have more than five persons working in the area full-time. Around one fourth of the ventures created organizational capabilities. New products are created by combining old, existing and new capabilities. Therefore, new capabilities development is critical in new product creation. New products enable new business creation. Around one sixth of the ventures created new products and/or businesses.

In summary, in the study 16 % of the ventures created businesses and/or products, 24 % created organizational capability or competencies in the corporate level to contribute to future growth creation. The remaining 60 % explored new markets or technologies increasing their personal skills and capabilities, but did not directly contribute to long-term firm development in that time. These findings are depicted in detail in figure 4-5.

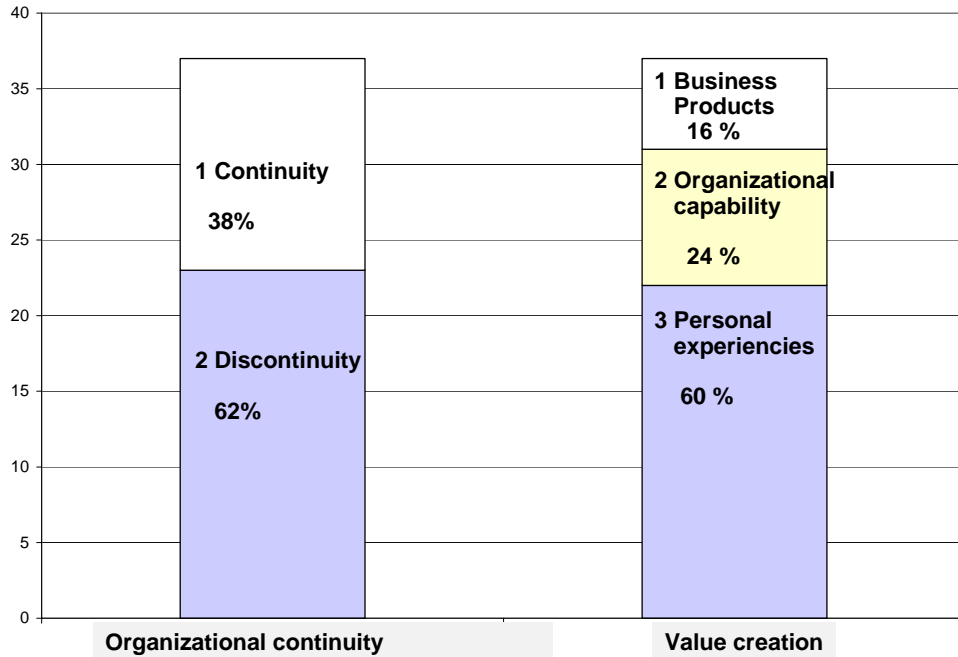


Figure 4-5: Organizational continuity and value creation outcome

### Inventions

Patents have been used as a measure of inventions. The patents filed in the sample ventures varied from 0 to 84. With the exception of four ventures, the ventures created and filed patents. The mean number of patents filed was 11.95 and standard deviation 18.403. 35 % of the ventures created and filed more than ten patents in the research period, as presented in table 4-10. In summary, the ventures are an important source of inventions in the firm.

Table 4-10: Number of patents

<i>Number of patents</i>	<i>Number of ventures</i>	<i>Proportion</i>
0-10	24	65%
11-20	5	14%
21-40	4	11%
41-60	2	5%
61-80	1	2.5%
81-100	1	2.5%
Total	37	100%

## 4.2. Statistical Analysis

### 4.2.1. Nature of and Relationship Between Variables

In this section, the correlations between the variables are reported. Table 4-11 presents the Pearson and Rank-order correlations. Some of the venture and firm factors are correlating with venture outcomes, as hypothesized. The venture outcomes correlate with each other.

Table 4-11: Nature and relationships between venture outcome variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1 Number of redirections	1.00													
2 Venture duration	<b>0.63</b> 0.00	1.00												
3 Scaled investment	<b>0.54</b> 0.00	<b>0.34</b> 0.04	1.00											
4 Number of People	<b>0.51</b> 0.00	0.30 0.07	<b>1.00</b> 0.00	1.00										
5 Number of patents	<b>0.72</b> 0.00	<b>0.57</b> 0.00	<b>0.58</b> 0.00	<b>0.54</b> 0.00	1.00									
6 Organizational continuity (1=discontinue)	<b>0.65</b> 0.00	<b>0.62</b> 0.00	0.28 0.09	0.28 0.10	<b>0.49</b> 0.00	1.00								
7 Idea origin (1=business unit, 2=other)	<b>-0.41</b> 0.01	-0.23 0.17	-0.29 0.09	-0.28 0.10	-0.14 0.40	-0.15 0.37	1.00							
8 Value Creation (1=new business)	<b>-0.64</b> 0.00	<b>-0.64</b> 0.00	<b>-0.46</b> 0.00	<b>-0.59</b> 0.00	<b>-0.51</b> 0.00	<b>-0.70</b> 0.00	0.21 0.20	1.00						
9 Team prior experience (1=low, 3=high)	0.27 0.10	<b>0.41</b> 0.01	<b>0.48</b> 0.00	<b>0.42</b> 0.01	<b>0.37</b> 0.02	<b>0.50</b> 0.00	-0.06 0.73	<b>-0.45</b> 0.01	1.00					
10 Relations and trust (1=low, 3=high)	<b>0.54</b> 0.00	<b>0.46</b> 0.00	<b>0.51</b> 0.00	<b>0.42</b> 0.01	<b>0.49</b> 0.00	<b>0.55</b> 0.00	-0.32 0.05	<b>-0.46</b> 0.00	<b>0.47</b> 0.00	1.00				
11 Fit to the firm strategy (0=close, 1=far)	-0.27 0.10	<b>-0.38</b> 0.02	-0.16 0.35	-0.31 0.07	-0.28 0.09	<b>-0.56</b> 0.00	0.08 0.63	<b>0.38</b> 0.02	<b>-0.47</b> 0.00	-0.22 0.19	1.00			
12 Interest by management (0=low, 2=high)	<b>0.41</b> 0.01	<b>0.58</b> 0.00	<b>0.59</b> 0.00	<b>0.61</b> 0.00	<b>0.32</b> 0.05	<b>0.58</b> 0.00	-0.03 0.87	<b>-0.53</b> 0.00	<b>0.50</b> 0.00	<b>0.35</b> 0.04	<b>-0.36</b> 0.03	1.00		
13 Technology uncertainty (1=low, 3=high)	-0.01 0.96	0.13 0.43	0.05 0.76	-0.08 0.65	-0.06 0.73	-0.01 0.93	0.06 0.72	-0.08 0.64	0.13 0.43	-0.05 0.75	0.07 0.68	0.26 0.12	1.00	
14 Market uncertainty (1=low, 3=high)	0.21 0.22	0.06 0.74	<b>0.36</b> 0.03	0.23 0.17	0.04 0.82	0.02 0.90	<b>-0.41</b> 0.01	0.01 0.94	-0.07 0.66	0.01 0.95	0.29 0.09	0.05 0.79	0.15 0.38	1.00

Bolded correlations are significant at the 0.05 level (p-values are given under each estimate)

1-7 intercorrelations are Pearson correlation coefficients

The correlations between 1-7 and 8-14 as well as the 8-14 intercorrelations are Spearman Rank-order correlations

Table 4-12 presents the means, standard deviations and correlations for metric variables.

Table 4-12: Means, standard deviations and correlations for metric variable

Variables	Mean	s.d	2	3	4	5	6	7	8
1. Number of redirections	1.86	.950	.633**	.537**	.508**	.723**	.649**	-.414*	
2. Venture duration	18.32	9.39		.337*	.304	.565**	.617**	-.229	
3. Scaled Investment	98.86	326.17			.996**	.579**	.282	-.286	
4. Number of people	62.11	236.34				.537**	.278	-.276	
5. Number of IPR's	11.95	18.4					.494**	-.143	
6. Continuity								-.153	
7. Venture origin									

\*p< .05 and \*\* p<.01

Tables 4-13, 4-14 and 4-15 present the statistical significance among variables. The statistical significance is denoted as follows: 0, which means that there is no statistically significant relation, ++, which means that there is statistically significant relation at the 0.01 level and +, which means that there is statistically significant relation at the 0.05 level.

First, a dependent variable, which is the venture outcome, and its different measures are presented. The different outcome measures consisting of *Continuity*, *Value Creation* and *Number of patents* correlate together and in the expected direction, table 4-13.

Table 4-13: Nature and relationships between venture outcome variables

	CONTINUITY	VALUE CREATION	NUMBER OF PATENTS
CONTINUITY	0	++	++
VALUE CREATION	++	0	++
NUMBER OF PATENTS	++	++	0

0, if not statistically significant, ++ statistically significant p<0.01, + statistically significant p< 0.05

Second, relations of the venture, firm and business factors to outcomes are considered. The venture factors, i.e. *Relations and trust* and *Team prior experience*, and as firm factor *Redirections*, are related to and have correlations with all outcome measures, which are *Continuity*, *Value creation* and *Number of patents*. *The Source of idea* is related to and has correlations with *Continuity*. *Number of people* correlates with the *Number of patents*. *Interest perceived by management* is related to *Continuity* and *Value creation*. *Fit to the corporate strategy* is related to and has correlation with *Continuity*. The business factors *Technology* and *Market uncertainty* have no direct correlations with the outcome measures. These relations and correlations are shown in table 4-14.

Table 4-14: Nature and relationship between relations of venture, firm and business factors on venture outcomes

	CONTINUITY	VALUE CREATION	NUMBER OF PATENTS
<b>VENTURE FACTORS</b>			
* Team prior experience	++	++	+
* Relations and trust	++	++	++
* Source of the idea	+	0	0
* Number of people	0	0	++
<b>FIRM FACTORS</b>			
* Fit to firm strategy	++	0	0
* Interest by management	++	++	0
* Redirections	++	++	++
<b>BUSINESS FACTORS</b>			
* Technology Uncertainty	0	0	0
* Market Uncertainty	0	0	0

0, if not statistically significant, ++ statistically significant  $p < 0.01$ , + statistically significant  $p < 0.05$

Third, correlations inside and across the venture, firm and business factors were presented.

The relations inside and across venture, firm and business factors

Firstly, the relations across venture and firm factors are described. The venture factors, i.e. *Relations and trust*, *Source of the Idea* and *Number of people*, are related to the firm factor *Redirections*. Venture factor *Team prior experience* is related to firm factors *Fit to the corporate strategy* and *Importance by management*. The venture factor *Relations and trust* also is related to *Importance by management*.

Secondly, the relations inside firm factors are described. The firm factor *Fit to the corporate strategy* is related to *Interest by management*. *Interest by management* is related to *Redirections*.

All of the relations and correlations expressed above are presented in table 4-15 below.

Table 4-15: Nature and relationship between venture, firm and business factors

	VENTURE FACTORS				FIRM FACTORS			BUSINESS FACTORS	
	Team prior experience	Relations trust	Source of Idea	Number of People	Fit to firm strategy	Interest by management	Redirections	Technol.	Market
<b>VENTURE FACTORS</b>									
* Team prior experience	0	++	0	0	++	++	0	0	0
* Relations and trust	++	0	0	+	0	+	++	0	0
* Idea origin	0	0	0	0	0	0	+	0	+
* Number of people	0	+	0	0	0	0	++	0	0
<b>FIRM FACTORS</b>									
* Fit to the firm strategy	++	0	0	0	0	+	0	0	+
* Interest by Management	++	+	0	0	+	0	+	0	0
* Redirections	0	++	+	++	0	+	0	0	0
<b>BUSINESS FACTORS</b>									
* Technology Uncertainty	0	0	0	0	0	0	0	0	0
* Market Uncertainty	0	0	+	0	+	0	0	0	0

0, if not statistically significant, ++ statistically significant p<0.01, + statistically significant p< 0.05



#### 4.2.2. Analysis of Hypotheses

##### Hypothesis H1: Firm Factors Relations to Each Other

Hypothesis H1 was introduced in chapter 3 is as follows:

H1a	The higher the perceived strategic fit between the venture and the parent firm corporate strategy, the higher the importance by management.
H1b	The higher the importance by management, the more redirections are made.

Hypothesis H1 is tested using contingency tables. Tables 4-16 and 4-17 present the results. *Fit to the corporate strategy* and *Importance by management* were predicted to be positively related to each other. This hypothesis received support from the data, as presented in table 4-16. The variables *Fit to the corporate strategy* (ordinal) and *Importance by management* (ordinal) are significantly positively related to each other. The appropriate measure for ordinal-by-ordinal association is Somers' D, which in this case has a value of Somers' D= 0.34 (p=0.015). In conclusion, this means that the higher the fit between the venture and the corporate strategy, the higher the perceived importance by management. Therefore hypothesis 1a was supported by the test.

Table 4-16: Contingency table of Fit to corporate strategy and Interest by management (Hypothesis 1a)

Fit to the corporate strategy	Interest by management			Total
	0	1	2	
Related	1	12	3	16
Unrelated	10	8	3	21
Total	11	20	6	37

*Interest by management* and *Redirections* were predicted to be positively related to each other. This hypothesis received support from the data, as can be seen in contingency table 4-17. The variables *Interest by management* and *Redirections* are significantly positively related to each other; Somers' D= 0.358 (p=0.001). In conclusion, this means that the higher the perceived interest by management of the venture, the more probable venture redirections. Hypothesis 1b was supported by the data.

Table 4-17: Contingency table of Interest by management and redirections (Hypothesis 1b)

Interest by management	Number of redirections				Total
	1	2	3	4	
0	8	2	1		11
1	8	6	4	2	20
2		5		1	6
Total	16	13	5	3	37

As a conclusion, Hypotheses H1a and H1b were supported by the data.

*Hypothesis H2: Venture and Firm Factors Relations*

In summary, hypothesis H2 was introduced in chapter 3 is as follows:

H2a	The higher the venture team prior experience of similar types of projects, the higher the probability of redirections.
H2b	The higher the perceived level of internal relations and trust by management, the higher the probability of redirections.
H2c	The closer the perceived idea origin is to the core of the firm, the higher the probability of redirections.
H2d	The larger the number of people, the higher the probability of redirections.

Multiple linear regression is used to test H2.

Table 4-18 presents the results of the multiple linear regression analysis for hypothesis H2. H2 predicted a relationship between venture factors *Team prior experience*, *Relations and trust*, *Source of the idea* and firm factors, *Redirections*. *Number of people* and *Relations and trust* are significantly positively related to *Redirections* (*Number of People*: beta=0.328, p=0.015; *Relations and trust*: beta= 0.369, p=0.016. These independent variables explained nearly half of the variance in the number of redirections (R square=0.441). The higher the level of relations and trust and number of people, the more probable the venture redirections are to occur.

Table 4-18: Venture factors effect on firm factor (Hypothesis 2)

<b>Dependent variable: Number of redirections</b>	
<b>Independent variable</b>	<b>Measures</b>
Team prior experience	-0.04 (.178)
Relations and trust	0.426 * (.190)
Source of the Idea	-0.441 -0.301
Number of people	0.001 ** (.001)
Constant	1.872 ** (.682)
F-statistic	6.319 **
R -square	0.564
N	37

$\square$  (p<0.10); \* (p<.05) ; \*\* (p<.01); \*\*\* (p<0.001)  
 t-tests are one-tailed for hypothesized effects.  
 Unstandardized coefficients are reported.  
 Standard errors are in parentheses.

In conclusion, H2b and H2d were supported by the data and H2a and H2c were not supported by the data.

*Hypothesis H3: Venture Factors Direct Influence on Venture Continuity*

Hypothesis H3, as introduced in chapter 3, is as follows:

H3a	The higher the team prior experience of similar types of projects, the higher the probability of venture continuity and value outcomes.
H3b	The higher the perceived level of internal relations and trust by management, the higher the probability of redirections, the higher the probability of the venture continuity and value outcomes.
H3c	The closer the perceived idea origin is to the core of the firm, the higher the probability of venture continuity and value outcomes.
H3d	The larger the number of people, the higher the probability of venture continuity and value outcomes.

Multiple logistic regression is used to test H3.

Table 4-19 presents the results of the multiple logistic regression analysis for the hypothesis H3. H3 predicted positive relationship between venture factors *Team prior experience*, *Relations and trust*, *Source of the idea*, *Number of people* and *Continuity*. The *Team prior experience* and *Relations and trust* are significantly positively related to venture outcome *Continuity* (pseudo R-square=0.438, *Team prior experience*: p=0.037; *Relations and trust*: p=0.05), see table 4-19. These independent variables predict the categorical venture continuity variable with a 78.4 % hit rate implying good model fit. The higher the level of team prior experience and relations and trust, the higher the probability of venture continuity in firm.

Table 4-19: Venture factors direct influence on venture outcome (Hypothesis 3)

<b>Dependent variable: Organizational continuity</b>	
<b>Independent variable</b>	<b>Measures</b>
Team prior experience	1.148 * (.644)
Relations and trust	1.025 * (.624)
Source of the Idea	0.976 (1.108)
Number of people	0.002 (.005)
Constant	-6.807 * (3.063)
Chi-Square	14.385 **
Nagelkerke's pseudo R -square	0.440
N	37

$\alpha$  (p<0.10); \* (p<.05) ; \*\* (p<.01); \*\*\* (p<0.001)  
t-tests are one-tailed for hypothesized effects,  
Unstandardized coefficients are reported.  
Standard errors are in parentheses.

In conclusion, H3a and H3b were supported by the data and H3c and H3d were not, if the dependent variable is continuity. The test on if the dependent variable is value creation and number of patents is shown with the testing of hypothesis 5.

Hypothesis H4: Firm Factors' Relations on Venture Outcome

H4 introduced in chapter 3 is as follows:

H4	The more redirections, the more probable the venture continuity and creation of value outcomes.
----	---

Contingency tables (when the dependent variable is *Continuity* or *Value creation*) and multiple linear regression analysis (when the dependent variable is *Number of patents*) are used in testing H4.

Table 4-20 presents the results of the contingency tables. The firm factor: *Redirections* and *Continuity* were predicted to be positively related to each other. The variables *Redirections* and *Continuity* are significantly positively related to each other; Somers' D= 0.553 (p=0.000). In conclusion, this means that the more redirections, the more probable the venture continuity. This hypothesis received support from the data, as is visible from table 4-20.

Table 4-20: Firm factors direct effect on continuity (Hypothesis 4)

Continuity	Number of redirections				Total
	1	2	3	4	
Continue	1	7	3	3	14
Discontinue	15	6	2	0	23
Total	16	13	5	3	37

Table 4-21 presents the results of contingency tables. The redirections and venture value creation were predicted to have positive relationship on each other. This hypothesis received support from the data. The selected firm factor: venture redirections and value outcome are

significantly positively related on each other; Somers' D= 0.582 (p=0.000). In conclusion, the more redirections, the more probable the venture value outcomes.

Table 4-21: Contingency table of firm factors direct effect on value creation (Hypothesis 4)

Value creation	Number of redirections				Total
	1	2	3	4	
New business and products	0	3	0	3	6
Organizational capabilities: technology, business, strategy	1	5	3	0	9
Personal experiences	15	5	2	0	22
Total	16	13	5	3	37

Table 4-22 presents the results of the multiple linear regression analyses conducted to test H4 with patent data. The firm factors: *Redirections* and *Number of patents* filed were predicted to be positively related to each another. This hypothesis received support from the data. The variables *Redirections* and the *Number of patents* are significantly positively related to each other (beta=0.723, p=0.000). Independent variables explain over half of the variation in patents (R square=0.522).

---

**Dependent variable: Number of patents**

Independent variable	Measures
Number of redirections	14.037 *** (2.269)
Constant	-14.231 * (4.732)
F-statistics	38.28 ***
R -square	0.520
N	37

---

α (p<0.10); \* (p<.05) ; \*\* (p<.01); \*\*\* (p<0.001)  
t-tests are one-tailed for hypothesized effects,  
Unstandardized coefficients are reported.  
Standard errors are in parentheses.

---

Table 4-22: Firm factors direct effect on patents creation (Hypothesis 4)

In conclusion, H4 is supported by the data.

Hypothesis H5: Venture Factors' Effect on Venture Outcome Moderated by Firm Factors

H5 introduced in chapter 3 is as follows:

H5a	The higher the team prior experience of similar types of projects, the higher the probability that the venture will create valuable outcomes. This effect is moderated by redirections.
H5b	The higher the perceived level of internal relations and trust by management, the higher the probability that the venture will create valuable outcomes. This effect is moderated by redirections.
H5c	The closer the perceived idea origin is to the core of the firm, the higher the probability that the venture will create valuable outcomes. This effect is moderated by redirections.
H5d	The larger the number of people, the higher the probability that the venture will create valuable outcomes. This effect is moderated by redirections.

Multiple linear regression with interactions is used to analyze the venture factors' effect on venture outcome, contingent upon firm factors.

Table 4-23 presents the regression results for H5 with *Value creation* as the dependent variable. The venture factors *Team prior experience*, *Relations and trust*, *Source of idea* and *Number of people*, contingent upon firm factor *Redirections*, were predicted to be positively related to *Value creation*. The firm factor, *Redirections* (beta= 1.886, p= 0.0125), *Source of idea* (beta 2.663, p=0.013) and *Number of people* ((beta= 0.016, p= 0.03) are significantly positively related directly to *Value creation* as shown in table 4-23. The higher *Number of people* and the more *Redirections*, the more value the venture will generate. If *Idea origin* is unrelated to the existing business and there are more *Redirections*, the more value the venture will generate.

However, taking into account the contingent effects, *Source of the idea* (beta = -1.091, p=0.007) and *Number of people* (beta= - 0.004, p=0.025) contingent on *Redirections* explained the *Value* outcome. The more *redirections*, the more the influence of *Venture size* decreases (negative effect). If the ventures are originated in business units and there are more *Redirections*, they generate more value.

<b>Dependent variable: Value creation</b>	
<b>Independent variable</b>	<b>Measures</b>
Number of redirections	1.886 ** (.793)
Team prior experience	-0.311 (-0.328)
Relations and trust	0.255 (.359)
Source of the Idea	2.663 ** (1.007)
Number of people	0.016 * (0.08)
Number of redirections x Team prior experience	-0.027 (0.165)
Number of redirections x Relations and trust	-0.083 (-0.186)
Number of redirections x Source of the Idea	-1.091 $\alpha$ (.419)
Number of redirections x Number of people	-0.004 * (.002)
Constant	-1.755 (2.011)
F-statistics	5.665 ***
R -square	0.650
N	37

$\alpha$  (p<0.10); \* (p<.05) ; \*\* (p<.01); \*\*\* (p<0.001)  
t-tests are one-tailed for hypothesized effects,  
Unstandardized coefficients are reported.  
Standard errors are in parentheses.

Table 4-23: Venture and firm factors contingent effect on value creation (Hypothesis 5)

Table 4-24 presents the multiple linear regression results for H5 with the *Number of patents* as the dependent variable. The venture factors *Team prior experience*, *Relations and trust*, *Source of idea* and *Number of people*, contingent upon firm factor *Redirections*, were predicted to be positively related to *Number of patents*. The variables *Redirections* (beta= -39.416, p= 0.012), *Source of the idea* (beta = -33.3922, p=0.0415), and *Relations and trust* (beta= -19.155, p=0.008) are related directly to *Number of patents*. The more *Redirections* and the lower the level of perceived *Relations and trust* (*negative effect*), the more *Patents*



are created. If the *Venture origin* is related to the existing business units and *Redirections* are made, then more *Patents* are created.

However, in looking at the moderating effects, the *Source of the idea* (beta = 15.355, p=0.028), and *Relations and trust* (beta= 10.573, p=0.0025) moderated by *Redirections* explained same of the variance. If the *Source of the idea* is unrelated to business units and more *Redirections*, the more patents generated (and ventures with less *Redirections* and *originally* related to business units create the most Patents). The higher the *Relations and trust* and more *Redirections*, the more patents are created.

Table 4-24: Venture and firm factors moderated effect on Patents creation (Hypothesis H5)

<b>Dependent variable: Number of patents</b>	
<b>Independent variable</b>	<b>Measures</b>
Number of redirections	-39.416 ** (14.589)
Team prior experience	0.899 (6.029)
Relations and trust	-19.155 ** (6.610)
Source of the Idea	-33.392 * (18.538)
Number of people	0.089 (.150)
Number of redirections x Team prior experience	0.471 (3.035)
Number of redirections x Relations and trust	10.573 ** (3.425)
Number of redirections x Source of the Idea	15.335 * (7.720)
Number of redirections x Number of people	-0.019 (.038)
Constant	85.987 ** (37.005)
F-statistics	11.799 ***
R -square	0.800
N	37

$\alpha$  (p<0.10); \* (p<.05) ; \*\* (p<.01); \*\*\* (p<0.001)  
t-tests are one-tailed for hypothesized effects,  
Unstandardized coefficients are reported.  
Standard errors are in parentheses.

In conclusion, H5c and H5d were supported, if the dependent variable was value outcomes. H5b, H5c and 5d were supported by the data, if the dependent variable was Number of Patents. H5a was not supported by the data.

Hypothesis H6: Business Factors Direct Effect on Venture Outcome

Summarized briefly, hypothesis H6 introduced in chapter 3 is as follows:

H6a	The higher the perceived market uncertainty of the venture, the higher the probability of the venture discontinuity.
H6b	The higher the perceived technology uncertainty of the venture is, the higher the probability of the venture discontinuity.

Contingency table is used in testing H6.

Table 4-25 presents the *Continuity – Market uncertainty* contingency table. The business factor *Market uncertainty* and *Continuity* were predicted to be related to each another. This hypothesis did not receive support from the data. The variables *Market uncertainty* and venture *Continuity* are not statistically significantly related to each other; Somers’ D= 0.41 (p=0.789). In conclusion, this means that *Market Uncertainty* does not directly affect *Venture Continuity or discontinuity*.

Table 4-25: Contingency table of business factor: market uncertainty effect on venture continuity

Organizational continuity	Market Uncertainty			Total
	Low	Medium	High	
Continuity		10	4	14
Discontinuity	2	12	9	23
Total	2	22	13	37

(Hypothesis 6)

Table 4-26 presents the *Continuity - Technology uncertainty* contingency table. The business factors *Technology Uncertainty* and *Continuity* were predicted to be related to each another. This hypothesis did not receive support from the data. The variables *Technology uncertainty* and venture *Continuity* were not statistically significantly related to each other;

Somers' D= 0.13 (p=0.933). In conclusion, this means that *Technological uncertainty* does not directly affect *Venture continuity or discontinuity*.

Table 4-26: Contingency table of business factor: technology uncertainty effect on venture continuity  
(Hypothesis 6)

Organizational continuity	Technology Uncertainty			Total
	Low	Medium	High	
Continuity	5	6	3	14
Discontinuity	7	12	4	23
Total	12	18	7	37

In conclusion, H6a and H6b were not supported by the data, if the dependent variable is the Continuity. The H6a and H6b were not supported by the data, if the dependent variable is value creation and number of patents. The last tests are done in testing the H7.

*Hypothesis H7: Venture Factors' Effect on Venture Outcome Moderated by uncertainty*

In brief, hypothesis H7 introduced in chapter 3 is as follows:

H7a	The higher the team prior experience of similar types of projects, the higher the probability that the venture will create valuable outcomes. This effect is moderated by perceived technology/market uncertainty.
H7b	The higher the perceived level of internal relations and trust by management, the higher the probability that the venture will create valuable outcomes. This effect is moderated by perceived technology/market uncertainty.
H7c	The closer the perceived idea origin is to the core of the firm, the higher the probability that the venture will create valuable outcomes. This effect is moderated by perceived technology/market uncertainty.
H7d	The larger the number of people, the higher the probability that the venture will create valuable outcomes. This effect is moderated by perceived technology/market uncertainty.

Multiple linear regression is used to analyze the venture factors' effect on the venture outcome, moderated by uncertainty H7.

Table 4-27 presents the regression results, with *Number of patents* as the dependent variable. The venture factors *Team prior experience*, *Relations and trust*, *Source of idea* and *Number of people*, contingent upon *Technology uncertainty*, were predicted to be positively related to *Venture outcome*. The variable *Number of people* (beta= -0.165, p= 0.039) is negatively directly related to *Number of patents*. However taking into account the interaction effect, the *Number of people* moderated by *Technology uncertainty* (beta= 0.198, p=0.035) explained the *Number of patents* created. The higher level of *Technological uncertainty* and more *People*, the more *Patents* are created.

Table 4-27: Venture factors effect on patents creation moderated by technological uncertainty  
(Hypothesis 7)

<b>Dependent variable: Number of patents</b>	
<b>Independent variable</b>	<b>Measures</b>
Technical uncertainty	13.622 (17.871)
Team prior experience	5.932 (12.041)
Relations and trust	9.45 (12.241)
Source of the Idea	11.768 (16.410)
Number of people	-0.165 * (0.090)
Technical uncertainty x Team prior experience	-2.967 (5.254)
Technical uncertainty x Relations and trust	-2.317 (5.557)
Technical uncertainty x Source of the Idea	-3.429 (8.118)
Technical uncertainty x Number of people	0.198 * (0.089)
Constant	-37.347 (35.792)
F-statistics	2.979 *
R -square	0.500
N	37

$\alpha$  (p<0.10); \* (p<.05) ; \*\* (p<.01); \*\*\* (p<0.001)  
t-tests are one-tailed for hypothesized effects,  
Unstandardized coefficients are reported.  
Standard errors are in parentheses.

Table 4-28 presents the regression results, with *Value Creation* as the dependent variable. The venture factors *Team prior experience*, *Relations and trust*, *Source of idea* and *Number of people*, contingent upon business factor *Technology Uncertainty* were predicted to be positively related to *Value creation*. The venture factors contingent by *Technology uncertainty* are not related to *Value creation*.

Table 4-28: Venture factors effect on value creation contingent by technology uncertainty (Hypothesis 7)

<b>Dependent variable: Value creation</b>	
<b>Independent variable</b>	<b>Measures</b>
Technical uncertainty	-0.979 $\alpha$ (0.822)
Team prior experience	-0.099 (-.179)
Relations and trust	-0.613 $\alpha$ (.563)
Source of the Idea	-0.584 (.765)
Number of people	0 (0.004)
Technical uncertainty x Team prior experience	-0.046 (.242)
Technical uncertainty x Relations and trust	0.199 (0.256)
Technical uncertainty x Source of the Idea	0.33 (.374)
Technical uncertainty x Number of people	-0.001 (.004)
Constant	5.112 * (1.647)
F-statistics	1.882 $\alpha$
R -square	0.390
N	37

$\alpha$  (p<0.10); \* (p<.05) ; \*\* (p<.01); \*\*\* (p<0.001)  
t-tests are one-tailed for hypothesized effects,  
Unstandardized coefficients are reported.  
Standard errors are in parentheses.

Table 4-29 presents the regression results, with *Number of patents* as the dependent variable. The venture factors *Team prior experience*, *Relations and trust*, *Source of the idea* and *Number of people*, contingent upon *Market uncertainty*, were predicted to be positively related to venture outcome. *Number of people* (beta= 0.552, p= 0.00) is positively directly related to *Number of patents*. However, taking into account the interaction effect, the *Number of people* (beta= -0.179, p=0.000) and *Relations and trust* (beta =11.244, p= 0.016) moderated by *Market uncertainty* explained the *Number of patents*. The higher *Market uncertainty* and higher level of *Relations and trust*, the more *Patents created*. The higher the market uncertainty, the smaller the influence of venture size (negative effect).

Table 4-29: The effect of venture factors on patents creation by market uncertainty (Hypothesis 7)

<b>Dependent variable: Number of patents</b>	
<b>Independent variable</b>	<b>Measures</b>
Market uncertainty	-2.872 (22.374)
Team prior experience	0.969 (10.645)
Relations and trust	-20.635 * (12.227)
Source of the Idea	10.153 (25.487)
Number of people	0.552 *** (0.97)
Market uncertainty x Team prior experience	-1.066 (4.391)
Market uncertainty x Relations and trust	11.244 ** (4.980)
Market uncertainty x Source of the Idea	-3.546 (9.540)
Market uncertainty x Number of people	-0.179 *** (.033)
Constant	4.476 (60.944)
F-statistics	8.186 ***
R -square	0.730
N	37

$\alpha$  (p<0.10); \* (p<.05) ; \*\* (p<.01); \*\*\* (p<0.001)  
t-tests are one-tailed for hypothesized effects,  
Unstandardized coefficients are reported.  
Standard errors are in parentheses.

Table 4-30 presents the regression results, with *Value creation* as the dependent variable. The venture factors *Team prior experience*, *Relations and trust*, *Source of the idea* moderated upon business factor *Market uncertainty*, were predicted to be positively related to *Value creation* outcome. The variable *Source of idea* (beta= 2.817, p= 0.017) is positively directly related to *Value creation* outcome. However, taking into account the interaction effect, *Source of idea* (beta=-1.008, p=0.04) contingent upon *Market uncertainty* explained the *Value creation* outcome. The higher the *Market uncertainty*, and if the idea of the venture is originated in business units, the more *value* it generates.

Table 4-30: The effect of venture factors on value creation moderated by market uncertainty (Hypothesis 7)

<b>Dependent variable: Value creation</b>	
<b>Independent variable</b>	<b>Measures</b>
Market uncertainty	1.731 $\alpha$ (1.316)
Team prior experience	-0.884 $\alpha$ (.626)
Relations and trust	0.428 (0.719)
Source of the Idea	2.817 * (1.499)
Number of people	-0.008 $\alpha$ (.006)
Market uncertainty x Team prior experience	0.274 $\alpha$ (0.258)
Market uncertainty x Relations and trust	-0.228 (.293)
Market uncertainty x Source of the Idea	-1.008 * (0.561)
Market uncertainty x Number of people	0.002 $\alpha$ (.002)
Constant	-1.692 (3.584)
F-statistics	2.591 *
R -square	0.460
N	37

$\alpha$  (p<0.10); \* (p<.05) ; \*\* (p<.01); \*\*\* (p<0.001)  
t-tests are one-tailed for hypothesized effects,  
Unstandardized coefficients are reported.  
Standard errors are in parentheses.

In conclusion, the H7d is supported (with technology uncertainty as the moderator), if the dependent variable is number of patents created. H7b is supported (with market uncertainty as the moderator), if the dependent variable is number of patents created. H7c is supported (with market uncertainty as the moderator), if the dependent variable is value creation. H7a was not supported by the data.

### 4.3. Summary of the Results

The table 4-31 below summarizes all of the results of the statistical analyses. Hypotheses 1, 2, 3, 4, 5 and 7 were supported or partially supported by the data. Hypothesis 6 was not supported by the data.

Table 4-31: Summary of results of the multiple regression analysis

<b>N:o</b>	<b>Hypothesis</b>	<b>Independent variable</b>	<b>Dependent variable</b>	<b>Support</b>
H1a:	The higher the perceived strategic fit between the venture and the parent firm corporate strategy, the higher the importance by management.	Strategic fit	Importance by management	Supported
H1b:	The higher the importance by management, the more redirections are made.	Importance by management	Redirections	Supported
H2a:	The higher the venture team prior experience of similar types of projects, the higher the probability of redirections.	Team prior experience	Redirections	Not supported
H2b:	The higher the perceived level of internal relations and trust by management, the higher the probability of redirections.	Relations and trust	Redirections	Supported



<b>N:o</b>	<b>Hypothesis</b>	<b>Independent variable</b>	<b>Dependent variable</b>	<b>Support</b>
H2c:	The closer the perceived idea origin is to the core of the firm, the higher the probability of redirections.	Source of the idea	Redirections	Not supported
H2d:	The larger the number of people, the higher the probability of redirections.	Number of people	Redirections	Supported
H3a:	The higher the team prior experience of similar types of projects, the higher the probability of venture continuity and value outcomes.	Team prior experience	Continuity Value creation Patents	Supported Not supported Not supported
H3b:	The higher the perceived level of internal relations and trust by management, the higher the probability of redirections, the higher the probability of the venture continuity and value outcomes.	Relations and trust	Continuity Value creation Patents	Supported Not supported Not supported
H3c:	The closer the perceived idea origin is to the core of the firm, the higher the probability of venture continuity and value outcomes.	Source of the idea	Continuity Value creation Patents	Not supported Supported Not supported
H3d:	The larger the number of people, the higher the probability of venture continuity and value outcomes.	Number of people	Continuity Value creation Patents	Not supported Supported Not supported
H4:	The more redirections, the more probable the venture continuity and creation of value outcomes.	Redirections	Continuity, Value creation Patents	Supported Supported Supported

N:o	Hypothesis	Independent variable	Dependent variable	Support
H5a:	The higher the team prior experience of similar types of projects, the higher the probability that the venture will create valuable outcomes. This effect is moderated by redirections.	Contingent effect: <i>Team prior experience</i> , Relations and trust, Source of the idea Number of people  Redirections	Value creation Patents	Not supported Not supported
H5b:	The higher the perceived level of internal relations and trust by management, the higher the probability that the venture will create valuable outcomes. This effect is moderated by redirections.	Contingent effect: Team prior experience, <i>Relations and trust</i> , Source of the idea Number of people  Redirections	Value creation Patents	Not supported Supported  Partially supported
H5c:	The closer the perceived idea origin is to the core of the firm, the higher the probability that the venture will create valuable outcomes. This effect is moderated by redirections.	Contingent effect: Team prior experience, Relations and trust, <i>Source of the idea</i> Number of people  Redirections	Value creation Patents	Supported Supported

<b>N:o</b>	<b>Hypothesis</b>	<b>Independent variable</b>	<b>Dependent variable</b>	<b>Support</b>
H5d:	The larger the number of people, the higher the probability that the venture will create valuable outcomes. This effect is moderated by redirections.	Contingent effect: Team prior experience, Relations and trust, Source of the idea <i>Number of people</i>  Redirections	Value creation Patents	Supported Supported
H6a:	The higher the perceived market uncertainty of the venture, the higher the probability of the venture discontinuity and outcomes.	Market uncertainty	Continuity Value creation Patents	Not supported Not supported Not supported
H6b:	The higher the perceived technology uncertainty of the venture is, the higher the probability of the venture discontinuity.	Technology uncertainty	Continuity Value creation Patents	Not supported Not supported Not supported
H7a:	The higher the team prior experience of similar types of projects, the higher the probability that the venture will create valuable outcomes. This effect is moderated by perceived technology/market uncertainty.	Contingent effect: <i>Team prior experience</i> , Relations and trust, Source of the idea, Number of people  Technology/ market uncertainty	Value creation Patents	Not supported Not supported

<b>N:o</b>	<b>Hypothesis</b>	<b>Independent variable</b>	<b>Dependent variable</b>	<b>Support</b>
H7b:	The higher the perceived level of internal relations and trust by management, the higher the probability that the venture will create valuable outcomes. This effect is moderated by perceived technology/market uncertainty.	Contingent effect: Team prior experience, <i>Relations and trust</i> , Source of the idea, Number of people  Technology/ market uncertainty	Value creation Patents	Not supported Supported by Market uncertainty  Partially supported
H7c:	The closer the perceived idea origin is to the core of the firm, the higher the probability that the venture will create valuable outcomes. This effect is moderated by perceived technology/market uncertainty.	Contingent effect: Team prior experience, Relations and trust, <i>Source of the idea</i> , Number of People  Technology/ market uncertainty	Value creation  Patents	Supported by Market uncertainty Not supported  Partially supported
H7d:	The larger the number of people, the higher the probability that the venture will create valuable outcomes. This effect is moderated by perceived technology/market uncertainty.	Contingent effect: Team prior experience, Relations and trust, Source of the idea, <i>Number of people</i>  Technology/ market uncertainty	Value creation Patents	Not supported Supported by Technology uncertainty  Partially supported

The results of regression analysis have been integrated in the following figure 4-6. The solid lines indicate that the hypothesis is supported by the data, and the dotted line indicates no support for the hypothesis.

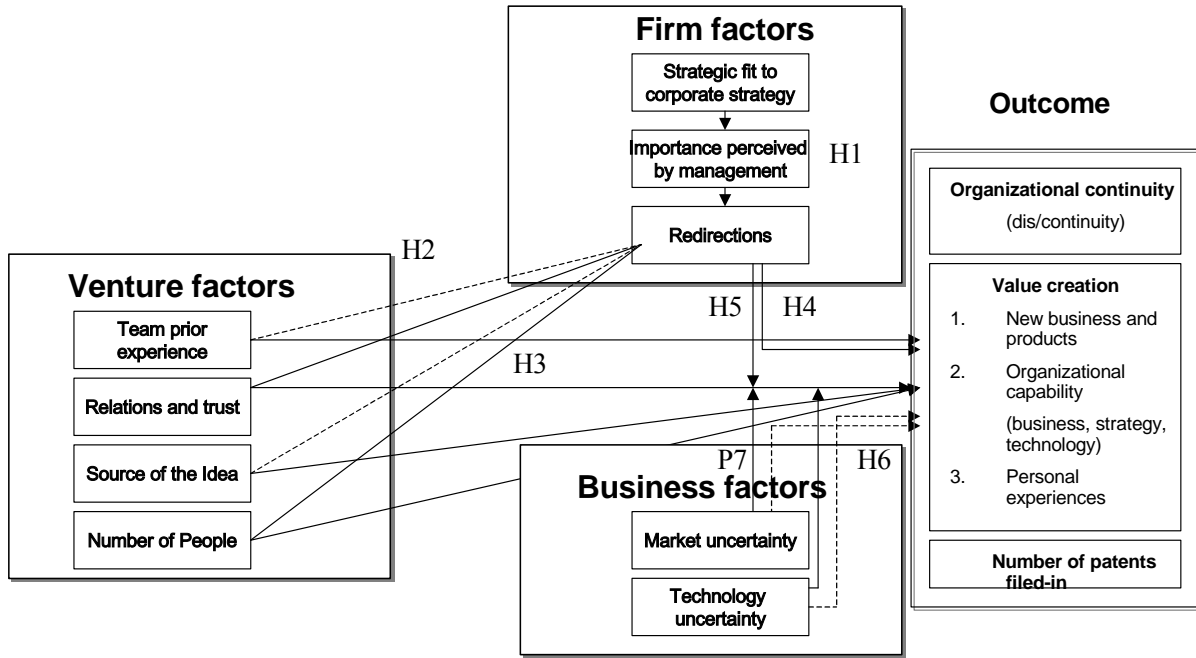


Figure 4-6: Results of regression analysis

The results of hypothesis testing have influence on theory and propositions. The table 4-32 below summarizes all the propositions. Based on the tests, the propositions Pa, P1b and P4 were supported by the data. The proposition P2, P3 and P7 was partially supported and proposition P6 was not supported by the data.

Table 4-32: Summary of results on propositions

<b>N:o</b>	<b>Propositions</b>	<b>Independent variable</b>	<b>Dependent variable</b>	<b>Support</b>
P1a	The higher the strategic relatedness between the venture and the parent firm corporate strategy, the higher the management priority to continue the venture.	Strategic fit	Importance by management	Supported
P1b	The higher the management priority, the higher the persistence to continue the venture.	Importance by management	Redirections	Supported
P2	The venture and firm factors are positively related one another.	Venture factors	Firm factors	Partially supported
P3	The better the venture factor, the better the venture outcome.	Venture factors	Venture outcome	Partially supported
P4	The firm factors and the venture outcomes are positively related on another.	Firm factors	Venture outcome	Supported
P5	The higher the venture factor, the better the venture outcomes. This effect is moderated by firm factors.	Venture factors + firm factors	Venture outcome	Partially supported
P6	The higher the business factors, market and technology uncertainty, the lower the venture outcomes.	Business factors	Venture outcome	Not supported
P7	The higher the venture factor, the better the venture outcomes. The effect is moderated by business factors.	Venture factors + business factors	Venture outcome	Partially supported

## **5. DISCUSSION AND CONCLUSIONS**

This study began with a fundamental puzzle: corporate ventures are uncertain, unpredictable and prone to failure, yet firms consistently engage in the venturing process. My research suggests that investments in venturing, properly managed, can yield significant benefits for venturing firms, despite their fundamental uncertainty and even in the face of failure. Among the important outcomes of the venturing process I identified were contributions to firm-level capabilities and resources; to new knowledge with important future potential; and to the personal skills and capacities of those engaged in the venturing process.

### **5.1. Overview of Findings**

The major finding of this study is that investments in venturing, when properly managed, can yield firm-level benefits even though the process is fraught with uncertainty. My empirical results thus shed light on several controversies with respect to how firms operate under uncertain conditions. Of particular note is the strong effect I find for the interaction between the characteristics of the ventures and how they are managed. Put simply, my study suggests that management matters significantly for the value of a corporate venturing program.

Of the population I studied, two fifths continued in the firm and three fifths were discontinued or divested. Despite the attrition of more than half its population of ventures, I identified clear benefits to Nokia in terms of personal capability development of those who were at one point involved with the venturing process. This suggests support for the view that venturing is one vehicle through which firms enhance and renew their human capital and skill bases. Further, I was able to identify that in fully one fourth of the ventures important organizational capabilities were created at a firm level. Although one sixth of the ventures established specific new products and businesses, nearly all of the ventures

generated inventions with the potential to seed future products and businesses. Indeed, one third of the ventures created more than ten inventions.

Contrary to arguments that corporations will find it nearly impossible to shut down or redirect ventures where exit criteria are not rigidly specified in advance, (Adner *et al.*, 2004), the ventures in this study were frequently redirected, as key milestones were approached. Despite arguments to the contrary, Nokia overcame common internal pressures to persist with ventures that were not making progress by using a disciplined staged decision process. Ventures had to pass several formal decision points and continuation decisions were made at these decision points. Ventures were frequently reviewed also between decision points. Reviews were carried out by a venturing board that acted as an advisory board and decision maker together with the managers driving the ventures. In this way, the management heuristics used by the corporation avoided escalation of commitment (Ross and Staw, 1986).

Among the ventures studied, all had been substantially redirected at least once and some as often as four times (on average there were 1.86 redirections per venture). Venturing managers frequently changed the course of ventures when new information became available between decision points. Although these redirections of ventures could be interpreted as a reluctance to exit from unsuccessful investments, I found no evidence corroborating such an interpretation. Rather the corporation frequently exited from other unsuccessful ventures as uncertainty about the prospects of the venture was reduced. Instead, the management process had a direct impact on the direction and pace of venture evolution. Although such a management influence has long been asserted in the corporate venturing literature, my study is one of the first to provide systematic empirical evidence linking the outcomes of a venturing program with specific managerial behaviours.

At the first decision point (the choice of going from a business concept to becoming a formal venture), 12 ventures were discontinued and another 2 spun off. At the second decision point (the choice of scaling the venture up), an additional 9 ventures were



discontinued, 1 was spun off and another 4 were recombined with other ventures or with existing mainstream business units. Of the remaining 9 ventures, 2 were discontinued, 2 were spun off and another 3 were recombined with other ventures or with existing mainstream business units at the third decision point (the choice of launching a new business from the venture group).

Beyond analyzing if ventures were discontinued or continued, patterns of value creation of both continued and discontinued ventures were analyzed. While it has been found that value creation in terms of revenues or number of patents grew with the age of ventures, I found ample evidence of value creation in discontinued ventures. In fact, discontinuing ventures in which time had disproved the venture concept and reallocating the resources that these ventures had created was a major value creation mechanism in the corporation.

Several mechanisms permitted the firm to benefit even from discontinued ventures. They include transferring personnel with important individual skills, the development of new products, creation of important new organizational capabilities, development of new knowledge and the creation of intellectual property. For instance several of the ventures in the sample were reintegrated into existing mainstream business units. When changes in the market rendered the ventures infeasible as a stand-alone business, spun-in ventures helped established business units to renew themselves. For instance, in one case, a business was able to take on emerging new competitors in the corporations' core business.

These results strongly support McGrath's (1999) assertion that 'falling forward' for corporations can be an important value creation mechanism, which is under researched in the organizations literature. The results further call into question some approaches to measuring the consequences of resource-development activities within firms, which fail to take into account the resource-creation effects of discontinued activities. One well-known example is Porter's (1987) observation that corporate efforts at diversification were largely unsuccessful because many acquisitions were subsequently divested or failed to grow. My study suggests that one cannot interpret discontinuation or redirection events as either

positive or negative without simultaneously examining the impact on people and processes remaining in the firm.

My study suggests several instances in which continuation as a standalone venture would have inadequately accounted for the ventures' true impact. In my study, two discontinued ventures with about 900 people working in them were transferred to a newly formed mainstream business unit. These people had built up important skills and that were in demand at the business unit. Transferring them as a group allowed the maintenance of organizational capabilities and thus jump-started entry into a new technological area in the business unit. Incidentally, this new area was one which competitors were increasingly finding attractive – had the corporation not invested in the ventures, it would have been at a distinct disadvantage, relative to first-movers. These two ventures had created about 25 products, which were transferred and integrated into the mainstream business unit technology base and are in use in mainstream businesses today.

Similarly, intellectual property created in several discontinued ventures were transferred to mainstream business units and integrated into their technology base. Finally, several ventures were discontinued as separate ventures and merged into a new larger scale initiative targeting a customer group the corporation had not been serving before. Integrating and expanding on these ventures allowed the corporation to create a significant new business unit.

My study also sheds light on the process through which the resources and capabilities of a firm change over time. The corporate ventures in my study enabled Nokia to test and validate assumptions with respect to new business models, new markets and new technologies, rather than having to make a full-fledged entry into these arenas. Just as options theory would suggest (see McGrath & MacMillan 2000), Nokia's main launches into significant new markets originated in established business units. In fact, existing business units made the main market entries. Just as real options reasoning suggests, from the point of view of a firm's portfolio of activities, ventures provide the right, but not the

obligation for a firm to extend its reach into new areas, without the risk of a significant commitment. My results show that ventures have clearly contributed to the creation of new functions, entities and business units in the existing businesses. Moving ventures and venture personnel to existing business units has influenced the business and strategic decisions and market entries of the firm. Therefore, these effects together with accumulated learning of the ventures are an important part of the venture contribution.

#### 5.1.1. Strategic Relatedness

As the resource-based view of the firm would propose, and some empirical research has found, (Thornhill & Amit 2000) I found that the degree of strategic relatedness or fit between the venture and corporate strategy did affect the outcomes of the venture. The more strategically related a venture was, the higher priority management placed upon it and the more persistent venture managers were likely to be. Not surprisingly, this is consistent with a point of view that close strategic fit creates both a cognitive and an interpersonal commitment to a venture, particularly if the venture is perceived potentially likely to increase resource inflows for the firm (Pfeffer & Salancik 1978).

My findings suggest that the higher the degree of the strategic relatedness or fit the higher the probability that the venture will be transferred to existing business units. Interestingly, the lower the degree of strategic relatedness or fit, the higher the probability that the venture will be discontinued. This is explained by resource dependence theory that the ventures near to the strategic core business, in other words incremental innovations, tend to have better possibility to survive. It seems that ventures near the strategic core businesses get more attention from management than radical innovations. This centrally contributes to the theoretical argument that firm behavior is - if not wholly, at least partly - the result of how firms channel and distribute the attention of their decision-makers (Ocasio 1997).

One intriguing finding of my study raises an interesting paradox. If a 'threat rigidity' response motivates poorly performing firms to take on more risky projects, then it stands to

reason that ‘excellently performing’ firms tend not to do, and therefore the ventures tend to move towards existing businesses. The main drivers towards the main businesses are core corporate assets: existing markets, customers, channels, technology, brand, human capital, executive attention and existing business units. The study shows empirically that these drivers had an impact on what happened to the ventures. With increasing relatedness came the tendency for ventures to migrate to become part of the core business. As a result of this effect the venture opportunity space shrank significantly.

Thus, ventures with high business opportunities, high risks and radical innovations either migrated to incremental innovations or were closed. The paradox this suggests for internal venturing is that the ventures with the highest probability of succeeding in the near term are also more likely to incrementally benefit the existing core businesses. The risk obviously is that radical value creation and renewal will not materialize. The findings are similar to those of Tushman and Anderson (1986) who found that in cases where a firm’s essential competencies were complementary to the technology, incumbents tended to remain in strong positions, while changes that required the development of new competencies tended to favor new entrants (see also Henderson and Clark, 1990).

As a summary, the ventures closer to the corporate core business tend to continue longer, thus creating more value. Strategic related management persistence is a critical factor in internal corporate venturing. Strategic related management persistence enables the ventures to have a few venture redirections. These redirections affect positively the venture results.

#### 5.1.2. Main, Strategic and Uncertainty Effects Impact on Continuity, Value Creation and Inventions

One of the key findings of this research is that different venture factors drove the outcomes of venture continuity, value creation and inventions. This is important because it suggests that venture outcomes are multi-dimensional. Therefore, studies that examine only one or

two outcomes or one or two antecedents are likely to be misrepresenting the true consequences of venturing activity.

In support of a socially embedded view of the venturing process, the ventures perceived to have capable teams with varied experience and access to assets, and which were supported by management were more likely to continue in the firm. The larger the size of the venture, the greater the amount of trust and the higher the level of relations between the senior and venture management, the more probable it was that senior management would support the venture. About half of this management support and persistence was explained by social interactions, trust and size of the venture. As Starr and MacMillan (1990) observed, the process through which resources were captured and sustained by venturing organizations was intensely social and bound up with the social fabric of the firm. This result suggests important connections between theories of firm structure and organization and theories of strategic performance.

Beyond the persistence variable, I also sought to understand the factors driving firstly the creation of new businesses or products and those driving new inventions. Some effects, for which I use the term ‘main effects’ illustrate the direct influence of venture factors on the outcome. Strategic and uncertainty effects moderate these main effects. These effects are depicted in table 6-1 below.

Table 5-1: The main and strategic and uncertainty effects impact on venture outcomes

Venture factors	Main Effect	Strategic Effect	Market Uncertainty Effect	Technology Uncertainty Effect
<b>Outcome=Value creation</b>				
Team Capability	0	0	0	0
Access to assets	0	0	0	0
Idea Origin	+	-	-	0
Size	+	-	0	0
<b>Outcome=Invention</b>				
Team Capability	0	0	0	0
Access to assets	-	+	+	0
Idea Origin	-	+	0	0
Size	-/+	0	-	+

\* Source of Idea: - from business unit, + from other sources

Small ventures with management persistence and with an origin in business units create more businesses and products (strategic effect, table 6-1). The selective strategic fit based persistence of management and business unit origin boost new products and business creation. The ventures need strategic fit and support from management to be successful. It also means that the ideas need to enable development of products and services, which have customer demand in short and long run. Business unit origin might by definition mean that these ventures are more product oriented and incrementally relevant to the firm.

The size of the venture does not explain the amount of business and products creation. This means that venture duration is more important than size. The venture may be smaller if it continues longer meaning that there is no sense in growing the venture too big too soon. This study suggests that it makes sense to have market exposure and business model iteration with the customers with a small organization. When the business model is stable enough the staff increase is justified.

Market uncertainty and business unit origin generate more business and products and therefore value (market uncertainty effect, table 5-1). Higher level of market uncertainty together with access to corporate assets from the onset boosts the new business and products creation. In contrast, technology uncertainty did not have the same effect on value creation in this research.

The ventures with better access to assets and having higher level of management persistence that do not have a business unit origin create more inventions (strategic effect, table 6-1). This means that more inventions and patents are created with the ideas, which are unrelated to the existing businesses, have better access to the corporate assets and get management persistence and support. Management persistence explains over half of the invention outcomes. The ventures that do not have a business unit origin by definition are either more concepts and/or technology oriented or radical innovations. Most of these innovations are from research units or other sources. This might explain why these ideas create more inventions but not, or maybe not yet products

The big ventures with high technology uncertainty create more inventions (technology uncertainty effect, table 5-1). This indicates that using the existing corporate knowledge in a new technology area makes creation of inventions or patents productive in proportion to venture size. This finding is supported by the previous studies on inventions. In contrast, small ventures with high market uncertainty together with access to corporate assets create more inventions. This implies that small ventures with high market uncertainty and better access to corporate assets have better opportunity to create inventions. Contrary to technology uncertainty, the size of the venture does not explain the number of inventions created, if the market uncertainty is high. This may be explainable by that most of the market innovations cannot be patented in general.

## **5.2. Theoretical Contribution**

The value created by a venturing program, I have found, depends in large part on how the various ventures are managed. This empirical finding has a bearing on several theories that are relevant to the venturing phenomenon.

Fundamentally, this study challenges the structural inertia hypothesis in ecological models of organization (Hannan & Freeman 1984). Although not predictable *ex ante*, I found that venturing provided a vehicle through which a firm can adapt to changing environments. Because ventures created new capabilities, new skills, and access to new opportunities, the assertion that firms' initial endowments form the basis for much of their subsequent performance appears not to be supported.

My findings also suggest a need to revisit commonly accepted conclusions about the workings of 'slack search' (Cyert & March 1963). While available resources (slack) at an operating level allow organizational actors to pursue opportunities, my research also suggests that for initiatives derived from slack search to contribute to corporate level well being in a substantive way, the mechanism should be controlled in a way that is far more

intrusive than most models of slack search might suggest. In slack search approaches, problem-solving activities by boundedly rational individuals prompt activity. When results are close to expectations, new search activity diminishes and efforts turn to consolidating gains. When results are below expectations, one common result is aspiration level adjustment, in which goals are adjusted downward as a function of poor experience. Unmanaged, such a process can easily lead to either stagnation or escalation. My research suggests instead that slack search processes are responsive to pro-active management, indeed that such management can (and possibly should) dominate the search behavior deemed central to such models (Zardkoohi 2004).

The venturing process model that appears most consistent with my findings is Burgelman's (1991) notion of internal organizational ecologies. Ventures indeed emerged in response to corporate strategic priorities (what Burgelman calls the 'autonomous' strategic process) and in response to perceptions of opportunity at an operating level (the 'autonomous' strategic process). Like many evolutionary models, Burgelman specifies the generation of variations, selection and selective retention as key activities in venturing. In contrast with Burgelman, however, my results suggest that the distinction between the 'selection' process in such ecologies and the 'variation' process is exceptionally hard to make. With redirection, recombination and transfer of capabilities to other business units, such a prominent part of the venturing process that I observed, the evolutionary analogy breaks down.

Ventures, unlike organisms, are not unitary entities; rather they and the skills, capabilities and inventions they represent can be divided into a great many sub-components. This is rather problematic for evolutionary models, as the unit of selection appears to be lower than the organizational entity. In this, social scientists share the dilemma facing genetic biologists, who wrestle with the difficulty that selection occurs at the level of the phenotype, while inherent biological potential is determined at the level of the genotype (Mayr 1978).

My findings suggest an interesting paradox that has to do with the extent to which past performance influences the propensity to undertake certain types of ventures (see March &



Sutton 1997). Poor performance can induce firms to take on more risky behavior than they otherwise would. Several theories are consistent on this prediction. It raises the intriguing possibility that good performance has the opposite effect. Indeed, what resource-dependency theory would expect is that a high performing firm will tend to venture in areas associated with current good performance. In contrast, poor performing firms tend to venture further a field, having despaired for finding a route to better performance nearby. Absent other influences, what one might therefore expect to find is a pattern, in which poor performing firms take on more risky ventures (and fail more often) while high performing firms take on fewer risky ventures, leaving themselves vulnerable to corporate sclerosis when the external environment changes. Such a pattern has also been observed when some ventures support the current capabilities of the firm while others call them into question (Tushman & Anderson 1986). In my study, a pattern emerged in which greater near-term longevity and acceptance was observed for strategically central ventures, and outcomes with primarily long-term effects (such as new inventions) were associated with less central ventures.

This study also contributes to the recent debate on the applicability of a real options perspective on strategic investments under high uncertainty. Recent criticism of the real options perspective (Adner *et al.* 2004) has centred on the difficulty firms face in redirecting and exiting strategic investments, claiming that this difficulty nullifies the prime benefit of an options perspective, namely the ability to experiment at low cost. My study shows that a rigorously structured staged investment program helped the focal firm to manage its investment projects and to create significant value even from ventures that were discontinued. This study actually suggests that discontinuation and redirections of ventures are part of options reasoning perspective and success can create option value that was not clear in the beginning.

Analyzing value creation from redirected or discontinued ventures helps to better understand option value in strategic investments and thus helps to improve the applicability of real options reasoning as a framework to guide strategic decision making. As McGrath

(1999) suggested, the pervasiveness of an anti-failure bias in researchers studying corporate ventures in particular and entrepreneurial phenomenon in general has limited the understanding of how even failed ventures can make a contribution to the resources and capabilities of firms.

This study also informs literature on organizational search in general. Particularly in complex and dynamic environments, local search has been shown to have severe limitations as a sole mechanism for exploratory learning (Gavetti *et al.* 2000). Slack search is valid descriptively, but as a method it is difficult to set the targets and manage search centrally. Corporations need intelligent search heuristics to be able to explore beyond the vicinity of existing knowledge, when unstructured path dependence is unlikely to generate this outcome (Christensen 1997). This study helps to establish that real options reasoning can inform such a search heuristic by helping organizations to systematically explore business domains that are further away from established lines of business.

By analyzing value creation from redirecting and exiting ventures, the study also contributes to the dynamic capabilities view in strategic management (Teece, Pisano & Shuen 1997). While resource shedding has been identified as one of the important mechanisms of reconfiguring the resource base of the firm (Eisenhardt *et al.* 2000), our knowledge of this value creation mechanism has been very limited. This study has identified tangible processes through which corporations reconfigure their resource base through redirection and discontinuing corporate ventures and how these processes create strategic value for the corporation.

This study supports the conclusion that to be successful the corporate venturing must be clear about the objectives and business models (Campbell, Birkinshaw, Morrison & Batenburg 2003). Considerable evidence suggests that absent new initiatives, a firm's offerings in competitive markets will be subject to commoditization, increased competitive intensity and ultimately to decline. Indeed Baumol (2002) proposes that in free markets, innovation rather than price competition is the fundamental competitive dynamic, creating

pressure on firms to engage in systematic innovation, often through internal corporate ventures. Similar to Ocasio's (1997) theoretical argument, this research empirically supports the importance of the attention of the decision-makers to the results of venturing.

This study suggests, consistent with other recent research (Kogut & Kulatilaka 2004; Zardkoohi, 2004) that there is a strong relationship between active management of uncertain projects and outcomes for the firm, supportive of the notion that real options heuristics offer some practical guidance to managers. A rigorously structured investment process facilitated redirection and closing of ventures, as well as recouping valuable capabilities and skills from them. Further, that real options logic is quite useful when one goes from the analysis of a single venture to the impact upon the 'bundle' of options that comprise a firm. Options logic thus, rather than being limited to clear-cut cases of success or failure with outcomes predetermined in advance, appears to have broad applicability to the venturing process and indeed to the process through which strategies are conceived, refined and executed.

### **5.3. Managerial Implications**

The findings of the study have several implications for corporate and venturing management. The key finding of the study is that the value of ventures depends on the intrinsic value produced in a venture, and how the value is managed and widely used holistically in the firm. The latter one is, indeed, the responsibility of senior executives in the firm and has clear managerial implications for the firm.

The value of the ventures must be managed holistically throughout the venturing process in the firm. Especially management of outcomes requires attention and interest. For example, transfer of the ventures, products and people to business units, establishing new lines of businesses and establishing systematic ways to share capabilities; knowledge and learning are the key management processes to reconfigure the resource base in the firm to be competitive in the business environment.

The main questions from the managerial point of view are under which condition a venture is most likely to be successful and who can affect the success of a venture, in other words: which are the factors under management control. The understanding and management of these causalities and factors improves internal venture value generation in established firms.

The results highlight the importance of the strategic related persistence of management on the venture outcomes. Successful internal corporate venturing is a strategic activity.

When defining variables under management control, two internal corporate venture governance approaches are applied. These approaches differ on corporate management expectations of outcomes and interest to set targets and steer the ventures.

The first governance approach is built on strategic relatedness based target setting and involvement of the corporate management in venture positioning and resourcing. In this approach the senior management may decide on or influence strategic relatedness between the ventures and corporate strategy, management prioritization and persistence with the selected ventures. Corporate management also influences the venture inside factors like team composition and size. Corporate management can also partly decide on and influence the idea and uncertainty level by selecting a certain type of venture positioning. The most important decision factors in this approach are strategic relatedness between the venture and corporate strategy, and agility and persistence of the corporate management with selected ventures. Corporate management makes decisions affecting venture factors by positioning and resourcing the venture.

In the second governance approach the corporate management allocates funds to venture management expecting certain return on their investment. The venture management has authority to adjust, drive and make decisions independently within certain budget limits. In this approach, the venture management decides on or influences the venture inside factors like team composition, and size. Also, venture management may influence the persistence

of corporate management by social interaction. Within certain limits the venture management may direct the venture to have, or not to have, a strategic relatedness between the venture and corporate strategy.

Based on the results of this study internal corporate venturing is a strategic activity and therefore the internal corporate venture governance model, which is based on corporate management target setting and involvement is suggested for these strategic, high profile, expensive, and innovative ventures. However, the slack search occurs in one form or another anyway, and the firm has to also have processes to develop these ad hoc initiatives.

#### 5.3.1. Implications to Corporate Management

One of the key decisions from corporate management point of view is the strategy of positioning the internal corporate venturing function as a whole. To be successful, corporate venturing must be clear about their objectives and business models. Through positioning corporate management influences the expected outcomes, the ideas and the desired level of technology and market uncertainty.

The key question in the beginning is whether the goal is to establish strategic relatedness between internal corporate venturing and corporate strategy. Based on the findings of this study strategic relatedness is needed for achieving successful venture outcomes. Corporate management influence and decide on the corporate strategy. The main strategies affect management prioritization, which has an influence on the persistence of certain venture areas or ventures. Strategic related persistence of corporate management together with venture internal drivers are the key factors explaining venture outcomes.

This study shows that a pure economic or return-on-investment based governance approach is not enough for internal corporate venturing. Clear target setting is important to avoid all ventures drifting too close to the businesses. Corporate strategies and strategic relatedness drive the target setting of the ventures. In other words, internal corporate venturing is a

strategic activity and in order to be effective requires clear strategic targets, which should be identified and allocated in the corporate strategy process. The target setting in incentives should be done in such a way, that keeping right kind of distance to core business is rightly rewarded. In addition, incentive targets must fit the risk profile and expected outcomes of the venture in order to avoid risk of escalation of commitment. If the targets of corporate venturing are not concrete and clearly articulated business expansions, the venture opportunity space might become too small for any new business maneuvers, thus drifting close to the existing businesses. A strategically planned venture expansion and mandate enables radical innovations and renewal.

Internal corporate venturing must be seen in the context of how a firm adapts to its environment and seeks sustainable competitive advantage. This is a continuous process, where a flow of strategic issues varies depending on time and uncertainty. Internal corporate venturing is a tool for selection, management and execution of the strategic responses. Management of strategic issues is divided into three stages: long-term probing, mid-term venturing and short-term execution, as presented in figure 5-1 below.

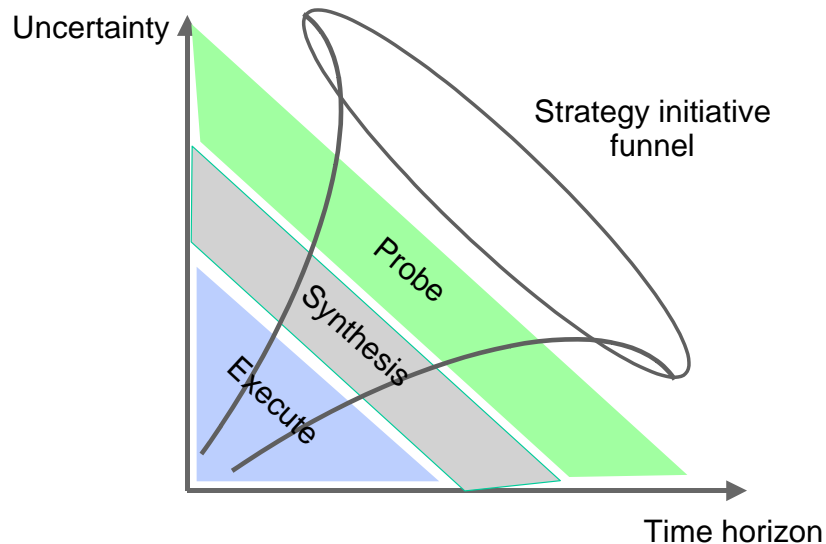


Figure 5-1: Project and venture initiative funnel

Probing is an information collection and knowledge creation phase for gaining long-term growth strategy. In probing a wide variety of low-cost new business development projects are needed to create insight. These projects are needed to explore new possibilities in new areas, thus managing the business uncertainty of the firm in the future. Such new business development projects are used merely as vehicles for learning about the new area. Probing is a continuous activity and requires constant monitoring.

In the mid-term venturing phase the clear opportunities are already available but the drivers of the business may still be uncertain. Because of these uncertainties concepts, prototypes, business model testing and clarifications as well as discussions with customers are needed. The new business and product development should be in focus during this phase. Some of these projects may serve as hedging for the main business technology risks.

The execution phase is a short-term growth implementation. In execution the drivers of the business have been analyzed and tested and clear focus is in the business creation by volume products and services.

One key managerial finding of this research is that all the projects exploring and exploiting new opportunities are not or never develop into ventures. A venture itself should have a clear business target. In the sample projects and ventures were not clearly separated. The projects best fit the probing phase. The ventures best fit the mid-term venturing phase and business unit programs into execution phase.

As discussed earlier, the key implication for the corporate management is that the value of the ventures must be managed holistically throughout the venturing process in the firm. Especially management of outcomes requires attention and interest. For example, transfer of the ventures, products, and people to business units, establishing new lines of businesses and establishing systematic ways to share capabilities; knowledge and learning are the key

management processes to reconfigure the resource base in the firm to be competitive in the business environment. These management decisions should be made by corporate management and through these decisions and processes the essential and real value of the ventures is partly created and benefited.

In conclusion, the research-based recommendations for corporate management are presented in the table 5-2 below.

Table 5-2: Recommendations for corporate management

<b>Number</b>	<b>Recommendations for Corporate Management</b>
1	Position the venturing function in the context of how a firm adapts to its environment and seek sustainable competitive advantage.
2	Establish strategic relatedness between the venturing function, ventures and corporate strategy. Internal corporate venturing is a strategic activity.
3	Consider internal corporate venturing as a tool of selecting, managing and executing the strategic initiatives.
4	Separate clearly projects and ventures. If the objective is not clear enough use projects to clarify it.
5	Build the portfolio of ventures by selecting the ventures strategically knowing the purpose.
6	Be agile and persistent with selected ventures personally.
7	Redirect and exit the ventures effectively to avoid the risk of escalation of commitment. The redirections add value to ventures.
8	Effectively manage the value of ventures holistically in the firm e.g. <ul style="list-style-type: none"> <li>• By transferring ventures, products, inventions, people when feasible,</li> <li>• By renewing the existing businesses,</li> <li>• By establishing new lines of businesses and</li> </ul> By sharing knowledge, capabilities and learnings systematically



### 5.3.2. Implications for Internal Corporate Venturing Management

The study suggests that the internal corporate ventures should fit the corporate strategy. The corporate strategy gives an explicit mandate for internal corporate venturing and ventures. This strategic mandate ensures selective management priority and long-term persistence, which are needed for successful operations.

The study finding clearly concludes, that strategic relatedness between a venture and corporate strategy has an effect on venture outcomes. The higher the strategic relatedness between the venture and corporate strategy the more value is generated. In practice this means that the ventures need to anchor to the corporate level strategic initiatives in such a way that adequate managerial interest and persistence as well as funding is established. To be successful venture management need to have long-term view, which is shared with senior management attention and interest.

The ventures themselves may influence the support by social interaction and the size of the venture. From an internal corporate venture management point of view, facilitating the establishment of personal relationships between venture managers and senior management is essential, in order to obtain support and persistence.

Ventures should be resourced with the most capable people, who also have capability to build relations and trust with other parts of the firm. Depending on the focus of the venture, the venture team should be capable to execute new business by developing prototypes, first commercial products or volume products. This means that the venture team needs to consist of motivated self-starters and self-adapters and have a good mix of business, strategic, marketing, technological and manufacturing understanding and experience. Solid base of technological understanding and capability ensures successful product development. The spirit of the team is important for the success of operations.

Deep customer understanding and touch with customers should drive the venture idea, incremental or radical. The venture idea should be executable and tested with customers. However, incremental and radical ventures need to address and test differently, since there is no established market consumption behavior for radical innovations. Ventures need to maintain a good balance between long-term visionary goals and short-term concrete goals. Based on this study the idea origin and idea iterations together with customers have an effect on the maturity of the venture and on the results. It seems that the strategy of the venture is more explorative in the beginning and will become matured by iterations in later phases.

The idea origin, idea maturity developed by iterations and persistence of management affect the value creation and invention outcomes. This study shows that business unit origin ventures create the most value, but the ventures originally unrelated to business units create most of the inventions.

Duration of the venture was found to be more important than size from the business and products development point of view. Maturity of the business idea development and ramp-up of the venture should be carefully managed. A venture must not be ramped-up too early but given enough time to mature.

If a favorable environment and resources are not readily available in the firm to materialize the venture idea, materialization of the idea through other modes like a separate company, strategic alliance, joint venture or acquisition should be considered.

By definition ventures are operating in an uncertain, complex environment. Due to the high degree of future uncertainty, in most cases it is nearly impossible to reliably analyze the factors in start-up decision.

As a summary, in internal corporate venturing a strategic relatedness between the venture and corporate strategy is needed. A significant part of the value of internal corporate venturing is in reality materialized through renewal of existing business units.

The research-based recommendations for internal corporate venturing management are presented in table 5-3 below.

Table 5-3: Recommendations for internal corporate venturing management

<b>Number</b>	<b>Recommendations for Internal Corporate Venturing Management</b>
1	Consider internal corporate venturing as a one tool of selecting, managing and executing the strategic responses. Consider objectively also other modes.
2	Select the ventures carefully and seek linkages between the ventures and corporate strategic initiatives. Build a portfolio of ventures that best fits the needs. Clearly separate projects and ventures. If the objective or maturity of venture idea is not clear enough use projects to clarify it.
3	Be clear with your goals: are you after direct growth, incremental development for a business unit, learning about a new market or intellectual property rights? Think clearly what is the business model and what kind of output you expect and construct the set-up accordingly.
4	Establish personal relationships to existing business units and to corporate management to get long-term support, combine the business units' skills and ideas in new markets to maximize value.
5	Resource the venture with the most capable and experienced people, who also have capability to build relations and trust with other parts of the firm. Different venture stages require different qualifications. A venture should have solid technology competence in the related field to guarantee successful new product development. The spirit of the team is important.

<b>Number</b>	<b>Recommendations for Internal Corporate Venturing Management</b>
6	Have a market need drive the venture idea and discuss with your potential customers in an early phase of the venture. The venture idea should be executable and tested with customers. Maintain good balance between long-term visionary and short-term concrete goals.
7	Iterate the business idea and model. Maturity of the venture will develop by these iterations. In the beginning the venture strategy is explorative and matures when the venture develops further. The strategic choice has clear consequences on venture performance.
8	Carefully manage the maturity of the business idea development and ramp-up of the venture. Do not ramp up the venture too early. Give enough time for the venture to mature.
9	Execute pilots and prototypes in order to gain learn more about the market.
10	Pay attention to you business model: What is the product? What is the value chain and proposition? How to make money? Develop your business model based on the market feedback.
11	Live with the uncertainty. If the venturing environment is not uncertain and complex any more, you are late in that market and/or technology.

#### **5.4. Limitations of the Research and Directions for Future Research**

Several limitations of this study need to be taken into consideration and should be addressed in future research. First, my study has been explorative in nature combining deductive and inductive methods of theory development. No attempt has been made to fully test the propositions and hypotheses developed in this dissertation. Rather, the empirical work carried out in this dissertation has contributed to further develop theory regarding corporate

venturing. Therefore, findings of this study should be further tested in large scale quantitative studies.

In particular, this dissertation has focused on one empirical context, that is, corporate venturing in Nokia. While this approach allowed studying the whole population of ventures in this one organization, it raises a question about the generalizability of the results to other organizations, let alone other industries. Some of these concerns are mitigated by the fact that Nokia is particularly well suitable for a study of venturing consequences. The firm has a fairly well organized way of identifying and tracking ventures and it competes in markets that are rapidly changing, in which innovativeness is essential for competitiveness. Furthermore, Nokia senior management provided both access and critical evaluative data, giving a unique access to population of within-firm projects that are difficult to study. This ideal environment has allowed me to develop particularly rich theoretical accounts of venturing and has allowed a degree of insight into the mechanisms at work that arguments made in this dissertation should generalize based on theoretical grounds. The theoretical generalizability is supported by earlier studies of venture continuity in Kodak, Nortel and Pernovo (Block & MacMillan 1993, Lindholm 1994, O'Connor & Maslyn 2002). In the following, the results of the comparison between these studies are presented. At a quick glance the results seem to have deviations. However, if the results are analyzed further, they seem to be relatively similar. Continuity of the ventures is in a similar range from 21% to 38% of the sample. Also spin-in to main businesses ranges from 21% to 25 %. Greatest variety is found in the discontinuity group. The reason for this variation may be that Nortel and Pernovo have ventures in the sample, for which no clear decision on continuity has been made yet. However, most of them will with high probability be discontinued later. Therefore, the discontinuity variation may be marginal. The full comparison is presented as table 5-4.

Table 5-4: Venture continuity in Nokia, Kodak, Nortel, Pernovo

<b>Organizational continuity</b>	<b>Nokia</b>	<b>Kodak</b>	<b>Nortel</b>	<b>Pernovo/ Perstorp</b>
<b>Continue</b>	<b>38 %</b>	<b>27%</b>	<b>21%</b>	<b>36 %</b>
* continue as a business	*8%			
* spin-in to main business	*25%	*27%	*21%	*27%
* spin-offs (future option)	*5%			*9%
<b>Discontinue</b>	<b>62%</b>	<b>73%</b>	<b>21%</b>	<b>32 %</b>
* spin-offs	*3%	*6%	*7%	
* divested	*59%	*40%	*14%	*32%
* sold out		27 %		
No clear decision yet			<b>57%</b>	<b>32 %</b>
<b>Total</b>	<b>100%</b>	<b>100 %</b>	<b>100 %</b>	<b>100 %</b>

The findings and limitations of this research suggest several pointers for future research. The models and propositions developed in this dissertation should be tested through large sample quantitative research designs. In particular, given the limitations of the current study, future studies should cut across organizational and industrial contexts to further test the generalizability of the findings of this dissertation based on statistical grounds. The propositions developed in this dissertation are well suited for large scale quantitative testing in future studies.

Beyond calling to further test the results of this study, this dissertation has raised further theoretical questions that warrant future research. My findings have pointed at the importance of resource creation effects of discontinued activities. The results identify the need for further research on value creation through corporate venturing beyond the traditional venture continuity and survival measures.

The results propose the importance of management attention as a mechanism that enables value creation in corporate ventures. Future studies should further investigate the micro mechanisms that steer management attention to some ventures but not to others. In particular, mechanisms should be investigated that allow proactive management of management attention, for instance goal setting and strategy processes.

My results have suggested an interesting paradox. Well performing firms will venture closer to existing areas currently associated with good performance while poorly performing firms will venture further away from current business areas thus taking on more risky ventures. As a result well performing firms face an increased risk of corporate sclerosis while poorly performing firms further increase their risk of failure. Future research should investigate mechanisms that can control this strategic drift.

Finally, my findings regarding the applicability of real options suggest that this theoretical perspective should be further emphasized in future research on the management of uncertain projects. Real options reasoning is ideal theoretical perspective to add rigor to empirical studies of phenomena associated with high uncertainty. My results suggest in particular that combining real options arguments with arguments of organizational search and managerial decision-making is a fruitful area of future research.

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## APPENDIX 1

### EXECUTIVE SUMMARY OF SAMPLE VENTURES

<u>Venture</u>	<u>Background</u>	<u>Outcome</u>	<u>Key learnings</u>
<u>Athens</u>	<p>The opportunity of the venture was to build a significant business with existing IPR in broadband access area already existing in firm. The venture goal was to develop a new multiplexer product, which would help the operators to build broadband access more economically. The product concept was a supplementary product for the basic DSL equipment.</p> <p>The project began in the Spring 2000, and a positive V0 decision was made 6/2000. The primary target was to move the venture to an existing business unit by end 2001. V1 decision was made in January 2001, but with certain conditions about resourcing. Soon after this V1 decision, the business environment started to look worse, and business unit cancelled operations and ventures were screened more critically. The venture was ruled to be outside the focus.</p>	<p>Technical and business feasibility studies carried out. Results were promising. Decision to spin-out 3/01, but venture closed.</p> <p>One patent granted.</p>	<ul style="list-style-type: none"> <li>• Issues have to be presented and discussed before decision making, while there is not enough time for the decision makers to get involved in the important facts in the situation itself.</li> <li>• Unofficial organization is very important. It is hard – if not impossible – to find totally new businesses. The goal to find new technologies for new markets is challenging.</li> <li>• The Venture has to have access to exploit existing channels or new technology from Business Units.</li> </ul>
<u>Rome</u>	<p>Research Center had an optics project in the late 1990's. The target was to develop comfortable virtual displays.</p> <p>The aim of the venture was to create totally new user experience for mobile communications and entertainment solutions towards a virtual enabler. The device was wireless, portable, wearable and lightweight. It was easy to use, safe.</p> <p>V0 12/99, V1 12/99.</p>	<p>The venture gained understanding of virtual displays and optics and has been able to develop competencies also within existing business units. The venture was closed in March 2001. Related technology development continues in Research Center. One patent filed.</p>	<p>Timing-wise it is too early, no market exists.</p> <p>It takes a long time from laboratory experiment to real consumer product.</p> <p>The competencies go with people, not with the organization.</p>

<b><u>Venture</u></b>	<b><u>Background</u></b>	<b><u>Outcome</u></b>	<b><u>Key learnings</u></b>
<b><u>Sapporo</u></b>	<p>The aim of the venture was to commercialize authorization and payment technology developed in Research Center. A prototype was created in 1998. In the end of 1999, the system was demonstrated at a fair in Japan. It created a lot of interest from the financial companies and banks. Based on the positive feedback, a new project was started to make a more robust and complete version of the system in the beginning of 2000. The venture was funded by existing business units, research center and the venture unit.</p> <p>V0 and V1 6/00.</p>	<p>By the end of 2000, the team developed technology and produced a system, which was ready for trials. Several business contacts were established in Japan.</p> <p>Networked with existing business units.</p> <p>The venture R&amp;D results: product will be commercialized as part of release of Mobile Payment Server. Existing business unit reserved all five patents, and parts of the technology for their second generation Payment Server.</p>	<ul style="list-style-type: none"> <li>• Main challenges were in competition of internal venture and external start-up, where start-up won the first release deal.</li> <li>• Japanese market was difficult for performing trials.</li> <li>• During 2001, funding was provided on very short-term basis unconnected to venture progress and created distress in venture team.</li> <li>• Team spirit is important. With common goals, and right attitude, 3-4 people could be able to do same things as 20 people in BU.</li> <li>• Good decision-making is needed.</li> </ul>
<b><u>Prague</u></b>	<p>The venture was born on V0 10/1998 to investigate opportunities through synergies in broadband distribution technologies (digital TV, fast Internet) point to multipoint broadcasting technologies and products. Basic question was how to combine different point-to-point and point to multipoint broadband technologies</p>	<p>Synergies found between digital broadcasting and broadband IP technologies. The work lead to home networking vision and home strategy. As a result, a new unit was founded as a sub unit in 11/99, unit was closed in the end of 2002.</p> <p>As results from the technology and service work two new product concepts were found. Seven (7) patents were filed. Bonn venture is directly benefiting from the service and application business development, having same technology and same services.</p>	<ul style="list-style-type: none"> <li>• The real venture does not live outside the existing core business units. The products are created inside BU R&amp;D.</li> <li>• Venture can exist out of business unit for a short period of time, then it should be integrated to the main business units.</li> <li>• Partnering needs with win-win culture. For partnering, an ‘excellent, demanding program management’ is important.</li> <li>• Firm history proves that it is impossible to say, which invention will be successful.</li> </ul>

<u>Venture</u>	<u>Background</u>	<u>Outcome</u>	<u>Key learnings</u>
		The venture partnered and invested in proactive innovation cycle and new distribution channel development.	
<b><u>Barcelona</u></b>	<p>Venture, which is developing a system solution, to provide local services using unlicensed frequency band to Bluetooth equipped mobile terminals. System venture was developed from a venture, which developed a Bluetooth access point. Access point was an enabler of new non-operator services driving demand for Bluetooth enabled terminals.</p> <p>Access Point was frozen to E0 as business targets were not concrete enough. The venture continued with development of system concept and evolved to Bluetooth solutions.</p> <p>V1 11/99, 2 different phases.</p>	<p>In 04/ 01 the development of</p> <p>Venture developed Bluetooth access technology and architecture vision to support firm business cases. Venture was also active in standardization and IPR - team filed totally 41 patent applications. Concrete deliverable was Bluetooth access concept proofing environment and Bluetooth access point product - ready for qualification and productization. Venture could not develop a solid business case, but number of spearhead ideas for possible business take-off was identified, which was developed further in other projects. Venture was also active in driving local services paradigm including enabler identification and business models.</p>	<ul style="list-style-type: none"> <li>• The venture should be online with the corporate strategy: the traditional box-business is not enough.</li> <li>• Learn fast, fail fast and move on!</li> <li>• Learn on issues, which somebody is willing to pay.</li> </ul>
<b><u>Zurich</u></b>	<p>Education is a large market with a potential for new mobile devices in corporate segment. A possible spearhead to enter corporate market.</p> <p>The venture got V0 in 3/99, a decision was made 05/1999 to divide the development of these venture proposals into two separate paths</p> <p>1. Continued in 8/99 as Madrid.</p>	<p>New knowledge and understanding of education market is created. As a part of development three inventions were developed and two of them (2) were filed as patents.</p> <p>Influenced other ventures.</p>	<ul style="list-style-type: none"> <li>• As the company is successful it becomes harder and harder to create something new.</li> <li>• The decision-making criteria are not clearly defined.</li> <li>• People create the innovations; they realize through team and network. The composition of the team is essential.</li> </ul>

<u>Venture</u>	<u>Background</u>	<u>Outcome</u>	<u>Key learnings</u>
	<p>2. The general education theme emerged under various instances, e.g. mKnowledge.</p> <p>Process started 03/1999. During 05/1999-11/1999 broad analysis of e-learning markets was made with assistance of external consultants. A lot of external contact with public education both in national and EU level were established. Several internal workshops were conducted to identify the best business opportunities. As a result, five concrete V0 proposals. No clear decision was made 12/1999. The process continued 1-3/2000 by making demos for use cases and in 4/2000 a decision was made to take one of the proposed ventures and develop it further. In 12/2000 this effort was transferred to new established unit as a separate project and then the project ended by 10/2002. Two phases.</p>		<ul style="list-style-type: none"> <li>• The organization may not be too homogenic.</li> <li>• Innovations are created in conversations; tacit knowledge is needed.</li> <li>• There are two kinds of innovations; incremental and radical. Radical innovations require right type of persons and right type of competencies.</li> </ul>
<u>Madrid</u>	<p>An opportunity to enter to corporate market with an end-to-end solution for distribution of personalized (profiled) content. Opportunity to utilize e-book as terminal.</p> <p>Similar type of project is ongoing today in existing business unit with partners.</p> <p>V0 3/99</p>	<p>Three revisions of business plans, A proto was developed which forwarded files matching a profile from a server to e-book terminal over GSM. Unclear decision-making lead to closing down the activity in 6/00. Two (2) patent applications were filed. Created insight on the importance of profiles and personalization in communications and content distribution.</p> <p>Influenced another venture.</p>	<ul style="list-style-type: none"> <li>• Weak signals are ignored. The new projects need to have external evidence before taken seriously.</li> <li>• Decision-making is not clear.</li> </ul>

<b><u>Venture</u></b>	<b><u>Background</u></b>	<b><u>Outcome</u></b>	<b><u>Key learnings</u></b>
<b><u>Milan</u></b>	<p>An opportunity to enter to ‘citizens service solutions and hosting’ with an end-to-end solution for distribution of personalized (profiled) content. It was a full application solution and hosting for citizen services for different terminals for individuals at home, terminals for mobile professionals, multimedia message service center (MMSC) with service specific collaboration applications. It would include solutions in the fields of health care, social services, education, taxation and other official services.</p> <p>V0 proposal was made/was proposed in January 1999. The Venture never really got started; it was discontinued right after V0 in 3/1999.</p>	<p>One (1) patent filed, as well as, knowledge and learning created in the hosting area.</p>	<ul style="list-style-type: none"> <li>• Elderly people are one of the key focus groups in the future.</li> </ul>
<b><u>Singapore</u></b>	<p>Exploit digital convergence in combining TV/Radio with mobile services to create new business. Develop a platform for integrating SMS services with TV/Radio shows. Create new program formats. A V0 proposal was made in 3/2001. The first V1 review was in 3/2002. At that phase the venture did not know, what was the product, nor who were the customers. The Venture also needed knowledge and expertise in the field of TV and Broadcasting. So the next target for V1 was in 10/2002. Venture was closed in the end of 2002. Phases 2.</p>	<p>Venture gained strong understanding of how the TV world is operating, detailed analysis of the market available.</p> <p>Effectuated to other venture.</p>	<ul style="list-style-type: none"> <li>• The V process of ventures is relatively clear, as well as the deliverables. The process is tuned to support traditional product business.</li> <li>• The actual decision criteria for especially V1 is not crystal clear, and probably always will be very difficult to clearly define obscure.</li> <li>• Venturing is a good tool to learn to make new things.</li> <li>• The decision communication is also important. Some kind of after-treatment and feedback is needed after negative decisions.</li> </ul>
<b><u>Delhi</u></b>	<p>The program was established at the beginning of the 2000. Target of the program was to create business opportunities in the area of combining personal use experience, mobility and privacy. Ubiquitous computing with Bluetooth as enabling</p>	<p>Had two venture ideas under it, (SGC), V0 8/00, and (CH), V0 8/00. SGH was not pursued further. CH closed in 12/00. Revealed the importance of profiles and privacy</p>	<ul style="list-style-type: none"> <li>• Weak signals are ignored. The new projects need to have external evidence before taken seriously. External evidence increases the issue importance</li> </ul>

<u>Venture</u>	<u>Background</u>	<u>Outcome</u>	<u>Key learnings</u>
	<p>technology was identified as an area with new business opportunities. It was also clear, that enabling technology alone would not be enough. Market Creation and Standardization activities would be as vital as technology development. In Market Creation focus was in creation of value added services and their business models and in standardization activities the Liberty Alliance was identified to be the major vehicle. 3 phases.</p>	<p>and lead to development of related end-to-end technology concepts. Also gave rise to a firm wide Bluetooth program.</p> <p>The program created variety of studies, white papers, patent applications, external publications and external presentations. The program was active in the start of the Liberty Alliance and has gained technology chairman position, has got its agenda into terminal roadmaps, influenced 2001 and 2002 visions, and established a Business Program into existing business unit.</p> <p>This enabler venture has officially moved to the existing business unit, where the work continues.</p>	<p>inside.</p> <ul style="list-style-type: none"> <li>• Enabling ventures are important venture form in this business context enabling the horizontal business problem solving.</li> <li>• In venturing the fast and clear decision-making is in critical role.</li> </ul>
<u>Warsaw</u>	<p>Personal life management services in Internet were seen as an area giving direction to new mobile services. Desire to investigate the area by finding partners who would build a solution to provide these services. V0 3/99.</p>	<p>A demo with WAP, Web and telephone access was developed. Discussions with potential partners. Discontinued in 5/00. Two (2) patents filed and granted. Knowledge and competence created of service market.</p>	<ul style="list-style-type: none"> <li>• The technology was not there yet, which would have lead to a vertical approach. Business unit solving same problems with a horizontal approach.</li> <li>• Strategic relatedness is a driving force in focused company decision-making.</li> </ul>
<u>Bratislava</u>  (Berlin inside)	<p>The target of the venture was to evaluate firm opportunity in wireless print media and distribution. Print media was moving and is still moving from paper distribution to digital world fast. The idea was back to Berlin investment, which gave good connections and insight.</p>	<p>Devised a firm wide Digital rights management strategy in 12/99. Became Media Distribution Solutions in 12/00. Made an investment in external company in 1/01. Digital rights management (DRM) competence center created</p>	<p>Successes: Quick adaptation of strategy when learning of market increased</p> <p>Mistakes :Time to market for several activities (especially terminal) was too early - in line with many Internet-bubble-era ventures. Organization grew too fast in</p>

<u>Venture</u>	<u>Background</u>	<u>Outcome</u>	<u>Key learnings</u>
	<p>The venture had three phases. 1) e-book business and technology area, 2) content distribution area and 3) Content Distribution Business program in existing business unit.</p> <p>From the beginning, the Digital Rights Management systems in enabling adaptive content formatting technologies to display the same content through different terminals &amp; bandwidth and in enabling technologies for content distribution and content billing, is remained in the focus.</p> <p>V0 9/99, V1 4/00.</p>	<p>in 4/01. Moved to business unit in 6/01. Gave a strong input in DRM to mobile terminal vendors and aligned firm activities therein.</p> <p>21 patent applications filed.</p>	<p>three different locations, which made venture difficult to manage and increased integration challenges. Investment was sound, however in the hindsight.</p> <ul style="list-style-type: none"> <li>• Acceptance of new technology is difficult to forecast.</li> <li>• Venturing can be an efficient tool for creating new technology competence within firm.</li> <li>• After the merger practically all of the team changed their jobs and reward for their effort was questionable.</li> <li>• Thorough industry analysis is important for creating every new technology business.</li> <li>• Venturing is successful tool for corporate renewal, but very demanding for people involved and their careers are in bigger risk than their corporate colleagues.</li> </ul>
<u>Melbourne</u>	<p>The target of the venture was to develop an advanced caching technique that could benefit both xDSL as well as 3G businesses by speeding up content delivery.</p> <p>V0 in 9/2000, V1 expected in 3/2001, but never obtained. The venture will continue as a research project in NRC.</p>	<p>Business and product plans, a working prototype, as well as new competence created in fast content delivery area. Two patents were filed. The venture produced new ideas and concepts.</p>	<ul style="list-style-type: none"> <li>• The first ventures have disadvantage in not having all the venture processes and support in place.</li> <li>• Decisions are not made open-mindedly. In decisions you cannot rely on only one person; you need to circulate the idea within a group of people to get a rational and fair decision.</li> <li>• Business units have too heavy influence on decision-making.</li> </ul>



<u>Venture</u>	<u>Background</u>	<u>Outcome</u>	<u>Key learnings</u>
			<ul style="list-style-type: none"> <li>Minimize the bureaucracy in venturing and decision-making. 'However, this is one of the best companies to work for'.</li> </ul>
<u>Paris</u>	<p>The opportunity of the venture was to use TV screen over a Bluetooth link as a display of a mobile phone to enhance the use of mobile services in homes. Strengthen the firm's position in homes. Develop the device needed between TV and mobile phone.</p> <p>The venture received positive V0 decision in March 1999.</p>	<p>Name changed to TV-Bluetooth. Business plans and a demo system during 1999. Discontinued in January 2000.</p> <p>The GateMate or TV-Bluetooth venture created and filed 4 patent applications, but before the venture set-up. The similar kinds of products are developed and just launched in existing business unit in 2003.</p>	<ul style="list-style-type: none"> <li>Market creation and timing is essential in venturing. Done too early and with too small business potential.</li> </ul>
<u>Copenhagen</u>	<p>An idea originally developed from research center user studies on communication in families. A need for a simple children's group communication device was identified. An opportunity for to enter a new age segment. V0 7/98, V1 3/99. Three phases.</p>	<p>Fall 1998 a decision to focus on kids as target group and maintain group communication as key selling point. First pilot attempt also in fall 1998. Second pilot attempt during 1999. In January 2000 a decision not to base the concept on GPRS implying reinventing the concept. In January 2001 move to existing business unit product line.</p> <p>Improved significantly the understanding of kids market and opportunity. The venture has undoubtedly influenced youth targeted products. Filed 12 patent applications. People from Kids team have participated in developing new, fun oriented features for Nokia terminals.</p>	<ul style="list-style-type: none"> <li>The customer needs should drive the venture throughout its lifetime.</li> <li>A venture has to have a solid technology competence in the related field.</li> <li>A venture should start testing ideas quickly by rapid prototyping, and advance through trial and error to commercialization.</li> <li>A venture should focus its efforts in the beginning to a feasible task, and minimize the time to the revenue instead of maximizing the size of the revenue.</li> <li>An experienced and entrepreneurial venture team is more important for the venture success than a good business plan.</li> </ul>

<u>Venture</u>	<u>Background</u>	<u>Outcome</u>	<u>Key learnings</u>
		The venture established cooperation relationships with universities and research institutes.	<ul style="list-style-type: none"> <li>• Ventures should be provided steering groups and decision boards with expertise from the relevant industries, also from outside.</li> </ul>
<u>Atlanta</u>	<p>Service personalization and adaptation calls for information on user behavior. This is a software solution for producing such information. Existing data mining competence in research unit could make firm a strong player in the business.</p> <p>Received V0 in 6/2000. The V1 milestone was passed in 1/2001, venture was spun-off.</p>	Venture team produced several versions of business plans and a proto version of the systems between 6/00 and 6/01. Piloting carried out. In 6/01 a spin out decision was made. The project filed 6 patents and had an important role in the formation of strategy inside research center.	<ul style="list-style-type: none"> <li>• Corporate ventures are cheap and easy, as well as holistic way to explore new' businesses and markets' and create new competencies.</li> <li>• Venturing is a holistic way to learn, especially through prototypes and pilot customers.</li> <li>• The ventures and projects are different having a lot tacit knowledge, which cannot be written down. Therefore a lot of knowledge and competencies are cumulated to the people.</li> <li>• Venture ideas should flow freely and innovatively throughout the firm: from business units to research and venture units. The innovation requires open and free communication, spirit, flexibility, excellent people and management working around as well as job rotation.</li> <li>• One target of corporate venturing should be renewal of the firm and internal development.</li> </ul>
<u>Dallas</u>	A clear opportunity for the venture was to add value on top of current solutions for mobile operators. The firm is in strong position to exploit the opportunity. No business unit interested to pursue the opportunity further alone. Started in November 2000, concept was introduced to	The proto was completed in the beginning of February 2002. Both internal and potential customer feedback was very positive. The venture developed a solution to allow especially high volume	<ul style="list-style-type: none"> <li>• Venture transfer to a new organization needs to be planned early enough and executed well, the venture must stay close to customers,</li> </ul>

<u>Venture</u>	<u>Background</u>	<u>Outcome</u>	<u>Key learnings</u>
	<p>customers for the first time during August 2001.</p> <p>V0 10/01, V1 4/02, V2 12/02</p>	<p>content to be economically delivered through cellular packet networks to cellular terminals.</p> <p>The venture was transferred to existing business unit in the end of 2002.</p>	<ul style="list-style-type: none"> <li>• Internal selling is often the most challenging one and integration to the existing business is far from trivial, even if the venture outcome was good and the business case was sound.</li> </ul>
<u>Tallinn</u>	<p>Existing display competencies exploited. Market need for a product optimized for bringing full size internet anywhere.</p> <p>The idea originated in firm strategy work in 1998-1999. Industry hype supported the venture: Internet, consumer devices, Internet advertising and mobility.</p> <p>Focus shifted towards WLAN and home during the Summer of 1999. During the Fall of 1999. The venture had good access to technology as well as to decision makers. The Venture also had very strong back up with a senior management sponsor.</p> <p>V0 1/99, V1 6/99, V2 9/99. Two phases.</p>	<p>A fully functional organization was set up during 2000 with 130 persons. First product with WLAN connectivity developed and a few hundred terminals produced through subcontracting (proto). Discontinued in 4/01, maturity of people do not continue with similar kinds of projects.</p> <p>Of course special skills develop: knowledge of mobile browsing, flat screen technology, back-end servers, etc. Almost everyone found a new job</p>	<ul style="list-style-type: none"> <li>• In venturing you should always question, are all key assumptions still valid in business, technology and in internal and external environment?</li> <li>• Starting a Venture is a challenge. You should not underestimate the “support”.</li> <li>• Transition from concept team (V2) to product team (operations) is very demanding.</li> <li>• The entire core team must passionately believe in the product concept.</li> <li>• It is easy to over estimate the market potential and you own capabilities, while underestimating the speed of changes (markets, technologies).</li> <li>• Closing a venture inside is a challenge, as “support” and co-ordination from the firm is a requirement.</li> <li>• Venturing itself can be described as learning. It is an asset as such.</li> <li>• It was a big surprise for many to find themselves in looking for a new job. The common rules and the name of the game in venturing should be made crystal clear beforehand.</li> </ul>

<u>Venture</u>	<u>Background</u>	<u>Outcome</u>	<u>Key learnings</u>
<u>Hollywood</u>	<p>Messaging based services was an underdeveloped opportunity. Difficulties experienced with WAP on several fronts urged to experiment with messaging. Basic idea to create a "living" monster with changing look and behavior, distribute it as messages and combine advertisements with it.</p> <p>Received V0 3/2000 and V1 in 8/2000. The work started to develop the prototype but the problem was that we did not have access to the development platforms and tools even though we had people who knew how to use them. In April 2001, we got the latest phone development platform to develop the prototype and the work started for real.</p>	<p>Roadmaps and business models created for various stages of the business, 12 filed patent applications, 'monster' technology defined (language, animations etc), working protos and demos with different phones.</p> <p>Discontinued in 6/01. In 2003 this is under development as a product in an existing business unit.</p>	<ul style="list-style-type: none"> <li>• The support and spirit provided was inadequate to support venturing.</li> <li>• Creating an end-to-end solution outside mainstream is very difficult.</li> <li>• Networking with peers most valuable in getting guidance and relevant information.</li> </ul>
<u>New York</u>	<p>Getting hold of "home domain" was felt as being of strategic importance. Internet, broadband access and wireless home networks were to change the home and offer new opportunities. Company had suitable technology, ADSL and WLAN in the end of the year 1998. The venture was created in the Summer of 1999. Phases 3.</p>	<p>In the end of 2000, two business units merged together to become one business unit under the one name including around 600 people. This venture was part of that unit until it was transferred (including 20-30 people) to existing business unit in 11/00 - 7/01 and then back.</p> <p>The activities were closed in 12/01. The market for the product was not yet there.</p> <p>The new venture idea was influenced e.g. Bonn.</p>	<ul style="list-style-type: none"> <li>• Focus is important. It is not good to bundle totally different activities together.</li> <li>• Fit is important. If the activity does not fit to the firm, it should be discontinued immediately.</li> <li>• Patience: if the activity is important, one should have patience in developing it. If not, it needs to be discontinued.</li> <li>• Management should be suitable.</li> </ul>
<u>Boston</u>	<p>The opportunity of the venture was to use a mobile communication competence from vertical business system to build the horizontal wireless telephony layer above the IP network.</p> <p>The venture was the first initiative</p>	<ol style="list-style-type: none"> <li>1. High quality products: about 20 pieces e.g. D2II dual mode WLAN/GSM cards</li> <li>2. Recruited several key persons that understand software and telecom business</li> </ol>	<ul style="list-style-type: none"> <li>• Venturing is good mechanism for disruptive technologies and markets; the problem has been the missing implementation capability</li> <li>• Create the clear and understandable decision-making systems. Create the</li> </ul>

<u>Venture</u>	<u>Background</u>	<u>Outcome</u>	<u>Key learnings</u>
	<ul style="list-style-type: none"> <li>to implement VoIP and WLAN in terminal products, in order to complement network product offerings; and</li> <li>to provide competitive and attractive product portfolio that fosters rapid deployment of VoIP and WLAN systems to corporations.</li> </ul> <p>‘This was planned like SAP’, which produces IPT business evolution by 1) building the end-to end solution and platform, 2) continuing to add value by quality of service, call features (IP Centrex), applications, virtual private networks, bandwidth on demand, multiple router selection and dynamic routing as well as with location based services. The venture products included both network and terminals. The venture grew rapidly in two and a half years from initial of 50 persons to over 1400 persons in Finland and USA.</p> <p>Started 1/98 and transferred in autumn 1999, 250 people to business unit and another 250 people to other business unit in the beginning of 2000.</p>	<ol style="list-style-type: none"> <li>New competencies for firm – WLAN technology implementation, IP security, IP telephony, understanding of corporate market needs</li> <li>Competencies in use in existing business units</li> <li>48 Patents were filed.</li> </ol>	<p>steering-decision structure with ‘the spirit to coach, motivate and question’.</p> <ul style="list-style-type: none"> <li>‘Consensus’ driven decision- making: in difficult questions, only one doubt could lead to NO decision.</li> <li>New ventures are based on early warnings on market, (tacit knowledge), which is not written in documents and procedures. Management is difficult: based on trust and person.</li> <li>KISS ‘keep it simple ’ business plan done .</li> <li>Manage the existing business unit opposition in all levels</li> <li>In acquisitions have clear strategy; why, which purpose?.</li> </ul>
<b><u>Budapest</u></b>	<p>The venture developed location based media applications and wireless advertising and marketing.</p> <p>A positive V0 decision was reached in October 1998 and a positive V1 decision in March 1999. This venture was merged with applications venture and transferred to existing business unit, which got it a very skillful competence team. The firm bought also external company R&amp;D. This R&amp;D team was combined with the in-house games developers.</p> <p>V0 10/98, V1 3/99.</p>	<p>This venture was merged with applications venture and transferred to existing business unit, which got it a very skillful competence team. This team was core in existing business unit new function. The firm bought also external company R&amp;D. This R&amp;D team was combined with the in-house games developers. The venture had also pilots, which created technical, business and content distribution knowledge in practice to the team.</p>	<ul style="list-style-type: none"> <li>The management was indecisive, and sometimes did not have the visibility to the things, that were really on going.</li> <li>Communication was minimal; even attempt to avoid to discuss the real issues.</li> </ul>

<u>Venture</u>	<u>Background</u>	<u>Outcome</u>	<u>Key learnings</u>
		20 invention reports were filed in total, 11 in this venture and 9 in applications venture.	
<u>Sydney</u>	<p>1. Offer an alternative (royalty free) browser and supporting servers. Limited success, with two big customers.</p> <p>2. Enter into new profitable pure software business. Relative success, leader in corporate WAP servers, although a small non-profitable market. Games hosting solution proved clear potential later.</p> <p>Growth of new markets is very difficult to predict. Estimated to fast development and therefore expanded the organization too fast, instead should have worked on solving the problems of one or two customers with smaller organization and then expanded based on the experience of that.</p> <p>Started 1/98, decision to transfer 6/00.</p>	<p>1. Products and platforms</p> <ul style="list-style-type: none"> <li>• high quality XHTML browser, that can be licensed to other phone vendors</li> <li>• corporate WAP gateway product, that can be used as an entry product to corporate market</li> <li>• mobile commerce platform MSW , and</li> <li>• mobile games platform.</li> </ul> <p>2. 84 Patents were filed.</p> <p>3. Distribution channel relations with leading IT vendors.</p> <p>4. Direct customer relations with leading banks and increased our competence in mobile e-commerce and related security solutions.</p> <p>5. Demonstrated the commercial potential of mobile entertainment solutions based on hosting.</p> <p>6. Recruited several key persons that understand software business. Many of the key persons from the venture have</p>	<ul style="list-style-type: none"> <li>• Any new efforts should have a real customer and work very closely to verify relevance of venture product offering. If topics are clearly important strategically then ensure sufficient resourcing and avoid overlapping work in/ with other units.</li> <li>• Key successes: we produced high quality core products in each area, but did not have sufficient customer support and customization capability.</li> <li>• If a team does not work, it needs to be re-organized/re-assembled without delay.</li> <li>• Try to estimate market development realistically, rather conservatively than aggressively.</li> <li>• Focus on a few key customers to achieve real success with them instead of building broad market reach via channel development.</li> <li>• Be ready to make significant changes in strategy and tactics based on new information, don't worry about "sunk cost" look ahead instead!</li> </ul>

<u>Venture</u>	<u>Background</u>	<u>Outcome</u>	<u>Key learnings</u>
		<p>joined existing business in key positions.</p> <p>7. New competencies:</p> <ol style="list-style-type: none"> <li>1. Developing XML related software,</li> <li>2. Mobile e-commerce,</li> <li>3. Understanding corporate markets needs for mobile solutions,</li> <li>4. Revenue sharing business model implementation with leading customers.</li> </ol>	
<u>Montreal</u>	<p>The aim of the venture was to enable an entry into Optical Access business.</p> <p>V0 1/00, V1 5/00, V2 11/01, 2 phases.</p>	<p>A demonstrator was build and a pilot was carried out in fall 2001. Spun-off in the end of 2002. Venture is a potential new business outside current firm. Four (4) patents filed.</p>	<ul style="list-style-type: none"> <li>• Business planning needs to start from the beginning of the venture life. Especially cost analyses of the systems to be developed need to be made early.</li> <li>• As a whole: the venture should get out of the “research” mode and work at full in the venture mode.</li> </ul>
<u>Tokyo</u>	<p>The aim of the venture was to to create a new centralized digital content distribution channels independent from mobile networks and subscriptions. The logic of using this digital information device was, that it was pocket able, thin and having digital media in cards. The device was a business card sized, styled to fit in business or pleasure device. Japan was used as a test market for global launch.</p> <p>Venture received a positive V0 in August 2000. The Venture was closed in February 2001.</p>	<p>Venture created deeper understanding of Japanese customers and market. Japanese market was different than rest of Asian. Japan is still a lucrative market for new kinds of devices. The knowledge and understanding is used in an existing business unit. 20 patents filed</p>	<ul style="list-style-type: none"> <li>• Japan is still a lucrative market for new kinds of devices. The importance of the Japanese market and possibilities were not quite understood.</li> </ul>

<u>Venture</u>	<u>Background</u>	<u>Outcome</u>	<u>Key learnings</u>
<u>Helsinki</u>	<p>Due to the development of the Internet, software business will turn into service business (implemented by the software). Offering an e-mail access service with existing mobile technology (SMS) would be an opportunity to build a new business and a direct relationship with consumers. The Venture had clearly two different phases:</p> <ul style="list-style-type: none"> <li>• phase 1: targeted towards consumer market and</li> <li>• phase 2: targeted towards corporate offering.</li> </ul> <p>The idea of was developed already in 1996-1997. The Venture got V1 status in 8/1999. Strategy panel in 03/2001 advised us not to apply for V2. There were too many, who was against or thought this was a problematic case. The venture had to find out an alternative business model. V2 milestone was received in 4/2002.</p> <p>V0 5/99, V1 8/99, V2 4/02.</p>	<p>The venture developed an e-mail access solution and trial from 4/00 onwards with 7000 users. The scalable solution was ready in 12/00. The first corporate sales efforts were in 2001, and first customer installation in 12/01. Calendar functionality was in beta testing 1/02. The venture product was commercially launched in June 2002. Personnel have been hired, and currently has a staff of 21 including R&amp;D, Sales and Marketing, Operations and General Management.</p> <p>Today, product is sold either directly to corporations or via partners and operators, under their own name to their customers. The venture is currently building its customer base in selected Western European countries.</p> <p>By the end of 2005, the Nokia One team expects, that mobile email will be a requirement.</p> <p>Four (4) patents filed.</p>	<ul style="list-style-type: none"> <li>• Internal strategy alignment must be done as early as possible to avoid useless efforts.</li> <li>• A positive decision from Business Unit is perhaps important for ventures.</li> <li>• In this firm it is easy to discuss technology, but more difficult to discuss markets and brand. All issues have to be discussed and addressed in a fair, brave and direct way.</li> <li>• A fundamental thing is to analyze the risk profile (1. technology 2. market or 3. strategic) of the venture as soon as possible and try to tackle these risks.</li> <li>• This service has been available for a long time as an internal pilot. The key for the venture is to do pilots as soon as possible.</li> <li>• Success factors in recruiting for new people: having start-up background is good -having seen and learnt all the aspects of business-, sense of urgency and responsibility. It is very important to have the right people. Venturing people have to be self-starters and self-adaptive. Venturing; it is fun and challenging vs. boring and formal.</li> </ul>
<u>Bonn</u>	<p>The opportunity of the venture was to use broadcasting to deliver any data content to terminals. A major opportunity to introduce a new category of devices bringing data reception to</p>	<p>This broadcasting technology is a core competence. Produced device could integrated to many consumer products.</p>	<ul style="list-style-type: none"> <li>• All Ventures have to be “selfish” and independent.</li> <li>• Money and other resources have to be earned.</li> </ul>



<b><u>Venture</u></b>	<b><u>Background</u></b>	<b><u>Outcome</u></b>	<b><u>Key learnings</u></b>
	<p>mobile terminals.</p> <p>The venture employs currently ~70 people.</p> <p>The underlying disruption is that analogue TV will be shut down, which will free band for digital multimedia broadcasting services Bi-directional - personal and interactive - services are done with cellular technology. The combination of the broadcasting services with bi-directional services results in very powerful solutions.</p> <p>The venture has had four phases.</p> <p>A prototype of a portable, mobile TV combined with GSM functionality was developed. The concept and prototype was a big success, when introduced in IFA in 1999 and created a lot of interest.</p> <p>The V0 was received in 3/2000 and V1 in 11/2000.</p>	<p>For end-users the value added and benefit would be mobile broadband data. For the operators, it is the ease of implementation of the networks (turn key approach).</p> <p>60 patents filed.</p>	<ul style="list-style-type: none"> <li>• There has to be courage to do new things. There are always many reasons to continue as well as discontinue a venture.</li> <li>• There must always be a business reason for the venture to exist.</li> <li>• Corporate circulation of people might be a good idea and worth looking into.</li> <li>• Use as much as possible time on the business model and on the strategical importance for the whole firm.</li> <li>• A steering committee consisting of persons from different parts of firm will help with the Strategy and specially with networking.</li> </ul>
<p><b><u>Riga</u></b>  (Seattle included)</p>	<p>Expand scope into terminals with video consumption as main feature. Develop a video content management application for PCs to download content over broadband access and organize it according to personal "channels". Docking station to load videos to a portable device (later with MMS and Bluetooth capability). BFA started 2/00; V0 3/99</p>	<p>Venture received positive V0-decision in March 2001. Business plans made during spring 2001. Discontinued 6/01. This, together with research project, created insight on teen media consumption behavior, which was used in the existing business unit.</p>	<ul style="list-style-type: none"> <li>• A clear definition of 'Venture Organization space' vs. 'core firm space' needs to be made.</li> <li>• It is important to have technical and logistics capabilities to make (or manage) feasibility studies on product development and manufacturing (costs).</li> <li>• In case of a possible venture transfer to another unit, it is vital to get receiving unit's commitment or participation in the product.</li> </ul>

<b><u>Venture</u></b>	<b><u>Background</u></b>	<b><u>Outcome</u></b>	<b><u>Key learnings</u></b>
<b><u>Oslo</u></b>	<p>Venture has existing competence to develop a wearable voice recognition device to act as a User Interface to various devices. The Venture has clear synergies with current businesses and possibility to use the brand. Venture also has a variety of different applications.</p> <p>V0 4/01, V1 11/01, V2 12/ 02</p>	<p>The venture has granted 7 patents and there is couple in the progress. All together 18.</p> <p>Proto available.</p>	<ul style="list-style-type: none"> <li>• Keep the organization slim and venture focused. Have the clear vision in mind.</li> <li>• ‘The crises’ are part of the venturing.</li> </ul>
<b><u>Stockholm</u></b>  (Munich included)	<p>A personal, pocketable server is an opportunity to take into a new category of terminals, which would support and augment current offering nicely. A positive V0 decision was reached in June 2000, and V1 decision in November 2000, also received an E-1 decision from existing business unit in May 2001, but this decision was cancelled soon after it was made.</p> <p>Venture achieved to manufacture working prototypes fairly quickly, with scarce resources and small number of personnel. Partnering for product creation.</p> <p>V0 6/00,V1 1/00; Munich similar idea V0 6/00</p>	<p>The first working prototypes were up and running according to the schedule in October 2001. The Bluetooth protocol stack can be called “a product” created by the Venture. It is openly distributed and regularly updated.</p> <p>The Venture gained lot of experience in team creation, partnering, Linux, Bluetooth and ODM manufacturing.</p> <p>One patent filed. The venture closed in the end of 2001.</p>	<ul style="list-style-type: none"> <li>• Have something new to show to the customers whether they are external or internal</li> <li>• The importance of “invisible organization” cannot be overestimated. There are many persons that possess a lot of influential and decisive power. Finding the influential person/ agents is very helpful.</li> <li>• The decision making process and the outcome of meetings often unclear (“don’t call us, we’ll call you”).</li> <li>• The decision makers should be same</li> <li>• Nokia internal non-openness can sometimes be difficult: same things are being developed at multiple places.</li> </ul>
<b><u>Phoenix</u></b>	<p>The target of venture was to develop and commercialize services for chronic medical conditions and self care around the world. The venture offered internet-based data link services, which support the self care of chronic conditions. The purpose of the data link service was to make a connection between the doctor and the patient</p>	<p>New phone variant have been created 6150: having ‘diabetics’ software inside as well as Modern Windows NT based generic VAMS platform.</p> <p>The WellMate was intensively tested; 4 pilots, over 100 users. Also</p>	<ul style="list-style-type: none"> <li>• Business group support faded after the spun off.</li> <li>• It was too early as a concept for the market and not enough proof (pilots) of value to the ones who were supposed to pay for it.</li> </ul>

<b><u>Venture</u></b>	<b><u>Background</u></b>	<b><u>Outcome</u></b>	<b><u>Key learnings</u></b>
	<p>easy, frequent and flexible.</p> <p>The idea started and development in business unit in 1995. In 1996 development of a self-care support system for diabetics was started. The application software was developed.</p> <p>Health care solutions and support systems were not firm's core business. Thus, the decision about external spin-off was made. The venture development activities and a US based company called ENACT Health Management Systems, a California start-up company, were merged and LifeChart.com was created in July 1999. The center of LifeChart's business was in the USA. LifeChart.com service for diabetics was started in November 1999 in Finland and ended up to chapter 11. Phases 3.</p>	<p>a Lotto demo was made.</p> <p>Venture created patents, about 20 filed (and granted).</p>	<ul style="list-style-type: none"> <li>• Make sure it is clear who will pay for the service and that they are on board.</li> <li>• New technology by itself does not change pace of slow moving healthcare.</li> <li>• Stay focused in one area until value is proven (geography).</li> <li>• Make sure the key resources are on board when spinning off.</li> <li>• Timing is all, if 6 months earlier start then we would have been part of other major player (and maybe failed with them?).</li> <li>• Make rapid platform decisions if there are more than one to choose from. Valuable learning of technology and market received.</li> </ul>
<b><u>Vienna</u></b>	<p>Venture exploited the opportunities in the area of providing Internet based services to consumers in public locations by using wireless local area technologies (WLAN and Bluetooth).</p> <p>V0 decision was received in September 1999, and V1 already in October 1999.</p>	<p>Defined business model and business plan, developed a demonstration system. Found an interested service provider candidate (one of the leading consumer brands) and prepared with them a joint validation plan. Discontinued in October 2000.</p>	<ul style="list-style-type: none"> <li>• Venturing should be less bureaucratic and</li> <li>• Corporate venturing surrounding is not fast enough versus external start-ups.</li> </ul>

<u>Venture</u>	<u>Background</u>	<u>Outcome</u>	<u>Key learnings</u>
<u>London</u>	To create a new application for 3G terminals. V0 9/98, V1 1/99	Developed a content creation and adaptation system. Four (4) pilots with partners using PC terminals and high-speed GSM data cards. Merged to with other venture and later transferred to business unit.  9 Patents filed.	<ul style="list-style-type: none"> <li>• The time span of Media industry is different from the telecom and IT industry. Media industry wants that things happen in max. 6 months. When developing new devices and applications that time frame is challenging to HW/SW players.</li> <li>• News content is a difficult market as news information basically is free for everyone: it is hard to make money, as the end customer is not willing to pay.</li> <li>• Learned a lot about the world of media. Media industry also learned that not everything could be put to mobile overnight, and that money isn't necessarily to be made.</li> </ul>
<u>Vancouver</u>	The idea and opportunity was to exploit existing competencies of a wireless access and services system for aviation, maritime and high-speed train environment based on standard system components and terminal technologies. Officially the venture was a one-man-show.  V0 was accepted in 05/2000. The venture was closed in December 2000.	Business plans produced during summer 2000. Technology existed and even some market need.	The project was more like a type-approval project, not a venture.