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## Strategic Flexibility and Alliances

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## Abstract

The focus of this thesis is on the relations between alliance involvement, strategic flexibility, and environmental uncertainty. Four main bodies of literature are drawn on; Strategic flexibility, Transaction cost theory, Resource based theory and International marketing and purchasing perspective. Based on these approaches, strategic flexibility is seen as being able to access resources and avoid constraints. Alliance involvement is defined through asset specific investments, strategic and social involvement, while uncertainty is seen as complexity and diversity. 13 hypothesis are set forward and tested on two samples, both from the Federation of Manufacturing and Engineering Industries<sup>1</sup> in Norway. The first sample consists of 100 alliances and was collected by Sven Haugland in 1993. The second sample was collected for this research and contains information on these 100 alliances plus an additional number of 83 alliances. This design thus allows us to study both cross-sectional and over time associations. The main findings seem to be the following:

- ❖ Increasing access to resources in an alliance necessitates asset specific investments and strategic involvement. However, if the firm involves in these types of investments, constraints increase. Social involvement, on the other hand, seems to reduce constraints, but does not allow the firm to access resources in an alliance. Hence, involvement in an alliance cannot at the same time stimulate resource accesses *and* reduce constraints.
- ❖ An alliance relation *evolves* over time. The manner in which the alliance is perceived by the partners and the activities that are covered by the alliance, may differ over time, although the relation between the partners continue. In some periods the alliance is defined by the firm as very strategic, in other periods the same alliance may be characterized as less strategic. Similarly, the level of mutuality may be unstable between periods.
- ❖ No relation was found between environmental uncertainty and alliance involvement. Firms working under conditions of high uncertainty consequently do not seem to be more likely to terminate their alliance than firms working under more stable conditions are.

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# 1. Introduction

*"With the dramatic changes in the business environment in the last decade – deregulation,... growth of information technology, global competition...- old ways of doing business are becoming less relevant. The process (of strategy) requires the capacity to think long term and, at the same time, create the space for change...It is the appetite for this process of reexamining and reinventing that will separate the builders (leaders) from caretakers (managers)" (Prahalad 1995).*

## 1.1 Research Problem

All firms must to various extents deal with uncertainty. Thompson (1967) argues that the organization attempts to meet this uncertainty in three major ways: Buffer, develop flexible strategies, or influence external actors or events causing the change. The focus of this thesis is on the second manner of uncertainty absorption; on the creation of flexible strategies, or on what could be termed strategic flexibility.

A central assumption in this thesis is that firm strategies draw on, and are limited by current organizational structures. One such organizational structure is an alliance, representing one manner through which the firm performs its tasks. A key question in alliance research is the effect of the alliance on firms entering them (Gulati 1998), and one such effect is increasing strategic flexibility (Harrigan 1988, Lorange and Roos 1992). However, studies also point to constraints imposed by alliance partners suggesting less ability for the firm to change its strategy (Alter and Hage 1993). Consequently, whereas much of the literature has been normatively describing alliances as increasing firm flexibility, there has been little focus on ways in which alliances can impact strategic flexibility, both positively and negatively.

Alliances are often described as genuine structures "*between markets and hierarchies*" (Powell 1987, Williamson 1991) pointing to a looser connection than common ownership, but stronger than market relations. Thus, one way of describing an alliance is through its governance. A related way to understand the difference between types of alliances is through the level of involvement. That is, for a firm to gain strategic flexibility from an alliance, to what extent must the firm be involved in the alliance? One way in which the firm can be involved is through idiosyncratic investments in equipment, human resources and the relation.

But the firm may also be involved strategically and through personal relations. Interesting research questions arise if we look at what type of involvement seems to increase or constrain dimensions of strategic flexibility. It is also interesting to look into how flexibility is affected by development in involvement over time. Longitudinal insights have been given in few alliance studies and therefore we have little understanding of how alliances develop and effect firm choices over time (Parkhe 1993b). Furthermore, it seems reasonable to assume that the involvement of a firm in an alliance is related to the level of environmental uncertainty. Thus, the research intent of this thesis may be stated as:

***What is the relation between environmental uncertainty, alliance involvement and strategic flexibility? How stable is alliance involvement over time, and how does involvement stability relate to strategic flexibility?***

## **1.2 Justification of Research Problem**

### **Flexibility vs. Stability**

The organizational literature presents an intriguing dilemma: On one hand, companies must position themselves successfully to earn superior and sustainable rents (Porter 1980), and make investments that are irreversible and difficult to imitate (Peteraf 1994). On the other hand, the environment is rapidly changing (Astley and Brahm 1989, Harrison 1994, Limerick and Cunningham 1993), and firms must follow these changes with proper strategies and structures, to create the best fit or not be selected out of business (Hannan and Freeman 1977). Thus, they must be flexible. This leaves companies in a difficult situation; To earn money today, the firm must make decisions that may impede on its ability to earn money tomorrow (Ghemawat 1991). Thompson (1967: 187-188) terms this dilemma the “*administrative paradox*”, and argues that ideally firms want stability in the short run, and flexibility in terms of slack resources in the long run. This idea implies that flexibility opposes stability, and that, at least in the short run, firms should focus on the latter. Porter (1996) seems to agree with this idea advising firms to choose strategic positions with a horizon of a decade or decades. The other extreme is Strategic options theory (Sanchez 1995), where the objective of firm strategy is to acquire resources that endow the firm with an optimal set of options. In this view, firms

in dynamic markets should strive to keep alternative actions at hand, so that new opportunities can be acted upon quickly. Other writers seem to agree that there is a tension between flexibility and stability, but that the needs of the two must be balanced, also in the short run. Ghemawat (1991) for example sees strategy as commitments, but in the process of committing, he argues that “*options to recourse*” are important to keep in mind. Volberda (1996: 360) goes even further, claiming that flexibility and stability are intertwined. In this view, both no flexibility and too much flexibility result in instability, thus “*flexibility is the middle course between rigidity and overreaction*”. Similar thoughts are presented by Stacey (1993: 232): “*All successful organizations have to be a contradiction between the mechanistic and the organic, between the stable and the unstable...because they have to handle both predictable short term and unpredictable long term futures if they are to survive*”.

It seems reasonable to conclude that all firms to some extent have a need to change and adapt, and that planning for change could save the firm both organizational and financial resources. Spending all planning time on possible changes, however, would draw attention away from the commitments necessary for all competitive strategy. Consequently, all firms must find their balance between “*Putting all eggs in one basket*” (Ansoff 1965) vs. “*Dividing eggs in many baskets*” to the extent that no coherent action can be taken.

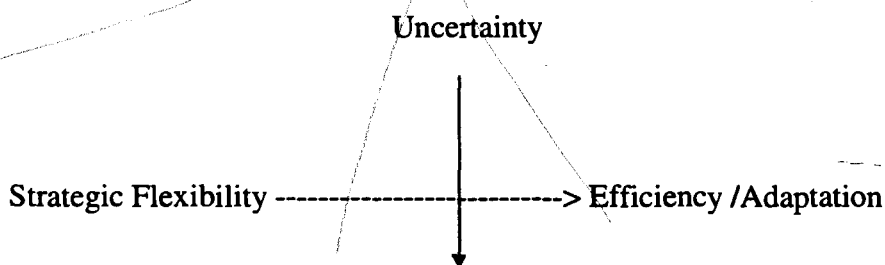
### **Flexibility vs. Uncertainty**

The main idea underlying all theoretical treatments of strategic flexibility is its connections to environmental uncertainty. The more uncertain, or unpredictable the environment is, the less is the firm able to make stable plans, and the more it must be prepared to face a variety of scenarios (Collis 1992, Courtney, Kirkland, and Viguerie 1997). Suarez et. al. (1995) sees *efficiency* as the dominant strategic imperative in the beginning of this of this century, followed by *quality* from the 1950s and *flexibility* in the 1970-80s. Thus, interest in the subject is fairly new. We could also propose that this development is taking place in a period where many markets have changed due to factors including rapid evolution of new technologies, shorter product life cycles, fluid industry structures, rise and fall of new industry sectors (Astley and Brahm 1989, Yoshino and Rangan 1995, Harrison 1994, Lorange and Roos 1992), increasing global competition (Harrison 1994, Bartlett and Ghoshal 1992), new

political, cultural and social values (Limerick and Cunningham 1993), and increasing pressures on costs and quality, and more fragmented markets (Dean and Susman 1989, Sanchez 1995).

Consequently, we could argue that this has been a time of great competitive pressure on many companies to adapt both to restructure their firms, but also to adapt on a smaller scale to meet continuous improvements demanded by the customer. There seems to be no indication that these “trends” will diminish, clearly pointing to strategic flexibility as an important concept. Regarding the state of the art of the research on strategic flexibility, there is still no common definition of the concept and the variables related to flexibility, consequently we need to learn more about the concept and the concepts relating to it.

Lawrence & Lorsch (1967) maintain that environments characterized by uncertainty and rapid rates of change place different demands on organizations than stable environments do. Thus, if we relate different organizational forms with different environmental conditions, the higher the environmental uncertainty, the more efficient should forms that promote strategic flexibility be. This can be illustrated in a figure:

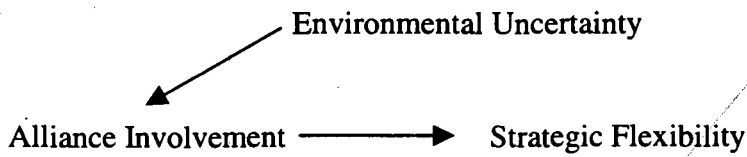


**Figure 1.1: Strategic Flexibility in a Contingency Perspective.**

To my knowledge, the relation between strategic flexibility, uncertainty and efficiency is widely accepted, but has not been submitted to any critical tests. The reasons for this are probably the early state of the research on strategic flexibility (Suarez, Cusumano, and Fine 1995), and also the nature of the concept as it is previously being understood. Aggarwal (1995), for example, argues that flexibility concerns may be connected to all resources, activities, technologies and structures of firms. An all-encompassing approach is extensive (including many flexibility dimensions), and complex (regarding interrelationships) and therefore difficult to study and test. A more promising direction seems to be to limit focus to a



few dimensions of flexibility, and structures that promotes flexibility. In light of the previous model, my contribution can be illustrated as:



**Figure 1.2: Overall Thesis Focus**

My contribution to the concept of strategic flexibility is thus to learn about ways in which alliances can impact the strategic flexibility of the firm, focusing on certain dimensions of the concept, trying to understand which these are and how they are affected by alliance involvement.

In his thesis Dreyer (1998) points to the limited previous use of the flexibility concept in organization models, like population ecology and microeconomics, as the concept clearly has relevance to concepts like efficiency and survival. One problem with the concept, however, is its nature. As concepts like cost and quality easily can be measured and evaluated, flexibility represents a potential that not necessarily must be demonstrated to be present (Upton 1995). Consequently, the value of flexibility is only seen when the environment changes and the need for other solutions come into play. The focus of this thesis is not on the measurable value of strategic flexibility to firms, but rather on the potential for strategic flexibility given through an alliance comparable to the “stores of options” given by an alliance (Jones and Ostroy 1984). Hence, I will not look into the direct efficiency effects of strategic flexibility from an alliance. Rather I am interested in different ways in which an alliance can affect the potential for making strategically flexible decisions in a firm.

## Flexibility and Alliances

A fundamental assumption that underlies the chosen approach is the idea that strategic flexibility is a function of many firm choices regarding what resources, activities and organizational structures to maintain and develop. Investments in any part of the organization may to different degrees affect the overall strategic choices available to the firm. One structure, assumed to affect the activities and resource choices of firms, is an alliance. In this thesis an alliance is seen as a durable, voluntary business arrangement between firms involving exchange, sharing or co-development of technologies, products or services. Even if an alliance is formally outside of the boundaries of the firm, cooperating in alliances are expected to be related to firm commitment, and type and level of resources and activities available to the firm.

Why focus on alliances as one possible route to strategic flexibility? As the following citations show, flexibility is often mentioned in alliance settings:

*Firms must maintain flexibility in a lot of areas including technology, marketing, distribution channels, and plant economics, and they must do so in the face of growing market uncertainties and increasing constraints on resources, both human and physical. Developing a flexible organizational capability lies at the heart of entrepreneurship. It is also at the core of the logic of strategic alliances", (Yoshino and Rangan 1995:51).*

*"...the issue has to do with in what ways a particular party is able to dispatch, as well as retrieve, specific, identifiable strategic resources to and from the strategic alliance based on whether this resource allocation represents a reversible or irreversible move, This contingency issue deals with whether future strategic flexibility regarding a partners resources will be at stake or not", (Lorange and Roos 1992: 265)*

Several authors have argued that the flexibility offered to firms from alliances is the ability to quickly enter and exit new activities (Powell 1987, Yoshino and Rangan 1995, Jarillo 1988, Harrigan 1985). Compared to activities performed internally, for example, alliances represent fewer financial and organizational requirements, and are thus easier to enter and exit. Market transactions are even more flexible in this sense, but do not take care of the long-term concerns of a relation, like securing and mutually developing an activity. In an on-going alliance, alliances are also suggested to offer flexibility if they allow changes to take place, or offer some sort of "willingness to change" (Bleeke and Ernst 1993, Bartlett and Ghoshal 1992; Håkansson, 1982). However, it is well known that alliances also impose constraints on

✓ firms. Thus, an ongoing alliance relationship may not only increase strategic flexibility, but also decrease it.

Focusing on resources, alliances are seen as tools for information and resource transfer (Badaracco 1991; Hamel 1991) and mutual adaptation and learning (Doz 1996; Håkansson 1990). In this sense, alliances represent an access to resources and activities that either can not be bought in the market (Badaracco 1991), or are too expensive or difficult to develop internally (Contractor and Lorange 1988). Increasing the resource base of firms could have at least two implications for flexibility; First, in terms of reducing risk as the firm has access to more resources in terms of alternative products, technologies, distribution channels or markets. Second, information and learning improve firm abilities to innovate and see alternative uses of their resources. Thus, if environmental claims change, firm responses improve if the firm has access to alternative activities, and/or is better able to develop alternative activities.

✓ Through this discussion, we have seen that when arguing for alliance rationales, researchers have argued that alliances may have potential advantages over market or internal organization, either allowing entry/exit, allowing changes to take place and increasing the overall resource base. Intuitively, market based exchanges will be more flexible in the first two respects, and organization based exchanges offer more flexibility concerning resources. This thesis will not, however, give any critical test of these intuitive suggestions, comparing alliances with market or hierarchical transactions. In the sense that we accept transactions as taking place on a continuum between market and hierarchy, and see involvement in the relation as an indicator placing the alliance on this continuum, we may say something about the “*market-like*” or “*hierarchy-like*” alliance effects on flexibility. Including strategic involvement and personal investments in the involvement construct draws this further than the original Transaction cost theory framework (Williamson 1985) reflecting on my interest in identifying characteristics of the relation rather than placing it within one particular continuum.

The theoretical framework presented by Williamson (1985); Transaction Cost Economics (TCE) and studies developing this framework further (Stern and Reve 1980, Bradach and Eccles 1989) have had great influence on studies of alliances and characteristics of alliance

relations. Based on this influence, I see this as a theory that can give great potential insight to my research questions. Whereas studies building on the TCE framework, e.g. Bradach and Eccles (1989) accept the assumptions of opportunism, and build their framework around this fundamental idea, another stream of alliance literature sees relations more in terms of potential opportunities than constraints given a certain level of personal investments (Hagg and Johanson 1982; Håkansson 1982; Håkansson and Johanson 1988). Whereas TCE to a limited extent is concerned with the content of the transaction, this stream, the International Marketing and Purchasing (IMP) approach views alliances and networks as the prime source of resource transfer, also offering insight on potential effects of alliances. A third body of research, The Resource Based View (Barney 1991; Montgomery 1991) differentiates between resources and activities being more or less strategically important to the firm, thereby both offering insight on alliance characteristics and effects on the firm. Many theories could have offered additional insights on my research questions, like Resource Dependency Theory and Game Theory. As I chose to focus on alliance investments and effects on strategic flexibility, I argue that the chosen theories offered most and complementary insight since these theories directly address relations and potential effects these may have.

### **1.3 Outline of Thesis**

There are several approaches to strategic flexibility, and no universal definition the research community seems to agree on. A perspective and a definition are developed in chapter 2.

Regarding alliances, there is considerable work done on issues like motives and characteristics and performance (Contractor and Lorange 1988, Lorange and Roos 1992, Alter and Hage 1993, Anderson 1990). Based on this body of theory, we can extract knowledge on the potential role alliances may play in firms. These are themes discussed in chapter 3. In this chapter I draw on insights from Transaction Cost Economics, the International Marketing and Purchasing perspective, and Resource Based insights. Furthermore, the concepts of the environment and uncertainty are given a more thorough treatment. In chapter 4, I develop the theoretical constructs that go into the research model. The theme of chapter 5 is development of the research model and the relations between the theoretical constructs. In chapter 6 I outline the research design, and discuss ideas and assumptions this choice is based on. In this

chapter I also present the industry from which my sample of firms are drawn, and lay out the empirical study.

In chapter 4 I develop dependent and independent variables on a theoretical level. Before these can be tested, these concepts need a useful empirical “*translation*” which is the theme of chapter 7. In chapter 8 the measuring model is developed and validated.

Data analysis and the major findings are presented in chapter 9. In chapter 10 the entire study is wrapped up, and the thesis is discussed in light of contributions and shortcomings.

#### **1.4 Contribution of Thesis**

The aim of this kind of research should be to give contributions both to advance theory in the relevant field, improve empirical methods, give practical implications that are useful for managers, and give directions as to how other researchers can go on extending the perspective further.

The theoretical contribution is first on developing the concept of strategic flexibility by looking at dimensions of the construct and the constructs that are associated with these dimensions. Within the alliance literature flexibility has been studied on the dyadic level, as one dimension, but no one has before looked at flexibility effects through several dimensions. Additionally, this study gives insight into the value of alliances. There has been a lack of longitudinal studies in the alliance field (Parkhe 1993a, Gulati 1998). This study aims at increasing our understanding on how alliances evolve, and how this evolution affects firm strategic responses.

Second, the study may have managerial implications. Learning how firms may increase their responses through alliances may give useful information when managers choose and design these. Third, in this thesis I start to operationalize concepts that have not been tested empirically before. This process of learning about different empirical indicators and their

internal consistency and direction, increase our knowledge on how to build better measurement instruments within this area.

## **1.5 Chapter Summary**

This thesis focuses on how an alliance may affect *strategic flexibility*. Studies of alliances and strategic flexibility propose that alliances may have flexibility effects, but what specifically these effects are and under what investment conditions we expect to find these effects, seem unclear. The intent of this thesis is to try to establish the link between alliance involvement and strategic flexibility to understand how an alliance may facilitate and constrain flexibility, cross sectionally and over time. Since strategic flexibility closely linked to uncertainty, I also want to see if there is a link between involvement and uncertainty. That is, it seems reasonable to assume that firms will try to develop alliances that increase their overall flexibility when uncertainty is high. If that means less involvement, we should expect to find this connection.

## 2. Strategic Flexibility

The focus in this chapter is on dimensions of strategic flexibility. Concerns with strategic flexibility may apply to many activities and organizational levels within the firm. Identifying all these levels and resources are outside the manageable scope of this thesis. The focus in this part of the thesis is on finding useful dimensions of strategic flexibility based on previous research.

I start the chapter by looking at assumptions in most perspectives on strategic flexibility. Thereafter I look at four broad categories of flexibility that are presented because they often act as building blocks in approaches to strategic flexibility, and from these I extract some common factors or dimensions. Next, three perspectives of strategic flexibility are presented and compared, and the dimensions are discussed further. The aim of the chapter is to learn how strategic flexibility is understood, and come up with some key dimensions of this concept.

### 2.1 STRATEGIC FLEXIBILITY: Main Assumptions

The concept of strategy has been defined in various ways. Quinn (1995:5) defines strategy as a *“pattern or plan that integrates an organizations major goals, policies and action sequences into a cohesive whole, .....based on relative internal competencies and anticipated changes in the environment.....* One influential line of thinking originated by Andrews (1971) who defines strategy as the most efficient alignment between the functional areas of the company and threats and opportunities from the environment (Montgomery and Porter 1991). This process of strategy becomes more difficult when outcomes and distributions that are unavoidable and not known, could be expected (Collis 1992). In this situation, there is a need for an ability to respond differently, or to have flexibility.

My Oxford American Dictionary (1982) defines flexibility as 1) *Ability to bend easily without breaking* and 2) *Adaptable, able to be changed to suit circumstances*. A quick search on ABI/Inform database shows that many different *types* of flexibility have been studied, and often, the various types consist of different *dimensions*. If we concentrate on *strategic*

*flexibility*, there are differences in definitions, but also some basic similarities. Most definitions of strategic flexibility involve a *firm's alignment to changing environmental conditions* (Evans 1991; Sanchez 1993; Sanchez 1995; Volberda 1996) *without too much cost, time, effort and organizational disruption* (Aggarwal 1995). Thus, the basic assumptions seem to be that: Strategic flexibility is a concept relevant on the firm level of analysis, describing a firm's interactions with its environment. Strategic flexibility comes into play, as the firms must make plans under conditions that could change. Thus, strategic flexibility has value under conditions of uncertainty. The choices firms are allowed to choose from to make new responses depend on the previous strategic choices embedded in organizational structures or options firms have developed and the ability to implement these in the firm (Volberda 1996; 1998). The concepts of environments and uncertainty are treated more thoroughly in the next chapter.

Most authors see strategic flexibility as a function of different types of flexibility in particular activities or levels of the firm (Evans 1991; Sanchez 1993; 1995; Aaker and Mascarenhas 1984), or as one type of flexibility related to other types of firm flexibility (Harrigan 1985; Volberda 1996). Before we go on to perspectives on strategic flexibility, it is useful to take a look at some of the types of flexibility studied within firms. I have chosen to look at resource flexibility, technology flexibility, organization flexibility and labor flexibility as four broad categories that represent four areas of flexibility studies related to the firm.

In the following discussion there are some other types of flexibility that are excluded. One type concerns the individual level of analysis, as some individuals due to personal factors or background may be more willing to adapt and change than others (Eisenhardt 1990; Upton 1995) Furthermore, flexibility may be a cultural indicator, as some cultures are more receptive to change than others (Volberda 1996). An additional category of flexibility may be termed "*environmental flexibility*" describing how firms can impact environments so that changes do not happen, or that changes that happen are more favorable to the firm. Pfeffer and Salancik (1978) argue that dependency of an outside actor may be reduced by developing alternatives, diversifying into different lines of business, filing antitrust suits, or acquire control by cooperating or merging. The environmental flexibility perspective was not included in this thesis, although this is clearly a field where alliances could make an impact on flexibility.



There are two reasons for this exclusion. First, this dimension of flexibility is not central within the mainstream literature on flexibility. In my review, only Volberda (1996) suggests strategies like use of market power and engaging in political activities to increase strategic flexibility. One problem with this dimension is the closeness to the concept of power. Whereas the two in most definitions are clearly distinguishable, in the environmental flexibility idea the two concepts dangerously converge. Including this type would thus extend this thesis greatly. Second, conditions that decrease environmental dependency are probably as dependent on industrial structures, like governmental regulations, as on specific alliance conditions. That is, it is not so much characteristics of the alliance that increase flexibility, but what role the firm together with the alliance partner plays within the industry. Adding this dimension would require a whole new set of independent variables that also would extend the thesis scope.

These additional elements of flexibility could extend the four broad types, and they clearly do belong in a “*total perspective of firm flexibility*”. They are left out here for two reasons. First, there is a need to limit the scope of the thesis, and second, they seem to play the least important role in the approaches to strategic flexibility that are discussed next.

## **2.2 FLEXIBILITY: Four Broad Categorical Types**

### **2.2.1 Resource Flexibility**

*In this category, what is flexible is the resource. When resources are flexible, they have many alternative applications, and the switching cost is low between applications (Sanchez 1995).*

A resource may be physical, human, relational or financial (Collis and Montgomery 1995), and vary from tangible to intangible (Itami 1987). By separating between state and control variables, Winter (1987) describes how some resources are locked in for some time until they can be changed. Certain investments will for example tie the firm to a line of business for a period of time until the investment has paid off, or new equipment can be sourced. *Flexible resources* are those that have a short lock-in time.

Another set of flexible resources is *slack resources* (Cyert and March 1963) as they may serve as a buffer against environmental changes. Thus, having employees with unused resources or financial reserves may be useful in times when environmental demands places excess claims on firms. Evans (1991) argues, however, that the concept of slack is only compatible with flexibility if it implies *liquidity*. Liquidity is described as an asset that can be converted into some alternative form of wealth with minimal switching costs.

Related to the term flexible resources are Powell's (1987) concept of *fungible knowledge* and Prahalad and Hamel's (1990) term *core competence*. Both concepts point to resources that once acquired give directions for many alternative uses. One example is brand name, like Disney, that not only sells movies, but also clothes, toys and household articles. This idea is close to the idea of related diversification. Montgomery and Hariharan (1991) argue for example that resources endowed by the firm drive diversification, pointing to resources that can be applied within several industries. Leonard-Barton (1992) warns however, that core competencies are not necessarily flexible, they can also create rigidities. This idea relates to the tension between performance and renewal (Doz 1993), or static and dynamic (Ghemawat and Costa 1993) or exploitative and explorative (Lewinthal and March 1993). These ideas reflect the tension between short term gains directed towards specific uses, versus putting resources in uses that "*reduce medium to short term efficiency, but allow competencies to be less path dependent, and thus less vulnerable to changes in technology or market linkages*" (Doz 1993:5)". Consequently, there seem to be a distinction between Prahalad and Hamel's (1990) initial argument, and the definition of core competencies as equal to strategic advantage. The first is always flexible, whereas the second may often not be.

### 2.2.2 Technology Flexibility

*This type of flexibility is concerned with the technology, or the operational manner in which products are put together and produced. Generally, flexibility is described along dimensions of range and mobility (Aggarwal 1995)*

The revolution in technology of the last decades has effected firm choices greatly (Browne et al. 1984; Gerwin 1989). Flexibility is increased as the ability to design a variety of production choices and mixes increase (scope/mix flexibility), as replacement of one type of production with another is easier (speed flexibility) and as it is possible to vary volume of production with no detrimental effects on efficiency and quality (Volume flexibility). Flexible management systems (FMS) and just-in-time systems (JIT) incorporate both product and process dimensions focusing on flexibility in output, machines, operation, product, process, routing and expansion (Browne et al. 1984).

Within this area there are several empirical studies. Richardson (1996) looked at fashion apparel firms that by use of IT technology shortened the manufacturing cycle, reduced inventory and allowed manufacturing response in the middle of the season.

Suarez et. al (1995) included 31 printed circuit board plants in their study and looked at volume, mix and product flexibility. They found that investments in flexible technologies are dependent on the complexity of the technology, demand conditions, and on the firms desire to control output. Fiegenbaum and Karnani (1991) looked at output flexibility in small and large firms, and found that smaller firms generally varied their volume more. Upton (1995) studied flexibility in 61 factories that manufactured fine paper. He defined flexibility as range and mobility, or access to a broad scope of resources, and the speed with which these could be changed. He found no correlation between the two concepts, I.e., there were no genuinely flexible factories. This finding was also supported by Suarez et. al (1995) who argue that firms may be “..more flexible in one area and less in another” (p. 35), i.e. that factors supporting one type of flexibility did not support another. Upton (1995) and Suarez et. al (1995) also agree on another matter; despite the popularity of flexible technologies, flexibility has much to do with non-technology factors like worker involvement and management.

Both Volberda (1996) and Aggarwal (1995) see technology-based flexibility as operational in the sense that it relates to the volume and mix of activities rather than the kinds of activities. In this sense, flexibility relates to known variations rather than unexpected shifts.

### 2.2.3 Organization Flexibility

*In this category, what are flexible are the organizational arrangements, that are the way people, processes and tasks are combined and the rules by which they are governed.*

From organizational theory there has been an evolution of organizational forms through this century (Miles and Snow 1992), and it seems as emergence of the different forms through time are related to a growing concern with flexibility. The *functional form* dominated the early decades of this century. This form is mainly directed towards mass production in stable environments, and was followed by the divisionalized form in the 40-50ies (Chandler 1990). As firms established separate divisions, based on products or markets, their dependency on one business line diminished. Kogut (1985) argues that this form of «*corporate flexibility*» exist to the extent that the head-office balances corporate risks.

In the 60ties and 70ties the *matrix* form evolved, allowing technical and professional personnel to move back and forth between different projects. In the same time period, Burns and Stalker (1961) introduced the distinction between organic and mechanistic groups, where the latter represent rigid work divisions of the functionalistic structure, and organic groups denote loosely connected groups highly responsive to external changes.

The fourth structure Miles and Snow (1992) term the *network organization*<sup>1</sup>, an arrangement that combines the assets of several independent firms to form a complete functional chain. Baker (1992:398) argues that «*a network organization can flexibly construct a unique set of internal and external linkages for each unique project, - it is designed to handle tasks and environments that demand flexibility and adaptability*». Eccles and Crane (1987) describe in an empirical study how volatility and specifications of orders require new and different

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<sup>1</sup> Nohria (1992) argues that all organizations can properly be viewed as networks, thus the term is misleading. In Miles and Snow's typology, however, the term denotes a distinct structure, where few functions are left within the borders of the firm, and the rest are performed by other actors.

product packages to be designed in investment banks. Ties are never constant, but are allowed to increase or decrease at various rates. Similar ideas are represented in the terms “*virtual organizations*” (Hedberg 1997) and “*virtual teams*” (Lipnack and Stamps 1997), where people work together “*reaching across time, space and organizations*”. Miles et al. (1997) gives an even further extension in the term *cellular form*, where the total organization is composed of cells, each of which has an individual level of responsibility needing to link to partners to perform its functions.

Other flexible forms include Mintzberg’s *adhocracies* (1979) dictating that employees are engaged in varied, non-repetitive and challenging jobs, thus, they are able to engage in individual responses and open to reorganizations. A similar term is Piore and Sabel’s (1984) craft organization. They maintain that networks of workers, with a broad knowledge of their craft, are better adapted to today’s changing conditions, than traditional bureaucracies. As an example they point to the garment and pottery districts of northern-Italy (Lazerson 1995).

#### 2.2.4 Labor Flexibility

*In this category, what is flexible is the use of labor. Indicators of a flexible labor force are increasing part-time work and overtime, fewer constraints on employers engaging and dismissing workers, and greater functional flexibility within firms (allocating labor between different parts of the work process).*

Atkinson (1985) documented in 1985 how British employers searched for flexibility to create the “*flexible firm*”. Under conditions of increasing uncertainty he observed that managers separated their workforce into a core group, conducting key activities, and surrounding secondary groups, performing periphery tasks. The core workers had greater employment security, but were required to be *functionally flexible*, or able to redefine work tasks, redeploy resources, and redefine relationships with surrounding actors and activities. The peripheral workers had a less secure position with the firm and provided *numerical flexibility*, or ability of the firm to vary volume or total working hours.<sup>2</sup>

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<sup>2</sup> Atkinson later added to additional dimensions of flexibility; *distancing flexibility*, or the replacement of employment contracts with commercial contracts, and *pay flexibility*, defined as the ability to adjust pay

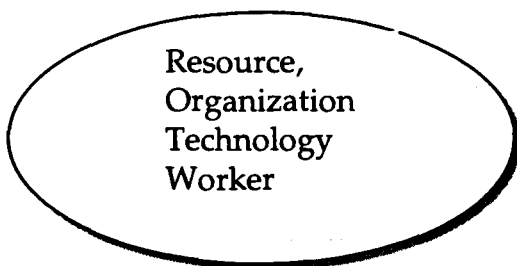
One trend widely documented in the 1980s and 1990s, is outsourcing (Harrison 1994).

Outsourcing refers to a core resource focus, leaving peripheral functions to other firms.

Harrison (1994) proposes that outsourcing may give the firm increased numerical flexibility as the firm no longer is the responsible employer to all employees in the value chain.

## 2.2.5 Summary and Discussion

In this presentation I have given a broad overview over some of the approaches to types of flexibility in firms. The four broad types are interdependent, as for example labor can be viewed as a human resource, and functional flexibility clearly is close to resource flexibility. The idea of numerical flexibility also agrees closely with the idea of volume flexibility, as both discuss the ability to vary overall activities in the firm. Consequently, we can see several common flexibility ideas in these approaches. For example regarding types and volume of a unit. Whether the unit is a worker, a resource, an organization or a technology, the unit seems to be more flexible if it can vary its overall volume or activity level. The unit is also more flexible the more application areas it can be put towards. Another general dimension of flexibility seen from these approaches seems to be that the unit is more flexible if it has alternatives. Hence, we see that there are at least three common dimensions present in these approaches:



A unit is flexible if:

- Its activity level can vary
- It can be put to use in many different applications
- It has or creates alternatives

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structures to encourage functional flexibility, match market rates for scarce skills, and reward individual effort (Farnham 1997).

We have now looked at approaches to flexibility looking at different sub areas within the firm. In the next section we will look at approaches to firm flexibility or strategic flexibility, denoting the overall flexibility of the firm to make strategic responses.

## **2.3 STRATEGIC FLEXIBILITY: Three approaches**

In my search through the literature on strategic flexibility, I have identified three main approaches: Strategic flexibility as maneuvers strategic flexibility as repositioning, and strategic flexibility as options. All approaches in some ways point to dimensions that increase the responses available to firms.

### **2. 3.1 Strategic Flexibility as Maneuvers**

*Evans (1991) defines strategic flexibility as an expedient capability for managing capricious settings.<sup>3</sup> Evans` main conclusion is that strategic flexibility is a polymorphous concept, and that strategic flexibility is the ability to use maneuvers both separately and in combination.*

Evans (1991) refers to studies of flexibility from as early as 1937 from the fields of economics, finance, military, and strategy. Based on three field studies of small and large technology firms, Evans (1991) comes to understand flexibility as a concept that has a number of different meanings in various contexts. Terms related to flexibility are *adaptability* (repositioning to deal with a new environment), *agility* (ability to move rapidly), and *versatility* (able to do different things and apply different capabilities depending on the needs of the organization), *robustness* (ability to absorb, deflect, or endure the impacts of unanticipated changes), *liquidity* (assets that readily can be turned into alternative forms of wealth with minimal switching costs) and *resilience* (the tendency to rebound or recoil, showing recuperative power, and the capability to withstand shocks without permanent damage and rupture). Using time and nature of decisions as dimensions, Evans develops four types of flexible "maneuvers":

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<sup>3</sup> Strategic flexibility enables a course of action to be modified in accordance with an encountered situation that may capriciously deviate from prior antecedents (Evans, 1991:69)

	Ex Ante	Ex Post
Offensive	Preemptive <i>Agility, Versatility</i>	Exploitive <i>Liquidity, Elasticity</i>
Defensive	Protective <i>Robustness, Hedging</i>	Corrective <i>Corrigibility, Resilience</i>

**Figure 2.1: Four Maneuvers of Strategic Flexibility (Evans 1991)**

The maneuvers discussed in figure 2.1 involve elements of flexibility dimensions discussed in section 2.2.5 as versatility, liquidity and elasticity point to flexibility in terms of more areas of applications, robustness points to enduring different activity levels, and hedging points to having various alternatives.

Figure 2.1 does not present mutually exclusive strategies firms must choose between. On the contrary, as Bahrami (1992:36) points out: *"The concept of flexibility, in an organizational context, refers to the ability to precipitate intentional changes, to continuously respond to unanticipated changes, and to adjust to the unexpected consequences of predictable changes"*. Evans (1991:85) agrees that *"being strategically flexible is not just a question of selectively deploying any one of the four types of maneuver. The key challenge is to develop the capability and deploy available assets to execute swiftly all four types of maneuver, individually or collectively, depending on the environmental contingencies and stakeholder preferences at play at a given time."*

#### Contributions from the Maneuvers Perspective

Evans' (1991) contribution is seeing the flexibility concept as ability to take action in different ways, typically to align internal structures to prepare for or adapt to external pressures. In his perspective, strategic flexibility both includes reacting to smaller changes as well as restructuring all major activities as a response to major shocks. Strategic flexibility is seen as multidimensional, in that it has *"a number of different meanings in different contexts"* (p. 73).

Viewing flexibility in an anticipatory or reactive sense is interesting, but highly theoretical in situations where environmental changes fail to have a clear-cut start or ending point. Evans' idea that the firm has capabilities to develop all four maneuvers simultaneously may also be

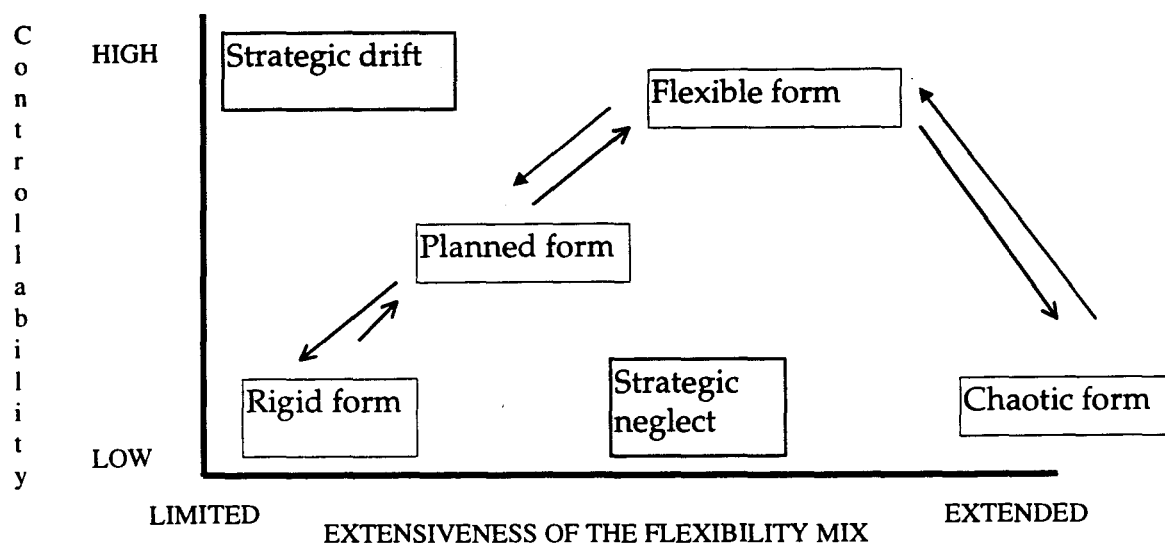


problematic. Consider, for example, a firm wanting to be agile, or in Evans' words « *...inflict a surprise on competitors* » (p.78). It seems reasonable that this action requires considerable investments in skills over a period of time, and that they may conflict with the resource requirements necessary to hedge or plan for adjustments after the change has taken place. Finally, Evans (1991) is vague describing implications maneuvers have on organizational structures, or what practical steps firms could take to gain increased ability to maneuver.

### 2.3.2 Strategic Flexibility as Repositioning

*Harrigan (1985) and Volberda (1996, 1998) see strategic flexibility as relevant in situations where management have to change its game plans, dismantle its current strategies, apply new technologies or fundamentally renew its products. Harrigan (1985) bases her insight on survey data from 192 firms, while Volberda's insight is conceptual. The main conclusions from this approach are that there are different types of flexibility, and strategic flexibility is only appropriate in situations characterized by very high uncertainty.*

Whereas Evans (1991) defines strategic flexibility in terms of small and large scale maneuvers, what we may term the positioning approach sees strategic flexibility as only a large-scale maneuver. Strategic flexibility depends on the entry and exit barriers the firm experiences in the position it occupies and would like enter (Harrigan 1985). Volberda (1996) separates between *Operational, Structural and Strategic Flexibility*, and argues normatively that firms should apply an appropriate mix between these types. Operational flexibility consists of routine capabilities, and promotes rapid responses to changes that are familiar. This dimension of flexibility should dominate the flexibility mix when the environment is dynamic or complex, but predictable. Structural flexibility concerns the ability of managers to adapt the firm in an evolutionary way, for example by the use of teams and job enlargements. As the environment becomes more uncertain, this type of flexibility gradually should increase. Strategic flexibility denotes the ability of the firm to fundamentally renew its strategies. This type of flexibility is mainly applied in hypercompetitive environments when the organization must be partially or completely transformed. Volberda (1996) places these typologies within different environmental conditions, and see a mix of structural and strategic flexibility as most effective when uncertainty is high.



Natural trajectory of revitalization       $\Rightarrow$   
 Natural trajectory of revitalization       $\Rightarrow$

**Figure 2.2: A Typology of Alternative Flexible Forms (Volberda 1996).**

The rigid form has a limited flexibility mix, and small choice and variation possibilities. The planned form also has a limited flexibility mix, but flexibility is incorporated within specific routines. As long as no unforeseen events take place, this form can cope with smaller changes. If unforeseen changes occur, this form is unable to handle these, inertia sets in and a situation of “*strategic drift*” occurs. The flexible form is dominated by strategic and structural flexibility and is able to cope with changes without losing its distinctiveness. One example of this form is social networks. Chaotic forms have a great flexibility mix, but lack a distinct technology, administrative structures, and a shared culture. Examples include Burgelman’s study of new ventures (1983) where the range of possible procedures is great, but the firm has no clear strategy, and is often unable to make decisions. The trajectory from chaotic to rigid corresponds with the idea that organizations become less changeable as they age (Rumelt 1987). The reverse trajectory, from rigid -chaotic, is seen in dramatic firm changes.

Concerning the previously identified flexibility dimensions (section 2.2.5) being able to vary the volume and develop alternatives are seen in the operational and structural forms, whereas the idea of multiuse units is mostly seen in the adaptive and strategic forms. One example given is creating new product/market combinations, implying the ability to innovate. This view clearly sees these dimensions as alternative responses appropriate in different situations, and does not suggest any further connection between them.

### Contributions from the Repositioning Perspective

The positioning perspective is important as it connects different responses with different environmental claims, and thereby proposes that different responses are appropriate in different external situations. Taken to the extreme, strategic flexibility is only viable under conditions of hyper-competition, or situations where the environment is fundamentally unpredictable, dynamic and complex (D'Àveni 1994). Thus, the concept of strategic flexibility would only be applicable to a limited number of firms in a limited number of situations. In my view, the gap between the planned and the flexible form is great, as external pressures may cause needs for changes that are significant, although do not require total reorganizations. Consequently, the concept of strategic flexibility can also usefully include these situations as flexibility responses directed towards temporary or partial reorganizations also can be strategic. In my view, the concept of strategic flexibility should cover a wider range of situations, and also include responses that are neither routine nor total reorganizations.

### 2.3.3 Strategic Flexibility as Options

*I have chosen to place several writers on flexibility in this section, as their main objective is to describe how investments in one point in time give firms opportunities to change at another point in time. The first part of this section covers insights that look at certain investments giving increasing choice of flexibility at a later stage. The second section represented mainly by Sanchez (1993; 1995; Sanchez and Mahoney 1996), and his total strategic flexibility/modular concept. Sanchez argues that strategic flexibility depends on a minimum of investments in different types of flexibility, whereas writers in the first section see flexibility as obtained through single dimensions or see different dimensions as alternatives.*

In the economics and finance literature, options are either classified as financial options or real options (Sanchez 1993). *Financial options* are rights to buy, sell, or exchange claims on traded financial securities like stocks and bonds. *Real options* are defined by Myers (1977) as the firm's opportunities for growth. Thus, real options not only denote financial instruments, but also include possibilities for growth inherent in the physical and human resources of the firm (Bowman and Hurry 1993; Kogut and Kulatilaka 1994). Investments in certain physical

or human assets at point t1 in time, thus gives the firm an increased array of responses at point t2.

### Flexibility as Options: Looking at dimensions

*In this part of the Options approach, I begin by looking at two “older”, but yet influential perspectives that discuss different types of flexibility. These contributions do not specifically discuss options as such, although Aaker and Mascarenhas (1984) position their perspective in terms of options. Both Ansoff (1965) and Aaker and Mascarenhas (1984) see strategic flexibility in terms of different dimensions in an additive perspective. That is, the firm can pursue one dimension or several dimensions. The section continues with what may be termed as a clearer “investment approach”, i.e. strategy is viewed as an investment, and strategic flexibility is obtained as firms invest in options to delay commitment (Ghemawat 1991), or a mix of delay and hedging (Collis 1992).*

One of the early writers on strategic flexibility is Ansoff (1965). He presents two types of flexibility: *External* and *internal*.<sup>4</sup> External flexibility is described by “*the maxim of not putting all of one’s eggs into one basket*” (p. 65). External flexibility may be either *defensive* or *aggressive*. Defensive flexibility is seen as number of independent customers, independent markets/market segments, and independent technologies, corresponding to the dimension of alternatives (see section 2.2.5). Aggressive flexibility can be measured as participation in areas of technology that are in ferment, stressing the innovative aspect of flexible resources. If the firm is innovative, focusing on research and development activities, it is flexible because “*even if the firm does not make the actual breakthrough, with a strong and responsive research and development organization it can exploit expeditiously and intelligently breakthroughs made by others*” (p. 66).

Aaker and Mascarenhas (1984) build on Ansoff (1965) and argue that there are three alternative approaches to strategic flexibility, and that each firm should choose between these after having identified environmental changes. *The diversified approach* involves developing alternatives, regarding products, markets channels of distribution and technologies. The second approach is *investment in underused resources*, involving liquidity, slack and

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<sup>4</sup> Internal flexibility is seen as a cushion towards the external event, represented by financial liquidity.

buffering, while the third approach; *reducing commitment* involve lowering exit barriers by designing activities so that they easily can be reduced and abandoned.

Collis (1992) building on similar ideas as Wernerfeldt and Karnani (1987), looks at investments under uncertainty. He argues that firms obtain flexibility in two ways. First, flexibility increases if investment decisions can be delayed until more events unfold. Secondly, flexibility increases if alternative options are developed by hedging. The more independent alternatives cover probable outcomes, the more likely is the firm to bet on the right horse.

Ghemawat (1991) sees flexibility as the value of recourse, given by revision possibilities of each option. The flexibility value of a strategic option is described as «*The extra value expected from being able to take advantage of revision possibilities it offers as opposed to persisting with it through thick and thin*» (p. 116). Thus, certain revision stages are put into the process as options to consider other courses of action. In his book, Ghemawat (1991) also mentions situations that may cause strategic *inflexibility*, highlighting *lock-in*, *lock-out*, *lags* and *inertia*. That is, investments tied to a specific situation (lock-in), foregone opportunities (lock-out), time use in recognition, decision, funding, planning and implementation (lags), and personality issues refusing change (inertia) reduce the strategic flexibility of firms.

### Strategic Flexibility as Options: Looking at the entire Strategy

*In this section I have chosen to separate between two different sets of contributions, the first represented by the strategy-as-options perspective (Bowman and Hurry 1993; Kogut and Kulatilaka 1994), and the second represented by the strategic options perspective (Sanchez 1993; Sanchez 1995). The contribution of both approaches is a totally new way of thinking about strategy, adding a more dynamic perspective (Foss 1997)*

In 1993, Bowman and Hurry introduced the *strategy-as-options perspective*. This perspective builds on earlier insights seeing strategy as an incremental process of resource-investment choices (Myers 1977). Although formal options are absent, the argument is that similar patterns of resource investments occur. Both Bowman and Hurry (1993) and Foss (1997) argue that options theory bring a dynamic element into “*The theory of the firm*”, giving new and complementary predictions to theories like Transaction Cost Economics (Williamson

1985) and Resource Based Theories (Barney 1991; Penrose 1959). Foss (1997) suggests that based on an options perspective, internalization of activities are based on 1) inputs that are difficult to obtain through traditional markets, and 2) are capable of generating superior option value to firms.

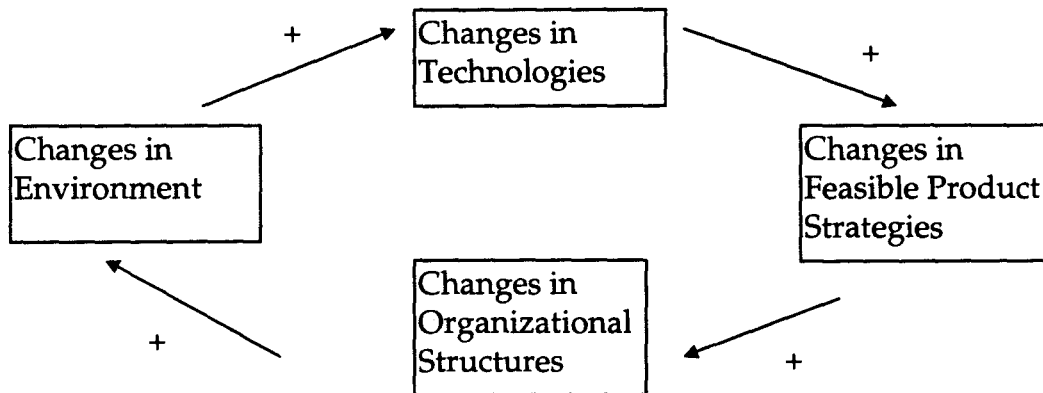
Regarding types of options available to firms Bowman and Hurry (1987) argue that the collection of resources in firms contain many *shadow options*, or options awaiting recognition. As options are recognized as real, they may contain *incremental responses*, or supporting the established strategy or be *flexible responses*, when the investment stream is shifted (Sharp 1991). Both incremental and flexible options are characterized as strategic.

Kogut and Kulatilaka (1994) further discuss types of options available in terms of platform investments. They argue that the value of proactive options that must be designed and planned (platform investments) are determined by the same factors that determine the value of financial investments, the problem lies in the more messy measurement of value. Thus, many options are undervalued. Platform investments include *operating flexibility* (speed and scope flexibility) and *growth options* (rights to expand in the future). The growth option in this term relates to Bowman and Hurrys (1987) flexibility option as the point is a shift of focus, whereas incremental and operational options describe choices within the present strategy.

Sanchez (1993) also sees strategic options as a totally new way of thinking about strategy, but takes another a somewhat different approach. He defines *strategic options* as the firm's product options and their associated timing and implementation options. Thus, the more choices the firm has concerning *which* products to develop, produce and market, *when* to develop, produce and market, and *how* it will organize development, production and marketing, the better the firm is able to adapt to dynamic markets. Optimizing the strategic options then becomes the viable strategy firms should follow, that is, more flexibility is not always better as building flexibility through options depends on cost-utility considerations.

In his approach, Sanchez (1993, 1995) draws on extensive research focusing on resource, technology and organization flexibility. His point is, however, that the firm is not flexible if its resources are flexible, but its production technology and coordination structure is not.

*“Strategic flexibility, thus, depends jointly on the inherent on the resources available to the firm and on the firm’s flexibility in applying these to alternative courses of action.” (p. 138)*



**Figure 2.3: Systemic Relationships and Positive Feedback Among Technologies, Product Strategies, Organization Structures and Competitive Environments. (Sanchez, 1995)**

Sanchez has, together with Mahoney (1996) extended his early thoughts, arguing that strategic flexibility is obtained through *modularity* in both products designs and organizational designs. By standardizing component interfaces, they argue that management time and resources can be greatly reduced, and that learning is stimulated both within the different components, and in coordination between these.

#### Contributions from the Options Perspective

Several dimensions of strategic flexibility are discussed in the options perspective. Both Ansoff (1965) and Aaker and Mascarenhas (1984) see a unit as flexible if it is innovative, a line of thought that is also found in the “*growth*” and “*flexibility options*” (Bowman and Hurry 1993; Kogut and Kulatilaka 1994). Ability to exit is seen in investments taken gradually (Collis 1992; Ghemawat 1991), and flexibility through alternatives in hedging strategies and development of independent alternatives (Ansoff 1965; Collis 1992; Aaker and Mascarenhas 1984). Options to incrementally alter responses could be seen as volume of activity flexibility

although these alterations could also involve other aspects, like incrementally adding other responses.

Regarding whether dimensions are joined or pose as alternatives the different writers disagree. Ansoff (1965) and Aaker and Marcarenhas (1984) view strategic flexibility as consisting of various types that can be invested in jointly or separately. Collis (1992) and Ghemawat (1991) place strategic flexibility in connection to a single strategic investment. Bowman and Hurry (1993) see options in a path-dependence perspective, where previous choices are limiting and extending present responses. Sanchez (1995) sees options as dependent on joint investments in flexible resources, technologies and structures.

Bartlett (1993) critiques Sanchez' approach (1993) by pointing to problems of applying a financial concept, like options, to a largely human process. He argues that *«developing company-specific capabilities involve much more than simply acquiring and assembling different packages of inputs; it requires the development and management of complex linkages of various assets and resources through organizational routines that are particular to the specific application»* (p.296). He goes on to question the management culture in an organization where everything floats. Who gets motivated when their proposals are either *«.. shelved or shopped around, while their projects limp along in a netherworld of semi-commitment, waiting for product-market trends to become clear»* (p.267). In his direct reply to Bartlett, and in later articles, Sanchez (1993, 1996) argues that firms do commit to a strategy, but in the process of committing and sustaining the strategy, options have value. In the modular approach, management culture and organizational routines could be seen to develop within each module, although Sanchez does not specifically address this issue.



## 2.4 STRATEGIC FLEXIBILITY: SUMMARY AND DISCUSSION

### 2.4.1 SUMMARY: Connecting perspectives

Contributions within the three main approaches to strategic flexibility (SF) may be looked at in a 2x2 table:

	SF is one dimension	SF is a combination of several flexibility dimensions
Different types of flexibility <u>can be</u> combined	Ghemawat (1991)  Volberda (1996) Harrigan (1985)	Collis (1992),Ansoff, (1965) Evans (1991) Aaker & Mascarenhas (1984) Kogut and Kulatilaka (1994) Ansoff (1965)
Looks at types of flexibility that <u>must be</u> present to form SF		Sanchez, (1993, 1995, 1996)

**Table 2.1: Approaches to Strategic Flexibility**

This table summarizes some central contributions to strategic flexibility. In my understanding, the approaches differ as to what dimensions they choose to look at, and the manner in which they argue that these need to be combined to meet external threats. Ghemawat (1991) sees flexibility as the value to recourse, and both he and Collis (1992) look at investment decisions, although Collis more specifically defines different ways in which this recourse can take place. Volberda (1996), in line with Harrigan (1985) also views flexibility as one dimension, but introduces other dimensions of flexibility that strategic flexibility can be related to. Evans (1991) argues that the dimensions represent responses to different external threats, and dimensions should be combined to form the optimal menu. Ansoff (1965) and Aaker and Mascarenhas (1984) also introduce several dimensions that alone or in combination can form strategic flexibility. Sanchez (1995) on the other hand, maintains that a firm is not

flexible unless dimensions, represented by activities in the firm, are flexible. One could say that this discussion is not completely correct since Volberda in his approach includes many different levels of uncertainty, while Sanchez concentrates on high levels of uncertainty. Volberda (1996) does argue, however, that operational issues have less weight under conditions where Sanchez (1995) argues operational flexibility must be present. Consequently, we see that there are different ways in which firms increase their flexibility, but that writers disagree on what should be termed strategic flexibility, and also on whether dimensions of strategic flexibility should or must be combined or represent alternative responses.

#### **2.4.2 SUMMARY: Defining Strategic Flexibility**

Regarding the wide variety of possible external changes facing a firm we also may discuss whether we at one point in time could claim that a firm has a high level of potential strategic flexibility, since success of the response will depend on the nature of the actual change. It seems likely, however, that some firms may organize their activities in such a way that they are generally more likely to absorb and respond to changes, and it must be this general absorption potential we are looking for.

From these approaches to strategic flexibility in this chapter we see that strategic flexibility is a concept without a universal definition. This could be because "*Flexibility has been notoriously hard to conceptualize; what precisely should be flexible, and to what extent should flexibility obtain*" (Foss, 1997:11).

A definition is still needed, and I choose to look at strategic flexibility as the *responses available to firms*. The strategic responses depends on the ability of the firm to maneuver, as having prepared responses, or over time invested in options to respond, the firm can better meet external changes. The strategic responses also build on ability to reposition, as being able to enter, alternate or abandon positions increase the strategic responses available. The responses do not only, however, apply to situations in which a strategy must be totally reorganized, but also include limited responses. Two different responses may be dependent or

independent, and have different values depending on the external claims facing the firm. Hence, it is difficult to pinpoint an absolute strategic flexibility value for a firm. Based on these approaches it seems to me that a fruitful way of approaching strategic flexibility is to look for different responses available to the firm in terms of resources available and possibilities to build responses. This will not give an absolute value of the overall strategic flexibility in the firm, but will form a starting point regarding some issues that affect the overall ability of the firm to respond. Hence, in my study, strategic flexibility is seen as the overall strategic responses available to the firm involving all sub activities and processes in the firm necessary to form these responses. Consequently, forming a response could imply that many different types of flexibilities must be present (ref. Sanchez, 1995), but in situations of different types of uncertainty, these types of flexibility could have different importance (Volberda 1996). Which responses to form, how they relate to each other and the “total value” of strategic flexibility are seen as outside the scope of this thesis. In the following I will look at how alliances can contribute to affect the position of a firm to be strategically flexible or how alliances may affect the potential responses available to the firm.

#### 2.4.3 DISCUSSION: Dimensions of Strategic Flexibility

In section 2.2.5 I looked at some dimensions of flexibility discussed in relation to resources, workers, technology and organizations. I found common arguments across these approaches arguing that a unit (resource, worker, technology and organization) is more flexible if it:

1. Can be useful in different applications
2. Can vary its activity level
3. Has alternatives

If we take these arguments in to the firm setting and look at strategic responses, we may argue that the strategic flexibility of a firm increases if it can form responses that:

1. **Can cover more applications.** That is if the firm increases its ability to innovate so that it has available capacity in its firm to see new uses of existing resources or creating new

resources to form a larger variety of responses. Evans (1991) and Sanchez (1995) point to the flexibility of resources in a “*multi-use*” sense, while Volberda (1996) and Ansoff (1965) draw attention towards the innovation aspects of activities. I.e. the firm is more flexible if it is innovative, and is able to see new uses of resources.

2. **Are free of constraints.** The idea that activity level can vary implies that the firm is free to design responses without any constraints from activities the response covers. This dimension is especially mentioned in the maneuvers and reposition perspectives (Evans 1991; Harrigan 1985).
3. **Has alternatives.** If the firm is able to set up alternative responses it is able to juggle between different situations that may reduce its overall risk. This idea assumes that certain optional situations can be mapped out, and that alternative responses can be prepared for these situations. Aaker and Marcarenhas (1984) point, for example, to diversification of products, markets, technologies and distribution systems, Collis (1992) to hedging.

If we see these as three dimensions of flexibility, giving three strategic responses, we have a starting point of what is strategic flexibility, and what are dimensions of strategic flexibility that can be affected through an alliance. In the next chapter I will bring in the alliance, refining further which dimensions should be included in the final model.

The dimensions are, not necessarily positively correlated. Both Upton (1995) and Suarez et. al (1995) have suggested that dimensions do not correlate, which may suggest that dimensions may replace each other, and that there are different ways in which a firm could increase its flexibility. We must also be open to the possibility that the dimensions actually reduce each other, making this picture even more complex.

### 3. Characteristics of Alliances and Environments

In chapter two, I looked at dimensions of strategic flexibility, and tried to extract common ideas that in different theoretical approaches are important to strategic flexibility. In this chapter the focus is on the alliance, trying to understand characteristics of an alliance and which effects the alliance may have on a firm. One of these effects is expected to be strategic flexibility or changes as to the responses available to the firm. Finally, I will look into environments and uncertainty. As I stated in chapter 1, strategic flexibility is of value to the firm under conditions of uncertainty. It therefore seems important to include the notion of uncertainty into this study. In chapter four I will draw on the two theory chapters and develop theoretical constructs and variables. In chapter five I will tie these constructs together an overall research model, and hypothesize about their connections.

#### 3.1 Alliance Definition

Alliances represent a form of *tie* between two or more actors. My interest in studying this tie must rest on the belief that this tie has some relevance, i.e. that the actors are *interdependent*, that they are *channels* for material or immaterial resources, and offer *opportunities* or *constraints* on each other (Wasserman and Faust 1994).

The *actor*, having ties to others, may be an individual, a sub-unit, the entire firm, or even collectives of firms. Studies of ties between firms may involve just the *dyad* - or the relation between two independent actors, or a *triad*, when three partners are involved. Mostly, by alliances we think of two or three firms working together, but the term may also include cooperation within a larger *group* (or set of specified actors) or a *network* (a finite set of actors and the relation defined on them) (Wasserman and Faust 1994). Webster (1992:8) sees networks as complex, multi-faceted organization that result from multiple strategic alliances, usually combined with other forms of organization including divisions, and subsidiaries.

If we start by defining the area of interest as any relation between two or more firms, we find everything from mergers to one time spot transactions. Kanter (1994) is close to this idea, talking about *collaborative agreements* defining them as encompassing anything from fleeting

encounters to mergers. Van de Ven (1976) discusses *interorganizational relations* (IOR), defined as two or more organizations transacting resources. Oliver (1990) adds durability to this definition. Interorganizational relations are also defined as collectivities of actors simultaneously pursuing self-interest and collective goals (Reve and Stern 1986). Other closely related terms include *cooperative agreements and partnerships*, denoting firms that work together to attain some strategic objective (Harrigan 1988; Powell 1990). Borys and Jemison (1989) discuss *hybrids*, defining them as organizational arrangements that use resources and/or governance structures from more than one organization. Lorange and Roos (1992) define *strategic alliances* as organizational agreements between two separate partners, involving more interactions than simple market transactions, but less integration than internalized transactions. Their definition is similar to Williamson's (1991) concept of *hybrids*, seen as anything that is neither market nor an internal transaction. Following these contributions and Reve (1990), alliances may be placed anywhere on a dimension between market- like to organization- like organizational forms, arguing that it is the nature of the transaction rather than the form that decides the placement. Yoshino and Rangan (1995) goes further, arguing that to be a *strategic alliance*, three elements must be included. The two firms must remain independent subsequent to the formation of the alliance, partner firms must share the benefits of the alliance and control over the performance of assigned tasks, and partner firms must contribute on a continuing basis in one or more key strategic areas. Their definition includes contractual agreements like joint R&D, long term sourcing agreements, equity agreements like minority investments and non-subsidiary JVs, but exclude franchising, licensing, and JVs that are subsidiaries. The term strategic implies that the resources involved in the cooperation are central to the bottom line.

Gulati (1998:293) sees strategic alliances as voluntary arrangements between firms involving exchange, sharing, or co-developments of products, technologies, or services. They can occur as a result of a wide range of motives and goals, take on a variety of forms, and occur across vertical and horizontal boundaries. This definition is looser than Yoshino and Rangan (1995) but more insightful than Lorange and Roos (1992). Influenced by these definitions, I define an alliance as: *A durable, voluntary business arrangement between two firms involving exchange, sharing or codevelopment of products, technologies or services.*

The term durable implies that the arrangement is more than an arms length transaction between partners who meet fluctually. Business arrangement implies that the firms engage in transactions involving exchange, sharing or co-development of products, technologies or services. The scope of the transactions may vary, however, from involving many to few transactions. I am interested in relations between firms; i.e. on an interorganizational level of analysis. The definition implies that the firms voluntarily cooperate. The parties may have ownership interests in the alliance or in the partner firm, but these are minority interests requiring a cooperative relationship rather than one based on ownership. Within this definition alliances include a range of organizational forms between market-like to organization-like. Alliances in this definition do not need to be strategic. Whether the alliance is strategic or not, is seen as a variable indicating the level of investments in the relation.

### **3.2 Alliance Rationales and Developments over Time**

Through the last decades, reliance on alliances have become increasingly common (Badaracco 1991; Hagedoorn 1993; Mowery 1988), and issues of cooperation have gradually changed from simple transactions to complex, developmental issues involving many firm functions (Bartlett and Ghoshal 1992; Mowery 1988). Additionally, alliances are becoming more strategic and necessary for innovation (Doz and Hamel 1998). A quick look at major journals and book titles, show that words like *cooperation*, *alliances* and *networks* have been much discussed the last decade. Rationales of alliances are discussed extensively (Alter and Hage 1993; Contractor and Lorange 1988; Lorange and Roos 1992), and include economic, political/legal and information rationales. *Economic* rationales are obtained through scale and scope advantages, access to complementary technology and vertical quasi-integration. Risk reduction is obtained through diversification into a product portfolio, enabling faster entry and payback, and subadditivity (the cost of the partnership being less than the cost of investment by each firm alone). *Political and legal barriers* include blocking competition and increasing market power, and acceptance of authorities in a foreign environment (Hladik 1988). Additionally, the alliance may be seen as *an information and resource flow* between the firm and the environment, both providing support and in some cases giving legitimacy.

However, alliances also have their drawbacks. Instead of improving activities of the firm, they end up deteriorating them. One reason is the *complexity* of aligning people, products and processes from two organizations to work as one. Bartlett and Goshal (1992) propose that cross-holdings and the number and scope of activities must be organized and governed, creating challenges for the partners to make the alliance successful. Kanter (1994:101) argues that «...*potential partners must find compatibility in legacy, philosophy, and desires, because specific opportunities are often short lived and will not sustain a long-term relationship*». This process of alignment is difficult and there seems to many traps associated with it. Another cause of failure is the *lack of control* (Hladik 1988; Moxon, Roehl, and Truitt 1988). Since alliances involve two or more independent partners, the firm never controls the activities included in the alliance, but is dependent on the other firm. A third cause of failure is the *risk of leakage*. By letting an independent outside partner into the organization, there is always a risk that important information and knowledge gets out, undermining own advantages (Hladik 1988; Moxon, Roehl, and Truitt 1988; Reich and Mankin 1986). Thus, even if intentions are good, alliances occasionally fail their initial charter, and are accompanied by problems of instability, poor performance, and collapse (Porter and Fuller 1986). Other causes of failures include *conflicts*, (Hladik 1988; Pfeffer and Salancik 1978), *delays* in solutions due to problems of coordination (Moxon, Roehl, and Truitt 1988), and being *associated* with a failure (Alter and Hage 1993).

Another key problem with alliances is their *transitional nature*. Even if they often go on for years, there is always uncertainty tied to the partners' strategies, and how much should safely be invested in the alliance. Porter and Fuller (1986) even propose that the transitional nature of alliances make them destined to fail. In this view, alliances tend to ensure mediocrity, not create world leadership. Bleeke and Ernst (1993) set the average age of a joint venture at 7 years. Kogut (1988) finds that the instability rate of alliances peak at 5-6 years, and argues that motivation factors often turn into termination factors due to environmental changes. Termination may be a result of failure of the original purpose, but may also denote successful completion (Hamel 1991). Other reasons for termination include initial lack of fit and commitment (Doz 1996), problems to change and evolve (Bleeke and Ernst 1993; Doz and Hamel 1998), internal strategic changes (Kogut 1991), change of bargaining position (Inkpen and Beamish 1997), contracting costs (Pearce 1997) and conflicts (Alter and Hage 1993). There may also be external causes to termination of the alliance pointing to changes that



makes the alliance obsolete. Firm's strategic needs may for example change (Kogut 1988), or other opportunities come along that need other arrangements (Serapio and Cascio 1996).

Research in alliances has mostly focused on establishing and structuring the alliance with less emphasis on later phases (Parkhe 1993). Exceptions include Ring and Van de Ven's (1994) treatment of formal, legal, and informal social-psychological processes in alliances, Hamel's (1991) study of inter-party learning, and Doz' (1996) study of the evolution of learning. Parkhe (1993) argues that there is a need for qualitative studies in this area that address evolutionary questions of the alliance. Doz (1996) study shows that some alliances undergo change processes than others, but we still know little of how alliances evolve, and what type of involvement is facilitating or restraining strategic flexibility.

In this section we have seen that alliances may improve firm conditions in various ways, both financially, politically, and resource and information-wise. Hence, through engaging in an alliance, the firm has the opportunity to improve its strategic choices. However, the alliance also has constraining effects, limiting ability to control decision processes and risk resource leakage.

### **3.3 Three Theories to Understand Alliance Relations**

To explore alliance relations further, I will rely on different bodies of literature. One perspective is Transaction Cost Economics (TCE) (Coase 1937; Williamson 1985), predicting that alliances as an organizational form is efficient under certain transaction characteristics. Hamel (1991) argues that perspectives like TCE may offer economic rationales on alliance issues, but fail to capture the dynamics that determines collaborative outcomes like learning and information transfer. At least two perspectives approach these issues in alliances. The International Marketing and Purchasing approach (IMP) sees alliances as a part of a larger network, where learning and information transfer are main concerns (Håkansson and Snehota 1995). This perspective seems to build on alliances as "*stable social systems*", where the development of a common understanding and rules seem to be important. Whereas the focus on Macneil's (1980) and Granovetter's (1985) studies is to demonstrate the existence of norms, the IMP perspective is more concerned with the effects of these social systems in terms of learning and innovation. Another approach is the Resource Based Theory (Barney 1986; Penrose 1959) including the Dynamic Capabilities perspective (Teece, Pisano, and Shuen

1997) where alliances can be viewed as sources of strategic information and learning (Grant and Baden-Fuller 1995; Inkpen 1998; Mowery, Oxley, and Silverman 1996). Table 3 gives a brief overview of the various perspectives:

	<b>TCE</b>	<b>IMP</b>	<b>RB</b>
Dependent variable/main focus	Economize on Transaction Cost	Learning/ Innovation	Development of unique resources
Main explanation factors	Match Transaction Characteristic with Organizational Form	Ability to develop long term bonds	Develop valuable, rare and non-imitable resources
Unit of Analysis	Transaction	Dyad and Network	Resources, Processes in relations
Seminal articles/books	(Coase 1937; Williamson 1975; Williamson 1985)	(Hagg and Johanson 1982; Håkansson 1982; Håkansson and Johanson 1988; Johanson and Mattson 1984)	(Barney 1991; Penrose 1959; Peteraf 1994; Teece and Pisano 1994)
Empirical Support	Series of quantitative and qualitative studies. Support for main hypotheses of asset specificity (Shelanski and Klein 1995)	Series of case studies looking at different aspects (Håkansson and Snehota 1995), support for external innovation (Håkansson 1982)	Resources vs diversification (Wernerfelt and Montgomery 1988) Resource transfer and learning (Grant and Baden-Fuller 1995; Mowery, Oxley, and Silverman 1996)

**Table 3.1 : Overview over Theoretical Approaches**

### 3.3.1 Transaction Cost Economics

Transaction cost economics (TCE) attends to issues of efficiency, and the unit of analysis is the transaction. The transaction is defined as the «*transference of a good or service across a technologically separable interface*» (Williamson, 1991:552). The focus of the theory is on transaction costs, defined as «*lubricants of the system*», different from other costs of production (Arrow 1969:48). Williamson (1985) argues that these costs both occur before and

after the transaction is set up, ex ante as costs of drafting, negotiating, and safeguarding an agreement, ex post as costs related to maladaptation, haggling, setup and running of dispute regulations, and bonding of effecting commitments. The main argument of the theory is to align transactions with the proper governance structures, in the most cost economizing way.

Underlying the theoretical rationalizing are behavioral assumptions of limited rationality and opportunism. The first of these implies man to aspire rationality, but only limitedly succeed (Simon 1947). Opportunism refers to «*calculated efforts to mislead, distort, disguise, obfuscate, or otherwise confuse*» (Williamson, 1985:47). Man does not necessarily always behave opportunistically, but as long as the opportunity exist, individuals could be expected to take advantages. The opportunity to take advantage in an ex post contract situation depends on the amount of asset specificity present in the transaction (John 1984).

In Williamson's model (1985) *uncertainty* is treated as one of the main transaction characteristics. Williamson separates between behavioral uncertainty and environmental uncertainty. Behavioral uncertainty is a problem because of limited rationality, not enabling partners in a dyad to spell out all contingencies. Behavioral uncertainty is not, however, a problem unless exogenous disturbances are experienced (p. 57-59). Furthermore, there is only a problem in situations of asset specificity, that is uncertainty "*does not alter...that.. non-specific transactions can be easily arranged by both parties. Matters change when asset specificity is introduced*" (1985:79). Uncertainty is further treated in the last section of this chapter.

When execution of the transaction necessitates asset specific investments, the market situation characterizing the ex ante bargaining, may ex post turn into a bilateral monopoly where one party is able to extract quasi rents (Klein, Crawford, and Alchian 1978). Quasi rent is defined as the value of an investment to the next best user. The appropriable part of the rent is the difference between the value for the current partner and the value of the investment for the second best user. Bounded rationality makes it difficult ex ante to foresee all contingencies and write complete contracts covering all opportunities that may arise ex post. When asset specificity characterizes the transaction, threats of opportunistic behavior may make transactions costs soar if the transaction is left in the market. If performed in-house, the threat

of opportunism is argued to be less, since one party controls all sides of the transaction, and nobody has the incentives to behave opportunistically.

Regarding flexibility, Williamson (1991:77) maintains that «*adaptability is the central problem of economic organization*». Under terms of external disturbances, he proposes two types of adaptations. First, economic actors adapt by responding independently to new economic parameters to maximize their profit or utility. This he calls *autonomy adaptation*, describing a situation in which alliance parties redesign all internal and external ties afresh for each small disturbance. Regarding other disturbances, Williamson (1991) suggests the need for complicated coordination performed internally, namely *coordinated adaptation*. When a change is demanded, the necessary actions are within the alliance.

High levels of asset specificity in a tie signal an ex post situation of dependence (Klein, Crawford, and Alchian 1978) suggesting preference for internal adaptation. Thus, asset specific investments represent one dimension of alliance involvement that suggests effects on the strategic flexibility of firms. One such effect seems to be opportunism. High levels of opportunism clearly limit the choices available to firms to change and reorganize the alliance relationship. Consequently all firm changes that depend on alliance changes are constrained.

### 3.3.2. The IMP approach and Approaches to Relational Norms

The International Marketing and Purchasing Approach (IMP) to inter-organizational relations is mainly associated with the IMP group in Sweden (Hagg and Johanson 1982; Håkansson 1982; Håkansson and Johanson 1988). Håkansson (1989) defines a network as consisting of companies linked together by the fact that they either produce or use complementary or competitive products. In this network, actors, resources and activities are used to describe the ongoing processes. The approach looks at competence building in a dynamic context i.e. the focus is on how relations establish, evolve and yield resources and opportunities for innovation and learning. The methodological approach is qualitative (Morgan and Smircich 1980) viewing interorganizational processes as complex and dynamic, and best studied in an approach to science that captures this richness, "*The context itself is conceived not as given*

*beforehand or predetermined, but as enacted, it cannot be assessed*", (Håkansson and Snehota 1995: 197).

A key idea in this approach is that successful alliances (those that learn/innovate) build mutually trusting relationships. *"Despite business relationships being essentially about business-specific behaviors ... the personal bonds and convictions that are always present play an important role in formation of a relationship. Machine-like relationships do not exist. Business relationships are generally built up very much as a social exchange process in which the individuals that take part become committed beyond strictly task content* (Håkansson & Snehota, 1995:10). This idea is consistent with Granovetter's concept of embeddedness (1985). Granovetter argues that economic action is socially situated and embedded in ongoing networks of personal relationships rather than being carried out by atomized actors.

The idea of social elements in economic exchange has received considerable attention the last decade. One issue has been whether social elements, like trust, have value within an economic context. Williamson (1993) is skeptic to the use of trust as he sees trust in a transactional context as only reductions in risk based on *"hard facts"*. Altruistic trust he argues, only takes place in close, personal relations that have little to do with business relations. Trust has, however, been found empirically to have impact on exchanges, both in terms of governing transactions (Bradach and Eccles 1989), and reducing risk (Gulati 1995; Macauley 1963; Nooteboom, Berger, and Noorderhaven 1997), which seem to justify this focus in alliance research.

Definitions of trust<sup>1</sup> focus on the expressions of intentions towards the partner. These expressions are based on different elements, like belonging to the same culture, industry or social group (Zucker 1986). Furthermore, these can result from the social investments in a

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<sup>1</sup> Authors on trust often separate between intentional and behavioral dimensions. Nooteboom et al (1997) see intentional trust as *"the subjective probability that one assigns to benevolent action by another group or group of agents"* (p. 311). Zucker (1986) for example describes how trust is based on certain features of the transacting partners (e.g. kinship, ethnicity), features of the society (institutional structure) or individual level features, like prior trading experiences. Thus, based on a set of information, the firm calculates the degree to which the other party is to be trusted. Behavioral trust, on the other hand, is seen as *"willingness to increase ones vulnerability."* (Nooteboom et. al. 1997: 311). This perspective sees trust as a faith in the moral integrity or goodwill of the other party (Ring and Ven 1994). Behavioral trust is based on intentional trust, but also includes a *"leap of faith"* beyond rational calculations, involving emotional dimensions (Lewis and Weigert 1985)

relationship over time, like Håkanson and Snehota suggests (1985), stressing the personal relations that develop between partners in an alliance. Macneil (1980) found that when two parties repeat transactions over time, norms evolve from issues related to the transaction, and take on expected behavior in the future. Norms are defined as “*A principle of right action binding upon the members of the group and serving to guide, control, or regulate proper and acceptable behavior*” (p. 38). Thus, personal involvement and norms could be elements on which trust is based. Furthermore, strong norms and strong personal involvement in an alliance would indicate strong alliance involvement. The IMP perspective suggests that when social involvement through norms and personal relations is present, firm learning and innovation through the alliance is increased.

### 3.3.3 The Resource Based perspective

In the Resource- Based perspective, the firm is viewed as a “*collection of productive resources*” (Penrose, 1959; Wernerfeldt, 1984). Wernerfelt (1984:172) defines *resources* as “*anything which could be thought of as a strength or a weakness of a given firm.... Or those assets which are tied semi-permanently to the firm*”. As finding “*strengths*” and “*weaknesses*” is a complicated process, I choose to go with Grant (1991:118) seeing resources as “*inputs to the production process*”, or as input factors the firm can choose to perform its functions. These resources may be physical, like location or equipment (Collis and Montgomery 1995)), or intangible, like know-how or a brand name (Itami 1987).

✓ Teece, Pisano and Shuen (1997) present the Dynamic Capabilities Approach, placing this approach as an alternative to the resource-based approach. The main argument seem to be that writers like Montgomery (1993) and Wernerfelt (1984) points to the value of the current resource base, whereas Dierickx and Cool (1989) and Teece, Pisano and Shuen (1997) stress the dynamic aspect of how resources develop over time. Although there is a difference, this distinction is still unrefined as both perspectives focus on *resources*, *resource use* and *resource development* that to me seem to be as much two sides of the same perspective as constituting separate perspectives.

Prahalad and Hamel (1990) introduce the concept of core competencies that have had much impact within the research community. Core competencies are the sum of resources and their applicability that represent heterogeneous and non-imitable learning. In addition to the learning, Rumelt (1994) argues that core competencies are distinguished as they support several products, and constitute the real competition for firms, rather than the underlying products. Teece, Pisano and Shuen (1997) argue that core competencies represent the fundamental business of the firm. The fundamental idea in the RB- perspective is that each firm is heterogeneous, in terms of resources and capabilities, and that these resources and capabilities are the cornerstones of the competitive advantage of the firm (Peteraf 1993). The proper strategies of firms is thus to identify resources and capabilities that have rent-generating potential, and select a strategy based on extending these unique resources to new applications (Grant 1991; Peteraf 1993). In this sense, some resources are seen as more core or strategic than others. Building on this idea, Reve (1990) sees the core resources as surrounded by gradually less core or strategic resources. We may thus argue that resources vary as to the degree of their core or strategic content.

A key issue within the RB perspective is organizational learning, or a permanent change in actions caused by new experiences. Related to learning is the concept of *absorptive capacity*, defined as the “*ability of a firm to recognize the value of new, external information, assimilate it, and apply it to commercial ends*” (Cohen and Levinthal 1990:128). Acquiring this ability is history or path-dependent. Hence, lack of investments in an area of expertise early on may foreclose future opportunities of action in that area. The stock of resources within a firm is not static, but added to and removed from continuously (Dierickx and Cool 1989). Barney (1986) argues that a firm should focus learning on own operating experiences since external information is generally available and unlikely to be a source of competitive advantage. Other researchers, however, argue that organizations have different processing abilities (absorptive capacity), and that some firms are able to build value from general or semi-general information (Cyert, Kumar, and Williams 1993). Additionally, solely focusing on own experiences may lead to *competency traps*, where the organization concentrates on improving rules increasingly out-of-date (Leonard-Barton 1992; Lewinthal and March 1993). Ingram and Baum (1997) found that organizations initially benefited from their own experiences, but were harmed by them in the long run, and that industry experiences were necessary for firms to prosper. Following this line of thinking it is necessary that to some extent, strategic resources

be obtained from or in cooperation with external partners to avoid competency traps. Furthermore, it also seems reasonable that one single firm rarely is able to keep up with research and development within several areas of expertise, and therefore fails to catch up on important external information. It could therefore be necessary to obtain this information from a partner who has higher absorptive capacity in these areas.

We may conclude that the firm is more strategically involved in some areas of its business than others, and that to some extent strategic resources can be obtained through alliances.

### 3.3.4 The Three Approaches Compared.

Comparing TCE and the IMP approach, TCE is not concerned with trust, whereas in IMP trust is so pervasive "*that opportunism disappears*" (Nooteboom, Berger, and Noorderhaven 1997). Even if the two approaches seem to have little in common, Noteboom (1993) argues that they can be usefully integrated. His attempt at combining the two in a unified model suggests that the embedded or bonding factors in a long-term network relation may reduce the potential for opportunistic behavior. In my view, Notebooms (1993) attempt at developing a fundamentally new paradigm strands because the two approaches are based on different assumptions and have different theoretical ambitions. TCE is a positivistic theory, developed to design the optimal governance mechanism given transactional characteristics, based on stringent beliefs about man and his conduct. The IMP approach, is, in my view, based within a relativist perspective, where there not necessarily is one solution that is better than others, but many may be good. Thus, whereas TCE would give one best solution on how to organize the IMP approach typically advises to keep good processes going (Håkansson and Snehota 1995). Consequently, researchers within the IMP approach have been less concerned with developing specific predictions than describing network processes at work. Instead of combining the two in an integrated framework, a more promising direction, I believe, is to draw on elements from the two perspectives to increase our understanding of alliances.

IMP focuses on relations through which learning takes place connecting actors, activities and resources. RB, on the other hand, focuses on resources in a strict strategic perspective.

Although both theories are concerned with processes, RB identifies the core resources and



their underlying isolating mechanisms, while IMP suggests richer descriptions of the innovative and learning processes.

Peteraf (1993) argues that the RB perspective is more concerned with asset specificity than with transaction costs. I.e. firms should not minimize transaction costs, but maximize asset specificity. This thought is also discussed by Connor (1991) arguing that the existence of firms can be explained by relatedness of assets, rather than fear of opportunism. Thus, gains of internal organizing come from linkedness in activities resulting from the employer’s broader knowledge and involvement in the activities of the firm. It is interesting to notice that Connor (1991:141) notices the value of gaining “*new ideas and perspectives*” from outsiders, and sees alliances as offering such ideas although at a cost of less internal specificity and redeployment. TCE has been criticized for offering only static guidance, whereas the RB perspective offers insight to resource development over time (Gulati 1998). Main criticisms of the RB theory, on the other hand, have been its imprecise definitions of key concepts.

I will not attempt to combine the perspectives but accept their different assumptions and approaches to alliance characteristics and effects on strategic flexibility. The main rationale and key insight from bringing in these perspectives is to extract different insights that can shed light on my research questions. I set out to understand more of the concept alliance involvement and strategic flexibility. The first construct is seen as a characteristic of the tie, the second as firm responses. If we look each perspective in light of these constructs, the following matrix can be developed:

	Related to the Nature of the Tie	Related to Firm Responses
TCE	<u>Asset specificity</u> signals involvement in the alliance	<u>Opportunism</u> in the alliance reduces firm flexibility in all decisions related to the alliance
IMP/Norms	<u>Personal relations</u> and <u>Norms</u> signal involvement in the alliance	Alliances are fruitful areas of <u>learning and innovation</u> contributing to firm innovativeness
RB	Alliance ties may imply more or less <u>strategic involvement</u>	Alliances give access to <u>new ideas and perspectives</u>

Table 3.2: Contributions from the Three Perspectives

If we relate contributions in table 3.2 to the strategic flexibility dimensions discussed in chapter 2, we see that fear of opportunism from the alliance partner may be seen as a constraint to the responses available to the firm. If opportunism exist, the firm is less free to take on new decisions, because the value of these most likely will be reduced by the alliance partner. From the RB and IMP perspectives we see that alliances may contribute new resources to the firm. Regarding the flexibility dimensions from chapter 2, we may argue that these resources may both contribute to the innovative capacity in the firm to create new responses as well as bring in alternative responses to the current strategic responses in the firm. These issues will be discussed further in the following two chapters.

### **3.4 Characteristics of Environments: The Concept of Environmental Uncertainty**

Concerns with the environment have been a key research issue throughout the second half of this century (Scott 1981). The main focus of the open systems view is the various effects of environmental conditions on internal structures of the firm (Thompson 1967). Some researchers have separated between different “*states*” or “*textures*” of the environment. Emery and Trist (1965) for example look at stable and dynamic environments and how they place different demands on organizations. A similar distinction is given by Courtney et. al (1997).

Another way of looking at the environment is dividing external actors/forces into smaller parts or sections. Meyer et. al. (1981) differentiate between technical environments and institutional environments. The former involves all aspects of the environment relevant to goal setting and goal attainment, like suppliers, customers and competitors. A related term is *organizational domain* (Thompson 1967) consisting of the claims the firm makes with respects to its activities and the populations served. The second include all elements relevant to rule conformity, like public agencies, churches and schools. Achrol, Reve and Stern (1983) suggest an approach towards the environment in a marketing channel dyad, distinguishing between primary and secondary task environments, the former comprising immediate customers, suppliers, regulatory agents and competitors, the latter denoting these actors’ primary external contacts.

Achrol, Reve and Stern (1983) find that the interplay between the environment and the organization can be analyzed by either identifying specific external elements or describe the environment with the use of abstract terms. The latter is preferred since the former approach can only address a limited number of external elements, and the impact of these is not necessarily seen directly. Thus, in the field of interfirm cooperation, impact of the environment is better studied through dimensions of environmental uncertainty.

Milliken (1987) presents a review of research on environmental uncertainty, and argues that the construct is often inadequately understood. She sees environmental uncertainty as “*an individuals inability to predict due to lack of information and inability to discriminate between relevant and irrelevant data* (p. 136). Perceived environmental uncertainty is the inability of executives to predict future changes in components of the environment. This definition is similar to Miles and Snow (1978:195) who sees uncertainty as “*..the predictability of conditions in the organizations environment*”.

As discussed in chapter one, when the environment is unpredictable and firms must design structures to fit the environment, there is a need for structures that also can change and match new environmental claims. Researchers have suggested that alliances represent less involvement than internal structures (Powell 1990; Yoshino and Rangan 1995) which should suggest that in times of high environmental uncertainty we would find more network organizations and alliances. Although not properly tested, this hypothesis seems to be maintained by many alliance writers (Badaracco 1991; Doz and Hamel 1998), and it seems reasonable to assume that environmental uncertainty is one factor the firm will take into consideration when getting involved in an alliance.

### 3.5 Chapter Summary

In this chapter I have looked at alliances, theories used to understand outcomes and processes of alliances and environmental uncertainty. Most alliance definitions are relatively wide, encompassing anything between the market and hierarchy. Strategic alliances are often seen as a subgroup of alliances, with a content that is key to present or future opportunities of the firm. The definition chosen in this thesis builds on Gulati (1998) and sees alliances as *a durable, voluntary business arrangement between two firms involving exchange, sharing or codevelopment of products, technologies or services*.

Most effort was undertaken to look at alliances, how they can be characterized and rationales for firms to enter into alliances. Three theoretical perspectives were used to shed light on ways in which firms are involved in alliances, and the following dimensions were developed: *Asset specificity, strategic involvement and social involvement*. I also looked into ways in which an alliance may have an effect on the responses or flexibility to a firm. By looking at alliance studies we saw that alliances may both give the firm increased resources that may increase innovative ability of the firm to create new responses, and also these additional resources may be in the form of alternative responses. The environment and the concept of uncertainty were also discussed. Strategic flexibility is closely related to environmental uncertainty, and it is interesting to see whether some alliances seem to be connected to certain kinds of environmental conditions. Looking at environmental uncertainty, I concluded that the environment is best seen through different dimensions. From the generally broad discussions in chapters 2 and 3, I will extract a set of theoretical concepts and discuss these more closely (chapter 4) and discuss how these may be related to each other (chapter 5).

## 4. Theoretical Constructs

In this chapter I draw on the insights of the approaches to strategic flexibility developed in chapter 2, the perspectives on alliances and environments discussed in chapter 3, to construct meaningful theoretical constructs. I start by discussing the dependent construct, and then go on to discuss independent constructs; alliance characteristics and environmental dimensions. The dependent construct in this study is strategic flexibility, or the strategic responses available to a firm. In chapter 2 and 3 I looked at various approaches to strategic flexibility and based on these insights I argued that one way of looking at strategic flexibility is through:

1. **Increased Access to Resources:** In chapter 3 we saw that within the resource based view and the IMP perspective, alliances are seen as routes to new ideas and knowledge. These resources may increase the innovative capacity of the firm or the ability of the firm to observe and design or redesign new responses. Additionally, alliances may contribute to alternative responses. As firms may access resources through the firm, I suggest that these resources may take the form of additional responses.
2. **Reduced Constraints.** In chapter 2 we saw that flexibility is often seen as the ability to vary volume in the sense that the firm is as free as possible to make new responses if a new situation occurs. In chapter 3 we saw that alliances can offer the firm the possibility to vary activity levels, but can also infer constraints on the firm in terms of slowing down or constraining decisions.

Alliance involvement is developed based on insights from Transaction Cost Economics, Resource Based Theory and International Marketing and Purchasing approach and seen as consisting of asset specificity, social and strategic involvement, while uncertainty is defined as dynamism and complexity.

As I study alliances over years, I will also look at which alliances that terminate. Being able to terminate the alliance may in itself be seen as a flexible response (Harrigan 1985). In this paper I have chosen to look at strategic flexibility in terms of effects on the firm from an ongoing alliance, and therefore I will not go thoroughly into why alliances terminate, and whether the firm freely can terminate an alliance if it wants to. It does, however, seem reasonable that being

heavily involved in an alliance would deter the firm from termination, an issue that will be looked into in this thesis. It is also interesting to look at termination in terms of stability. If we find, for example that alliance involvement is negatively related to termination, this should imply that the related effects on strategic flexibility are more stable for the firm over years. I therefore argue that it is interesting to look at this concept.

#### **4.1 Dependent Construct: Strategic Flexibility**

X In chapter two, I discussed various approaches to strategic flexibility. In the summary (2.2.5) I concluded that a firm has strategic flexibility the more areas of developments lies in its, the more its units volume is allowed to vary, the more its units can be terminated, and the more alternatives in the activities of that unit can be developed.

In chapter three, I found that alliances could have several rationales for firms, economical, political and informational. Economic rationales include scale and scope economies, but also reduced risk if the alliance offers alternatives to firm activities. Furthermore, alliances also may impose constraints on firms, by for example lagging and disturbing decision making. One such constraint, opportunism, was found through Transaction Cost Economics. If the firm fears or experiences opportunism in an alliance, all decisions that can possibly be connected to the alliance may be constrained. Other theoretical perspectives, like the International Marketing and Purchasing perspective (IMP) and Resource Based Theory (RB), point to positive effects of alliances, like resource transfer, learning and innovation.

One way of approaching the construct of strategic flexibility is to look at the different dimensions discussed in chapters 2 and 3. There seems to be at least three main dimensions of this construct that we may term *constraints*, *resource transfer*, and *exit*. The first two concern strategic flexibility effects on the firm from an ongoing alliance, while the last concerns opportunities to terminate the alliance. In this thesis strategic flexibility is seen mainly through an ongoing alliance. That is, the dependent variables that are defined here represent ongoing effects on firm strategic choices from being in an alliance. The ability to exit the alliance is also taken into the study by looking at which alliances seem more likely to terminate over time. If alliance involvement constrain termination of an alliance, then we would expect to find that alliances with low involvement are more likely to terminate. This

issue is debated further in the ~~next chapter~~. Consequently, strategic flexibility is seen constituted by two dimensions: constraints and resource access.

#### 4.1.1 Constraints

In alliance studies we have seen arguments that alliances not only benefit firms, but also place constraints on firms. With the construct *constraints* I want to identify ways in which an alliance may place constraints on the firm that actually reduced strategic flexibility. I have chosen to focus on three such constraints:

1. Decision Constraints
2. Opportunism
3. Activity Level Constraints

#### ✓ **Decision Constraints**

Cooperating in alliances involve aligning people, products and processes from two organizations to work as one (Bartlett and Ghoshal 1992). This process of alignment is difficult and may result in loss of autonomy and ability to unilaterally control outcomes (Hladik 1988), loss of control and delays in solutions due to problems of coordination (Moxon, Roehl, and Truitt 1988). Since alliances involve two or more independent partners, the firm has to give up full control over the activities included in the alliance, and may therefore experience that its ability to respond is constrained, rather than increased. Alliance partners may constrain and lag decisions taking place in the alliance, but may also constrain and lag firm decision processes to the extent that alliance activities are intertwined with firm activities. If the level of decision constraints is high, the firm has less freedom to respond to external changes due to constraints imposed on it from the partner. Thus, the variable decision constraints is defined as *lags and limits on firms decisions*.

## Opportunism

Underlying the theoretical rationalizing in the TCE are behavioral assumptions of limited rationality and opportunism. The first of these implies man to aspire rationality, but only limitedly succeed (Simon 1947). Opportunism refers to «*calculated efforts to mislead, distort, disguise, obfuscate, or otherwise confuse*» (Williamson 1985:47). Man does not necessarily always behave opportunistically, but as long as the opportunity exist, individuals could be expected to take advantages. Alliance responses are constrained by the level of opportunism. If this level is high, firms will experience that responses they try to make turn out differently than expected as a result of distortions from the partner. Consequently, if the firm experiences external changes, opportunism reduces the ability of the firm to respond to these changes. Opportunism is defined as *level of distortions experienced in the firm*.

## Activity Level Constraints

This concept is tied closely to what is termed volume flexibility in manufacturing. Volume flexibility is seen as the possibility of adjusting production within a wider range, and is studied in a series of approaches to manufacturing flexibility (Gupta and Somers 1992). The essence of the concept is thus the ability of the firm to avoid constraints related to a set specific production volume.

In his monograph on organizations, Thompson (1967) discusses how organizations must balance capacity in different areas of production. Problems of balance surfaces as some departments (e.g. production) are efficient if volumes are stable, whereas other connected departments (e.g. sales) are efficient if volumes can be varied in line with seasons or cycles. Abernathy (1978) argues that vertical integration in the auto industry led to inflexibility, as constraints from one part of the value chain was placed on another. Consequently, if constraints from one activity are reduced, other activities are allowed to follow their own scale of optimal activity volumes. Johnston and Lawrence (1988) discuss value added partnerships, and describe how these partnerships may change in types and volume if for example fashions and thereby demands change. This effect was also seen in a case study of the shipping company Laboremus (Lunnan 1992). This company owned and managed ships. By balancing a set of alliances they were able to avoid activity constraints. In periods when they owned and operated few ships, they were not responsible for as many workers as they



x } could use in peak periods, thus they were able to exploit the ship trading activity to a full extent.

Through some alliances, firms are allowed flexibility to trade various volume amounts, whereas in others the activity level is set. If transactions imply a fixed level of activity, the firm is constrained from responding to external changes by increasing or decreasing its volume of activity. That is, varying volumes of the product or service are not allowed within the contract. Additionally, the firm has fewer constraints on activity levels if the firm may get excess products or services from an alternative partner. Thus, activity level constraint may be defined as *level of commitment to a fixed volume*.

The construct constraints, defined as *reductions in freedom to respond to external changes placed on the firm by an alliance*, is thus seen through three variables:

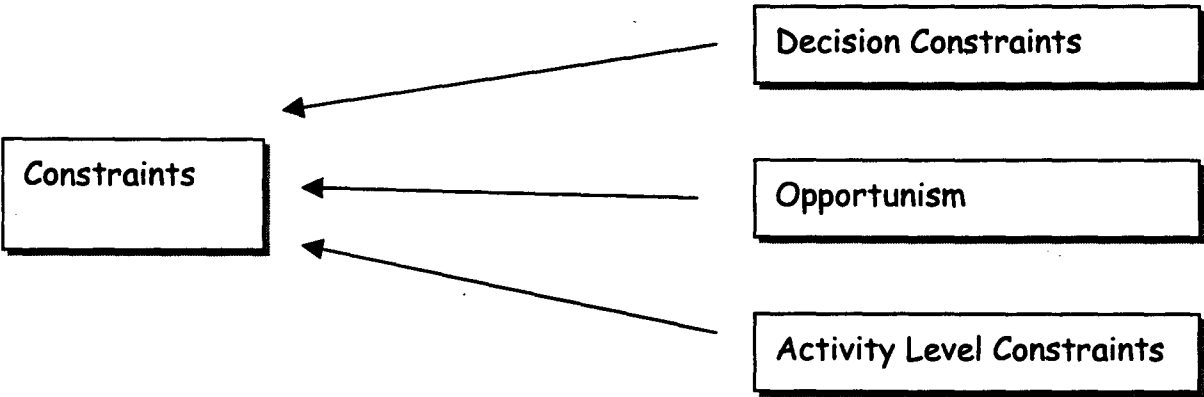


Figure 4.1: The Constraint Construct

4.1.2 Resource Access

In chapter 2 we saw that having access to alternatives and being innovative was seen as indicators of strategic flexibility, as both these dimensions allow the firm access to different levels of diversification. If the firm has access to alternative products, markets, and technologies, for example, the firm is less dependent on one alternative if for example that

product or market fails. Additionally, the more innovative the firm is, the more it is able to follow up on technological developments in its markets, combine these developments with existing ideas, and respond to these by designing appropriate responses. Alliance studies based on IMP and RB theories have pointed to alliances as offering resources, and alliances as fruitful grounds for learning and innovation. Based on these insights I have chosen to focus on two variables:

1. Resource portfolio
2. Innovative capacity

### Resource Portfolio

One advantage of alliances is access to new sets of resources. Alignment with an external partner gives access directly to the resources of a partner, and also to the network of this firm. Noteboom (1993) calls this the *principle of learning*, pertinent in the IMP approach, but overlooked by TCE. Researchers like Kanter (1994), and Porter (1990) point to similar ideas. Hence, many of the resources put to use in a company becomes available from its relationship with outside partners.

Alliances represent a combination of resources of two separate companies. This combination increases the overall resource pool available to the firm. One advantage from this increased pool may be risk reductions and access to complementary technology as discussed by Contractor and Lorange (1988). Risk reduction, they argue, is obtained by diversification into a product portfolio, “...as diversification in of the product portfolio may insure (auto) producers from variability in demand, at least up to a point” ( p.11). The underlying example is that General Motors, by forming a joint venture with Toyota, got access to a larger range of automobile models. Thus, if demand for large cars sank, GM still would have sales from other models. In this sense, by cooperating, GM got access to alternative products to spread its risk. Borys & Jemison (1989: 243) argue that if firms cooperate overall risk is spread across many different units. Johnston & Lawrence (1988) describe how a trend toward greater product variety shifted production from one product to another emphasizing the value of a portfolio of distribution channels, products, technologies and markets. Thus, through alliances, firms may access to alternative technologies, like Yokohama Rubber and Toyo Tire

that share R&D and production, distribution channels and markets (Ohmae 1989). Ohmae (1989) describes how Glaxo, a British pharmaceutical company avoided to build an extensive sales and service network in the US, by cooperating with a Japanese firm they swapped drugs with. Through this deal Glaxo could concentrate in its European distribution system, at the same time as it got access to increase its product portfolio, got access to another distribution system and another market. Having these additional choices reduced Glaxos dependency to its products, type of distribution and markets. Based on these insights, I argue that *Portfolio diversification is obtained by access to alternative products, markets, technologies and distribution channels that reduce the overall risk of the firm.*

## Innovative Capacity

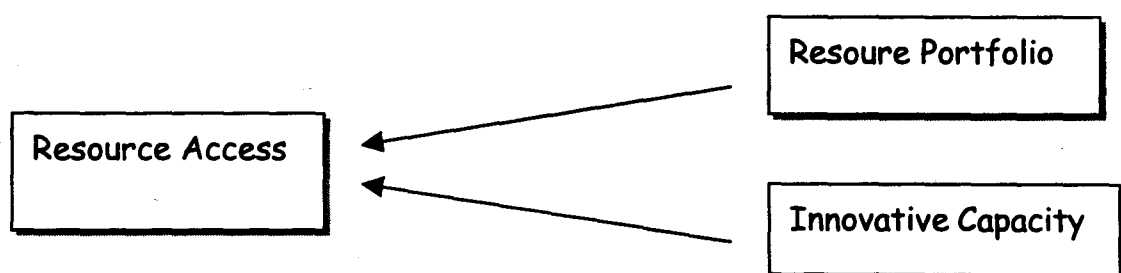
In this thesis I see innovative capacity as an organizational concept. If we differentiate between tacit and distinctive knowledge, tacit knowledge being that that can not be easily observed and codified, Nonaka (1994) argues that tacit knowledge is an individual concept. Kogut & Zander (1992) maintains, however, that if knowledge is solely individual, hiring new workers is equivalent to changing the skills of an organization, which does not hold true. Thus, in this thesis, innovative capacity equals knowledge creation and is seen as knowledge interplay between personal knowledge and knowledge embedded in organizational principles. Innovation is often described as creating “*something new*” (Dosi 1990). In this thesis, this view is adopted as this construct is seen as capacity to create new knowledge, and see new applications. This concept relates to dynamic competencies (Hitt 1998) as having the capacity to innovate can create new opportunities and take advantage of them. Porter (1991) terms this ability “*capacity to improve*” and argues that development of flexibility choices should focus on these rather than on discrete alternatives.

Hamel (1991) argues that alliances are not in-between other organizational forms but represent a superior situation as to learning. Alliances may be seen as a way of short-circuiting the process of skill acquisition and thus the firm avoids the cost of being a perpetual follower. Powell et. al (1996) refer to the “*liability of unconnectedness*” at work in many fields of rapid technology development. “*At the core of this relationship is a vital need to access relevant knowledge: knowledge that of a sort that is sophisticated and widely dispersed and not easily produced and captured inside the boundaries of a firm* (Powell et. al. 1996: 143). In an earlier article Powell (1990) maintains that networks are the most

efficient organizational arrangement for sourcing information because information is difficult to price (in a market) and to communicate within a hierarchical structure. Furthermore alliance cooperation creates the conditions for further innovation by bringing together different logics and novel combinations of information. Relatedly, Conner (1991) argues that firms often lack “expert” information internally and must seek it externally.

From studies within the IMP and RB perspectives, we saw that alliances may give access to strategic information and represent fertile learning grounds. Kanter (1994) sees alliances as options for the future, opening new doors and unforeseen opportunities, and that their value goes beyond clear financial payoffs. In a case study of four joint ventures, Lyles (1988) shows how development of insight and knowledge took place in the JV and spread to the sponsor firms. Badaracco (1991) proposes knowledge as the most important competitive factor, and argues that alliances are important means of knowledge creation. Alliances may even be useful in situations where information is difficult to transfer, as it offers opportunities for benchmarking (Hamel 1991).

These issues clearly have a flexibility side to them. If alliances represent information access that increase the firms ability to know where to go and how to build alternative courses of action, they gain faster and more accurate access to external information, their total knowledge base grow, increasing their ability to develop more alternative courses of action. Thus, alliances may increase overall strategic flexibility to the extent that they increase the innovative capacity base of the firm. Innovative flexibility may be defined as *the capacity of the firm to innovate and create new responses*.



**Figure 4.2: The Resource Access Construct**

## 4.2 Independent Construct: Alliance Involvement

While the dependent strategic flexibility construct concerns firm level responses, the alliance involvement construct points to the level of involvement of the firm in the alliance relationship. From the discussion of the three theoretical perspectives in chapter 3, alliance involvement may be described through three dimensions;

1. Level of asset specificity (Williamson 1985)
2. Level of social involvement (Håkansson 1982; Macneil 1980)
3. Level of strategic involvement (Reve 1990)

### Asset specificity

Asset specificity is defined as *idiosyncratic attributes of transactions*. If one transaction ceases to exist, asset specificity denotes the assets that can not be put to use in another transaction. Williamson (1985) distinguishes between four kinds of asset specificity: site specificity (e.g. location), human assets specificity (e.g. knowledge), physical assets (e.g. machinery or equipment), and dedicated assets (e.g. contracts or standards). If these kinds of investments take place in a transaction, the firm has put down investments that are lost if the firm wants to terminate this transaction. Investments tied to a place, for example, may not be applicable in another geographical location. Each transaction may also require specific physical investments, investments in competence or the relation that indicate how entangled the firm is in this transaction as these investments are done specifically to be able to transact with this partner.

### Social Involvement

Macneil (1980) defines nine relational norms in an alliance. These are norms of role integrity, mutuality, implementation of planning, effectuation of consent, solidarity, flexibility, linking norms, creation and restraint of power, and harmonization with the social matrix. Two norms that represent strong social involvement are solidarity and mutuality, as mutuality is a “*key to the continuance of the relation*” (p. 45) and solidarity “*holds the exchange together*” (p. 52).

**Mutuality:** The norm of mutuality is related to the distribution of outcomes. In a discrete or short-term relationship, division of the surplus is conducted on a transaction-to-transaction basis. As a relational norm, however, the focus is on the continuous, undifferentiated returns from the exchange relationship (Macneil 1980). Thus, partners do not depend on distribution of benefits and expenses to equal at each transaction period, but believe that fairness in the long run is guiding the transaction.

**Solidarity:** The focus of this norm is directed towards continuing existence of the relationship itself. The various commercial exchanges that take place within the transaction may end, but the relationship is continued to involve other exchanges, thus the relation is perceived as more important than the single exchanges (Kaufmann and Dant 1992).

Macneil (1980) also mentions the norm of flexibility. This norm is described as a “*capacity for change in a contract*” (p. 50). In a discrete contract change concerns are taken care of externally, while relational contracts are characterized by expectancy on behalf of the partners that changes will be taken care of internally. This norm, which is key to this research, is not included in the overall relational investment concept for the following reasons:

As this norm is treated in Macneil's (1980) study, this norm clearly is an indicator of the level or relational involvement within an alliance, rather than an indicator of the actual level of flexibility experienced by the alliance partners. The next question is then whether relational norms equal flexibility, or whether norms and flexibility are two separate constructs. That is, can we have relational norms without flexibility and flexibility without relational norms? I think that the answer is clearly yes. The contract may in itself allow for a set of responses without a high level of relational norms being present in the relation. It seems reasonable, however, that the existence of relational norms stimulates the responses of firms to make changes within the alliance. The question is, however, whether this indicator is the best indicator of relational norms, compared to other indicators.

There was a need to limit the indicators, and other indicators of mutuality and solidarity were assumed to give a better indication of the relational investment in the relation.

The norm of flexibility, as an indicator of strategic flexibility, is unclear as to the amount of change each party in the alliance is willing to undertake. Macneil (1980) seems to indicate that relational partners could be expected to undertake anything from smaller adaptations to

an “*immense flexibility*” (p. 68). If we adopt typologies of change from Henderson & Clark (1990) and Ghemawat & Costa (1993), changes may involve anything from incremental, local changes, to radical changes involving the entire organization. It seems reasonable to assume that willingness to change will depend on the amount and type of change demanded by one alliance partner.

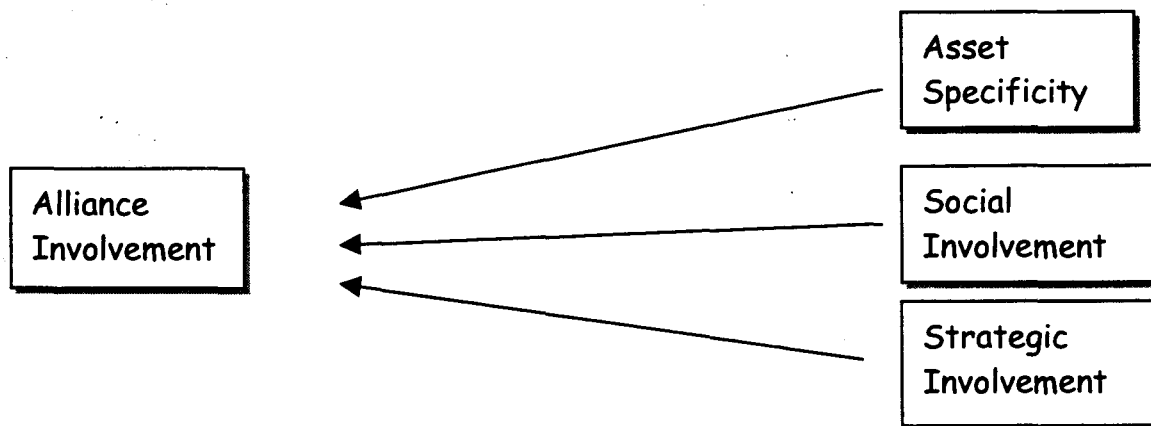
Based on the problems with this norm, I chose not to include it neither in the relational investment concept, nor in the strategic flexibility dimensions. I chose to try to “*clean*” the concept of relational norms by seeing this through the norms of mutuality and solidarity, and tried to find indicators of “*willingness to change*” through two other indicators. As is later described, one of these is *the actual volume change allowed within the present contract*, trying to capture the volume changes allowed for in the contract. Additionally I included the variable *decision constraints* measuring the constraints placed upon the firm to take and implement decisions, and *opportunism* measuring the likelihood that the partner will directly oppose change suggestions from the firm. Thus, instead of looking at the “*willingness issue*”, these variables are seen as describing how much change the firm is allowed to undertake in light of the constraints placed upon the firm by the partner.

Additionally, social involvement in a transaction may be described by the level of personal involvement by the partner firms (Håkansson 1982). Personal involvement is one of the starting points of developing trust (Yoshino and Rangan 1995), and this variable may thus have effects on both resources being transferred and constraints. Hence, the norms of mutuality and solidarity and level of personal involvement indicate social involvement, which is defined as *level of personal interaction and norms in the alliance*.

## **Strategic Involvement**

In chapter 3 by use of the Resource based perspective, I argued that alliances may be more or less strategic to the firm, i.e., they may to varying degrees involve strategic value activities, and be more or less central in the strategy of the firm. The term *strategic* placed on certain alliances indicate this importance placed on some alliances, although in this theses I choose to see level of strategic involvement on a continuum rather than as a separate category. Thus strategic involvement is defined as *level of strategic importance placed on the transaction*.

The construct alliance involvement is seen through three variables, as described in figure 4.2.



*Figure 4.3: The Alliance Involvement Construct*

#### **4.3 Independent Construct: Environmental Uncertainty**

A variety of dimensions of environmental uncertainty are mentioned in different studies (Achrol, Reve, and Stern 1983; Achrol and Stern 1988; Duncan 1972; Scott 1981). Bensaou (1992) recognizes three major types of environmental uncertainty in interorganizational relationships: Capacity, complexity and dynamism, and finds through an empirical study that these three predict the information processing needs of a firm. Achrol and Stern (1988) found that these dimensions had effects on decision making uncertainty. Both need for additional information and uncertainty in decision making should stimulate a search for flexible alternatives. Whereas capacity and dynamism may result in unexpected claims from the environment, low capacity indicates a more permanent search for new areas of business. Consequently, in the uncertainty concept, I choose to include complexity and dynamism.

#### **Environmental Complexity (Diversity)**

This variable can be seen as the heterogeneity and range of an organizations activities (Child 1972). The more dissimilar environmental actors are (e.g. customers), the more difficult it is to assemble information on their needs and design appropriate strategies (Dwyer and Welsh 1985). Consequently, a firm that produces standardized products with a low level of

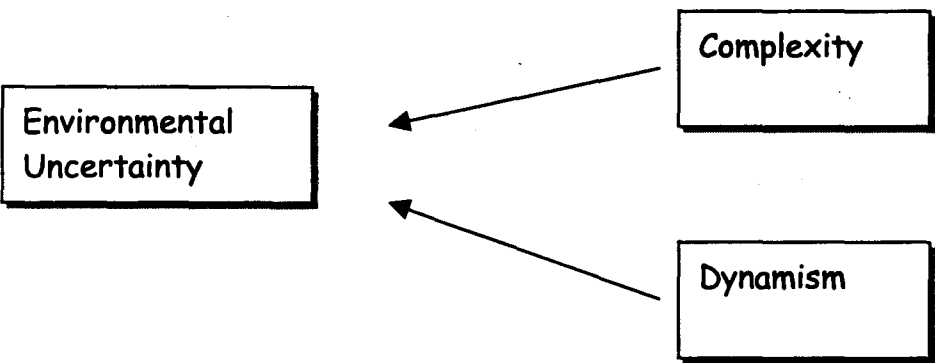


individual adaptation can specialize its activities into a limited and planned range. A firm with a lower level of standardization, however, must be prepared to take on a larger set of activities to adapt to the various customer needs, and the information, design and assembly processes are more complex.

**Environmental Dynamism (Variability)**

This variable is defined (as is defined) as the extent to which the entities in the environment of the firm are undergoing change (Scott 1981; Thompson 1967). The more these entities are changing their strategies and actions, the more time the firm has to spend on designing actions to meet these changes.

In line with Miles and Snow (1978) we may define environmental uncertainty as the *predictability of conditions in the firms environment*". Environmental uncertainty variables are thus: High environmental complexity and high environmental dynamism



**Figure 4.4: The Environmental Uncertainty Construct**

**4.4 Alliance Termination**

Alliance termination is in this thesis defined as dissolution of common activities. That is, the firms no longer share common activities, or engage in fairly regular transactions. Brief contacts do thus not qualify for an alliance relation, the alliance partners must in this sense engage in regular transactions with each other.

4.5 Chapter Summary

In this chapter I have been building on the two previous theoretical chapters dealing with strategic flexibility and alliances to come up with theoretical variables that can be subject to further treatment. Three main constructs have been identified. First the dependent construct; strategic flexibility, denoting the strategic responses available to a firm. This construct is defined on the firm level although alliance level constructs of opportunism and alliance variation are assumed to have effects on firm level responses. The construct consist of two main set of variables; one describing the increased responses by having access to additional resources, and one by describing constraints to responses by an alliance. The second main construct identifies is alliance involvement, describing the nature of the ties in the alliance. It seems reasonable to assume that the nature of this tie could be connected to strategic flexibility effects on the firm. Third, I want to look at environmental uncertainty as many studies of flexibility point to its connection to uncertainty. A summary of the theoretical definitions is given in table 4.1:

<i>Variable</i>	<i>Theoretical Definition</i>
<i>Decision Constraints</i>	Lags and limits on the decisions of firms
<i>Opportunism</i>	Level of distortions
<i>Activity Level Constraints</i>	Commitment to a fixed volume level
<i>Portfolio Diversification</i>	Access to alternative products, markets, technologies, and distribution channels that reduce the overall risk of the firm
<i>Innovative Capacity</i>	Ability to innovate and create new responses
<i>Asset Specificity</i>	Level of idiosyncratic attributes of the transaction
<i>Social involvement</i>	Level of personal interaction and norms in the alliance.
<i>Strategic Involvement</i>	Level of strategic importance placed in the transaction
<i>Complexity</i>	Level of heterogeneity and range of firm activities
<i>Diversity</i>	Level of unpredicted change of firm environment
<i>Termination</i>	Dissolution of common activities

Table 4 1: Summary of Theoretical Variable Definitions

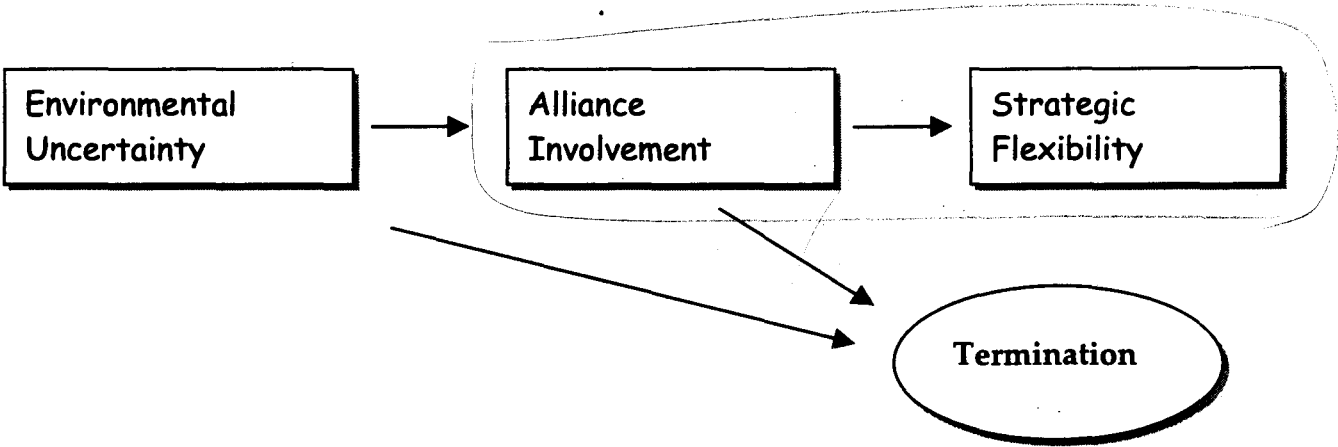
In the next chapter I will place these variables in a model, and hypothesize about the relation between them.

## 5. Alliance Impact on Strategic Flexibility: Research Model and Hypotheses

In chapter four I discussed the set of constructs and variables I have chosen to study. In this chapter I will hypothesize about the relationship between these variables in my overall research model.

### 5.1 The Research Model

Based the theoretical definitions presented in chapter 4, this overall research model was developed:



*Figure 5.1: The Research Model*

As discussed in chapters 2, 3 and 4, the concept of strategic flexibility may be seen as a combination of several dimensions, which may or may not point in the same direction. Likewise, the constructs alliance involvement and environmental uncertainty are seen as containing several dimensions that could have different associations.

## 5.2 Alliance Involvement – Strategic Flexibility

In chapters 2 and 3 I looked at various perspectives and drew the conclusion that strategic flexibility seemed to be influenced by alliance conditions. Strategic flexibility is, in this perspective, seen as a multidimensional concept involving at least two dimensions. First, the firm obtains strategic flexibility if constraints from the alliance are minimized. Second, the firm obtains strategic flexibility if it gets access to resources that either increases its portfolio of choices, or if the resources improve firm ability to innovate.

Even if strategic flexibility is seen as a multidimensional construct, it is not necessarily an additive relation between the dimensions of flexibility. That is, to obtain more responses through innovation capacity, decision constraints may increase. This suggests that alliance involvement may have both positive and negative overall effects on flexibility.

Strategic flexibility may not only depend on levels of alliance involvement today, but also on the ways in which involvement has developed over time. Effects on strategic flexibility could, for example, be related to a specific development of certain types of involvement. The proposed relationship between dimensions of strategic flexibility may be modeled as follows:

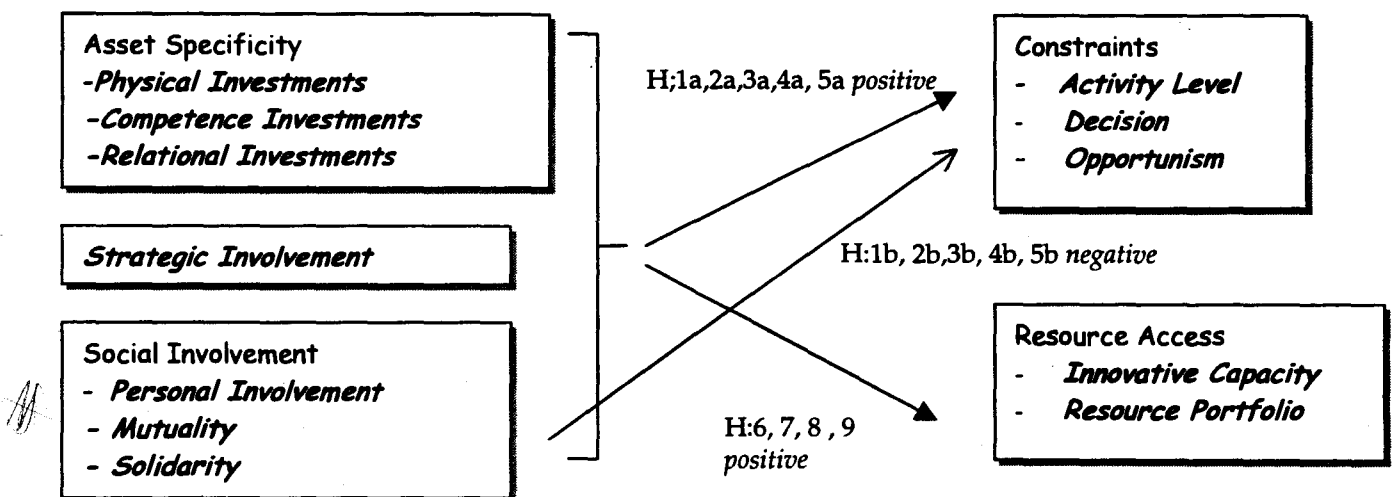


Figure 5.2: Alliance Involvement – Strategic Flexibility

### ✓ 5.2.1 Alliance Involvement - Opportunism, Decision and Activity Level Constraints

One way of looking at firm involvement is by placing it on a continuum between market and hierarchy (Reve 1990; Williamson 1991). Thus, the more involved the partners are in the alliance, the more the alliance relation resembles an internal organization structure. With more involvement, and “stronger” overall tie, the firm is more committed to that particular alliance, which should increase opportunities for alliance partners to constrain firm responses.

#### **Higher involvement increases the opportunity for opportunism.**

Transaction cost theory discusses how opportunism may be a problem when asset specificity increases (Williamson 1985). Even if coordination mechanisms like authority or trust offset part of this risk, (Bradach and Eccles 1989; Haugland 1994), relying on trust also increases risk of cheating (Gambetta 1988). Since alliance relationships retain some level of independence between partners, no party in the relation has almost per definition full authority control. Consequently, in situations of idiosyncratic investments, because of asset specificity or because of strategic importance, there are always some possibilities that partners may act opportunistically. A partner acting opportunistically may constrain the desired response of a firm by altering its content or slowing down the implementation process. A fear of opportunistic behavior may also restrain the firm from actually forming a response that could have improved the competitive position of the firm. Hence:

authorities

consequences

H

***H 1a: Alliance involvement is positively related to opportunism.***

#### **Higher commitment slows down decision processes and reduces decision alternatives.**

Constraints need not, however, only be in the shape of fear of opportunistic behavior, or because of “bad will”. Constraints may also occur because alignment with the partner naturally forecloses alignments with other partners, and decision processes taken by the firm in many cases could involve issues that the alliance partner has the right to approve of, and therefore the decision process is delayed. As involvement levels increase, it seems likely that activities of mutual involvement and therefore naturally the necessity for common decisions increase, increasing constraints and lags.

***H 2a: Alliance involvement is positively related to decision constraints.***

On the other hand, even if social investments increase the risk of opportunism, they also reduce the threat of opportunism (Bradach and Eccles 1989; Powell 1990). When the firms gets involved in the relation, it believes that the relation is going to last beyond single transactions, and believe that opportunistic behavior is minimized through the development of relational norms. Thus:

***H 1b: Social involvement is negatively related to opportunism***

***H 2b: Social involvement is negatively related to decision constraints***

**High involvement implies stronger needs of activity alignment.**

Another effect of involvement, and the closer alignment involvement usually implies between partners in an alliance, is the need to set a fixed activity level. If the transaction involves asset specific investments and/or takes place in an area that is strategically important to the firm, both the firm and the alliance partner gradually enter into an exclusive bargaining situation where alternative partners are taken on at increasing costs. Additionally, in this situation of high commitment, neither party will allow alternative partners. Thus, we may argue that the more the firm commits to the alliance, the more exclusive the alliance is. If the firm is to obtain the freedom to access variable levels of activity within an alliance it seems likely that either the firm or the partner must balance activity levels towards other alternative partners. If asset specificity is high, however, most likely the firm is reluctant to enter into other partnerships that could balance activity levels. If strategic importance is high, most likely the firm will not allow another partner to take on some of the activity. Relational investments may also constraint the firm from using another partner as they take time and resources to build, which limits accessible alliances. Furthermore, building a trusting relationship often depends on exclusivity between two partners. Thus:

***H 3a: Alliance involvement is positively related to activity level constraints***

Alternatively, relational investments may have an opposite effect. Macneil's (1980) idea is that alliances with a high degree of relational investments better handle variation issues within the alliance. Thus, if the partners have invested in the relation, they expect that the alliance will absorb more activity variation than if the relational investments are low:

***H 3b: Social involvement is negatively related to activity level constraints***

**Changes in alliance involvement over time and constraints**

Changes in the alliance place a strain on the relationship, and cause the need for new realignment (Bleeke and Ernst 1993). Realignment is difficult and demanding on time and resources, and most likely cause a great strain on the firms involved. Periods of instability may lead to higher involvement as firms through these periods get to test each other's willingness to go for the alliance. Most likely, however, periods of instability drain the alliance, and make the firm insecure about the future of this relationship. We may also argue that the longer the firm has been involved in the alliance, the longer the firm has been in a stable "*lock-in situation*", with possibilities of the alliance partner to exclude other alliance partners and constrain the firm from entering areas outside of the alliance territory. It even seems rational to assume that high involvement over time constrain the choices of change available to a firm. Also it seems reasonable to assume that increasing levels of involvement indicate higher constraints placed on the firm, as the firm is in a situation with increased "*lock-in*". Thus,

***H 4a: Total alliance involvement over time is positively related to constraints on firm decisions, opportunism and activity levels***

***H 5a: Increasing alliance involvement over time is positively related to constraints on firm decisions, opportunism and activity levels***

In her studies, Larson (1991; 1992) found that social processes like relational investment is not static, but evolve over time. Larson (1992) argues that social investments in an alliance is time consuming, and that over time these investments are either increased or decreased. Doz (1996) gives examples of “good” and “bad” development paths in alliances leading to more or less adaptation. High social investments over time indicate a long-term relational relationship where relational norms has replaced regular business or discretionary norms (Macneil 1980). In this situation, the alliance takes on a “*life of its own*”, where internal rules guide transactional behavior, rather than market prices or ownership mechanisms. A positive development of relational investments over time may indicate a build-up trust (Larson, 1991, 1992) that could have effects on constraints. Thus;

***H 4b: Total social involvement over time is negatively related to constraints on firm decisions, opportunism and activity levels***

***H 5b: Increasing social involvement over time is negatively related to constraints on firm decisions, opportunism and activity levels***

## ✓ 5.2.2 Alliance Involvement and Resource Access

As we discussed in the previous chapter, firms enter into alliances to get access to resources (Contractor and Lorange 1988). By use of these resources, the firm may either increase its available portfolio of products, markets, distribution channels and technologies, or increase its ability to innovate. Increases in both of these factors, I argue, improve the firm’s ability to respond in times of new demands on the firm.

Resource access is connected to alliance involvement by at least two arguments. First, an involved relation is necessary to facilitate resource transfer if the resources have tacit elements (Badaracco 1991). Thus, whereas the firm in a low-involvement relation only is able to access non-tacit resources, higher involvement in an alliance may include resources with tacit elements.



Second, successful resource transfers are often dependent on long term involvement, in areas of high strategic interest and evolving personal relations. In a short-term, low involvement relation neither firm is willing to put into the agreement resources that could make the other firm more flexible (Osborn and Hagedoorn 1997). In line with Granovetter's results (1973), they discovered that less involved alliances are fruitful in the idea generating phases. If resources are to be transferred and become a usable part of the other firm's response set, however, higher involvement is needed.

**Alliance involvement facilitates transfer of more kinds of resources.** (facilitates a / resource transfer)

- Gaining access to another partner's resources is complicated the more immaterial and tacit the resource is (Badaracco 1991). If a firm wants to include another firm's product in its portfolio, this can easily be done with physical products, where all elements of the product are observable.

The more tacit elements the product has, for example regarding repair and service, the more dependent the firm is on the partner firm to learn how to repair the product and serve the customers. Consider, for example, a product like musical instruments, where identifying a "good tune" is not a trivial, standardized process. Similarly, a technology process can not necessarily be specified in written instructions, but must be observed over time to be fully understood. Thus, accessing resources may involve observing tacit elements that are transferred from one firm to the other through practice, but the transfer may be slow, costly and uncertain (Kogut and Zander 1992; Teece, Pisano, and Shuen 1997). Badaracco (1991) argues that the more tacit element resources have, the more the partner firms must form complex, intimate relationships. If a firm engages in an alliance without being involved, it may access only those resources that are simple, observable and specific.

**Alliance involvement facilitates resource transfer.**

Powell et al. (1996) state that relationships where learning takes place cannot be treated as "one-offs", or independent relationships pursued separately. If the firm is to learn from an alliance partner, a longer time horizon must be developed. Both Mowery, Oxley & Silverman (1996), Goes and Ho Park (1997), Harrigan, (1988), and Hennart (1988) found that alliances in which the partners either had ownership investments, or where asset specificity was present, reported more

learning and innovation than looser alliances. Inkpen (1998) argues that more resource transfer and learning will take place when the knowledge is expected to be valuable or strategic. Kanter (1994) argues that in cooperative relationships synergies are not realized until people get to know each other personally. Personal relations and trust guide exchanges and enhance information flows (Doz 1996; Håkansson and Johanson 1988; Jarillo 1988; Inkpen 1998). Larson (1991) found in a study of four entrepreneurial firms, that trust and personal interaction resulted in information exchange, and also research improvements.

Based on these arguments, we may, in line with Conner and Prahalad (1996) argue that on a knowledge-based flexibility ground, when flexibility is gained by accessing and developing resources; involvement in the alliance is necessary.

***H 6: Alliance involvement is positively related to innovative capacity***

***H 7: Alliance involvement is positively related to resource portfolio***

How does alliance involvement over time affect the transfer of resources in an alliance? Increases in involvement signal a positive stance towards the alliance, indicating a build up of commitment of the firms engaging in the alliance. The alliance is becoming more strategic, the firm is willing to commit to a higher level of specific resources, or the firms are in a process of strengthening personal or social ties. However, this build-up could give a picture of an alliance in transition. In line with my previous reasoning, transition phases could have an element of instability that may direct the firm to withhold resources or make transfers more difficult. I argue, however, that the positive effects of alliance build-up dominate over the negative caused by inefficient realignments often experienced in growth processes. Thus,

***H 8: Total alliance involvement over time is positively related to innovative capacity and resource portfolio.***

✓ **H 9: *Increasing alliance involvement over time is positively related to innovative capacity and resource portfolio***

✓ **5.3 Alliance Involvement, Environmental Uncertainty and Termination**

Harrigan (1985) studied firm's decision to exit business units that were not performing well, and found that a feeling of responsibility and attachment to alliance partners significantly deterred exit of a business unit. Thus, being socially involved in an alliance could keep the firm in the alliance, even if it is no longer functioning as well. Additionally, both Harrigan (1985) and Ghemawat (1991) argue that asset specific investments function as "lock-in" factors, deterring the firm from terminating the alliance. Similarly, Lorange & Roos (1992) similarly maintain that the flexibility of alliances lies in the ability of the firm to retrieve resources from the alliance. Thus, to be flexible, the firm must be able to operate successfully without its partner. One manager in Yoshino and Rangan's (1995:81) sample expresses the same ideas: «*Why should we lock ourselves into an equity-based alliance when we can retain the strategic flexibility of moving to a different structure as the technology and our strategy evolve?*». In this sense, the flexibility contributed by alliances concerns the ability to withdraw from the alliance with all necessary resources when new opportunities arise. In a network context, Miles and Snow (1986) argue that the primary strength of the dynamic network is its ability to efficiently allocate member firms, uncoupling and re-coupling them with minimum cost and minimum loss of operating time.

**H 10: *Alliance involvement is negatively related to termination***

In the heart of the theory of strategic flexibility lies the idea that when uncertainty is high, firms need to be able to adapt to these conditions (Thompson 1967). One way the firm can adapt, is to terminate the alliance. Consequently, we should expect to find a higher rate of alliance termination rate the higher uncertainty the firm perceives in its environment.

**H 11: *Uncertainty is positively related to alliance termination***

#### **5.4 Environmental Uncertainty - Alliance Involvement**

All studies of strategic flexibility argue that strategic flexibility has value under conditions of uncertainty (Sanchez 1993; Sanchez 1995; Volberda 1996). Empirical studies show, however, mixed effects. Miller (1987) discovered a link between strategy and environment, arguing that increases in predictable changes are dealt with through bureaucratic structures, whereas unpredictable changes are dealt with through organic structures. Wiersema and Bantel (1993) found that instability led to a higher magnitude of changes in corporate level strategies, whereas Fombrun and Ginsberg (1990) found a curvilinear relationship between volatility and changes in corporate aggressiveness. Using a multidimensional operationalization of uncertainty, Birnbaum (1984) found that competitive uncertainty increased the adoption of less risky strategies at both the corporate and business levels but that regulatory and customer uncertainty influenced changes in strategies indirectly through their effects on competitive uncertainty. These results indicate that uncertainty is a multifaceted concept, and that the relationship between uncertainty and internal factors still is not totally clear (Boyd, Dess, and Rasheed 1993).

Looking specifically at alliances, Harrigan (1988) found that in uncertain environments, alliance relationships were less equity based, and that loose cooperative structures performed better when customer demands were changing. Dyer (1996) saw that under conditions of technological uncertainty, firms were moving towards alliance solutions rather than hierarchy.

Even if results from previous studies are not unidirectional, it seems likely that the more uncertainty a firm faces, the more it will place value on obtaining flexibility from an alliance relationship. One dimension of flexibility, is the ability to withdraw by having low investments. We should therefore expect a negative relationship between uncertainty and involvement.

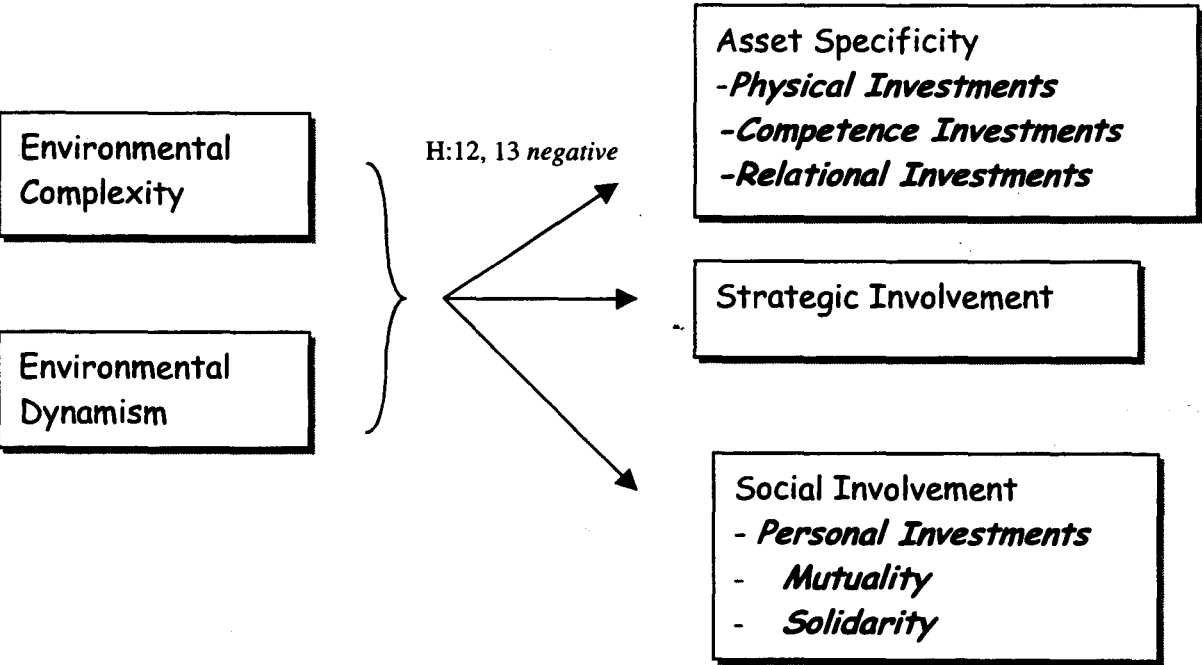
#### **H 12: *Environmental uncertainty is negatively related to alliance involvement***

Kogut (1988) argues that the same motivations that led to formation of an alliance may lead to its dissolution. An alliance may have been formed as a response to a certain environmental condition. If this condition changes, however, the alliance no longer is useful, and is therefore

terminated. Thus, if firm strategic needs change (Kogut 1988), or other opportunities come along that need other forms (Serapio and Cascio 1996), the firm no longer wants to be involved in this specific alliance. Hence, if the environment is increasingly uncertain, and external conditions to the firm are changing, we would expect the firm to involve less in one specific alliance.

**H 13: Increasing levels of environmental uncertainty is negatively related to alliance involvement.**

The relationship between environmental uncertainty and alliance involvement may be illustrated in figure 5.3:



**Figure 5.3: Environmental Uncertainty – Alliance Involvement**

## **5.5 Chapter Summary**

In this chapter I have discussed possible relations between the three main constructs environmental uncertainty, alliance involvement and strategic flexibility. As I see the five variables of strategic flexibility as independent, I have constructed relations between alliance involvement and the dependent variables separately. Theoretically there seems to be little reason to believe that firms engaging in alliances that have high innovative capacity also have high resource portfolio or have high opportunism. Combined or multiple effects could be an interesting continuation of this study, but is not considered in this thesis.

The hypothesis put forward build on previous studies. Generally, they propose that high involvement alliances are associated with high resource flexibility, but also with high constraints. Being involved in an alliance, I argue, may thus not only give the firm opportunities, but also reduce them. There is, however, some support in theory that social involvement may have positive relations to both resource access and reduce constraints, which in this chapter is set forward as an alternative hypothesis.

I also propose that alliance involvement is stable over years, i.e. firms engaging in an alliance cannot change their level of involvement easily. Furthermore, I believe that high levels of involvement over time generally strengthen the association between involvement and flexibility, although changes in involvement could have both negative and positive effects on resource flexibility. Increases in involvement may stimulate resource transfer, but may also be a sign of alliance instability restraining resource transfer.

The next two chapters will deal with measurement issues, first operationalization issues, then the process of building reliable and valid scales are discussed.

## 6. Research Design

So far in this dissertation I have been discussing approaches and constructs on a theoretical level. In this, and the following two chapters I will enter the empirical level, trying to find out whether my theoretical dimensions can be represented as empirical variables, and whether the relations between these variables behave as predicted. In this chapter I will start to discuss the design process, or thoughts on how to change the focus from the theoretical level to the empirical. In the second section I describe the study, starting with the pilot and pretest, and then the final study. Two samples were used in this study. The first consists of 100 alliances in 1993; the second is a follow-up study of these alliances and some additional alliances collected in 1998. The empirical part of this thesis consists of five parts: pilot study, pretest; expert and firm sample, survey original sample and new sample. In the pilot study I wanted to look at the empirical content of my theoretical variables and develop understanding for exact wording, in the pretest the questionnaire was tested, first on expert colleagues, then on a representatives of the sampling population.

### 6.1 Choice of Research Design

To test my theoretical hypotheses I need to choose a research design that captures my theoretical ideas in an empirical setting, and that meets the requirements for testing. What requirements should be met to draw inferences about the relationship between environmental uncertainty, alliance involvement, and strategic flexibility?

Research designs may be classified as exploratory, descriptive and causal (Grønhaug 1985). Exploratory designs are preferred when little previous information exists about the phenomenon, and the focus is on building new theory (Context of Discovery). In situations where previous research on a phenomenon is extensive, the researcher is better able to present structured problems, that can be tested (Context of Justification). Descriptive designs test pre-specified

associations without giving information on which variable is the cause of another. Causal designs aim at finding causes and effects.

The phenomenon of interest in this study, strategic flexibility, is a novel concept that has only partly been tested empirically before. In this sense, it could as well be placed within the Context of Discovery. In this study, however, I have put forward hypotheses that I intend to test. To do this, there are two issues that need to be addressed:

1. Are the theoretical imperatives in previous studies strong enough to specify hypotheses about relations between alliance involvement and strategic flexibility?
2. How can a research design aimed at testing meet the operational requirements of a novel concept?

Based on previous studies on strategic flexibility and alliances, I argue that a reasonable link between being involved in an alliance and effects on strategic flexibility is established. These arguments were presented in chapter 5.

Regarding the operationalization of the concept, much effort was put into a pilot study to empirically explore the theoretical dimensions deducted from previous studies on strategic flexibility. Thus, through interviews in the pilot study, the chosen theoretical dimensions were explored, and a wording of these dimensions developed. In this sense, a combination of deductive and inductive approaches was combined.

In chapter 5 of this thesis, hypotheses were presented on relations between dimensions of flexibility, uncertainty and alliance involvement. My intention is to develop a research design where these relations are exposed to a fair empirical test. Ideally, I would like to find causal effects between alliance conditions and dimensions of strategic flexibility.

The research design that best meets the requirements for establishing causality, is the classical experiment. This design allows for *comparison* between groups with or without treatment.

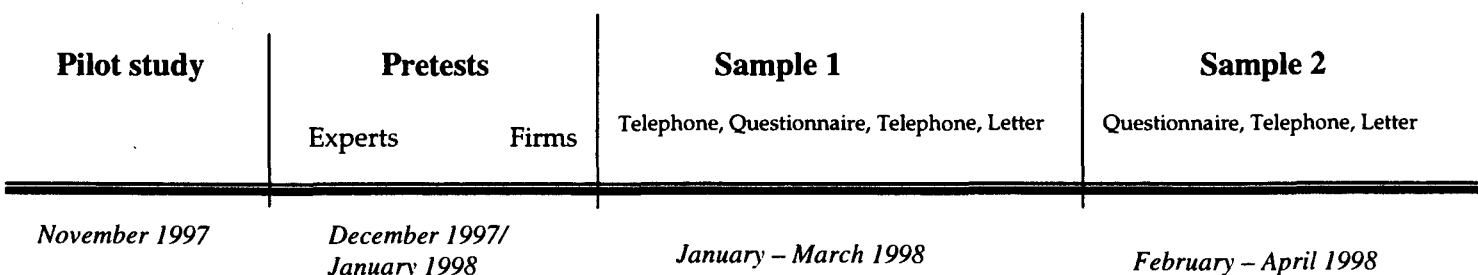


Secondly, the researcher may *manipulate* the treatment. Third, the researcher can *control* third factors to rule out spurious relations.

There are, however, situations in which, the researcher puts more weight on other concerns, and lets go of the control the classical experiment offers. One such cause is *complexity*, as constructing all research variables in an experiment is seen as impossible. This concern applies well to the problem in this thesis, as it is difficult to construct a realistic alliance situation within the limits of an experiment. Additionally, some concepts, like relational investments are *developed over time*, and are therefore difficult to design in an experiment. On these grounds the classical experiment was abandoned. Modifications of the classical experiment include abandoning control groups (field experiments), no randomization to test and control group (quasi experiments), and abandoning manipulation (natural experiment) (Pedersen 1989). In my study, these designs are also inappropriate. First, manipulation of the chosen explanation factors in firms is not possible. As a researcher I cannot design differing levels of involvement in alliances. Second, assigning firms to test and control groups also seems like a moot idea, as treatment neither can be varied by the researcher, or by reasonable expectations occur naturally. Consequently, I abandoned the experiment, and chose a cross sectional survey design (Churchill 1991) with two observation points.

## 6.2 The Study

The empirical part of the research process in this thesis can in a flowchart:



**Figure 6.1: Flowchart of the Empirical Research Process**

Before I present each step in this process, I start with a discussion of methodological issues of theoretical population, sample population and informants.

### 6.2.1 Theoretical Population

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In this study I would like to test the theory proposed. Following Calder et al (1981), the aim is to provide general understanding, rather than defend effects within a chosen research setting. The theoretic population that this general understanding is intended to apply to are firms engaging in alliances. It is impossible, however, to collect data from all members of the population. In selecting a sample, we should be concerned with establishing a setting allowing for theory testing, more than being worried about the representativeness of the sample. I can thus argue for the relevance of the study within the chosen sample, but cannot say whether my findings hold for all firms engaging in alliances.

## 6.2.2 Sample Population

The sample population constitutes all firms engaging in alliances within the Federation of Norwegian Engineering Industries (TBL)<sup>1</sup>. This federation was chosen of two reasons. First, I was allowed to use the data set collected by Sven Haugland in 1993 from this Federation (Haugland 1994). To test the theoretical relations presented in chapter 5, cross-sectional data was insufficient, as I also needed to look into developments in alliance involvement and uncertainty over time. Using the already existing data set, and building on this with updated information, allowed me to look into these changes and their relations to strategic flexibility. Second, early in the empirical process, I had a meeting with the research department of the industrial federation, presenting the initial ideas. Through this discussion I was assured that the research problem was relevant in all sub- industries and within the vast majority of the firms. I also felt confident that sufficient variance would be found as to the level of uncertainty these firms experienced. Based on these initial insights, this seemed as a promising setting to enter.

## 6.2.3 Unit of Analysis

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The unit of analysis in this study is the firm, defined as a legal entity. The concepts I am interested in, strategic flexibility pertain to the firm. In some situations, however, I rely on the assumption that alliance level variables impact firm level responses. For example I assume that the ability of the firm to vary the activity level in the alliance belongs to the overall response set of the firm. Additionally, I assume that the level of opportunism in the alliance also constrain firm overall responses. Concerning independent variables, I would like to look at characteristics of the alliance. Since one-sided data will be used, however, I get the estimation of alliance involvement on behalf of the firm, and do not know whether the "total level" when including estimations from the partner is different. Environmental uncertainty is meant to describe the conditions in the industry perceived by the individual firm.

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<sup>1</sup> Teknologibedriftenes Landsforening

#### 6.2.4 Key Informants

In this study a single key informant approach was used. That is, one key informant from each firm filled out the questionnaire on behalf of the firm, representing the overall view of the firm and estimated the alliance characteristics. This method is common in many alliance studies (Heide and John 1990, Walker and Poppo 1991). The problem with this approach are increases in random and systematic error (Phillips 1981). Heide and John (1990) found a significant correlation between buyer and seller perception of transaction cost. John and Reve (1982) also found high validity on structural aspects on the alliance relationship, which point to the conclusion that this method is acceptable, although including a set of informants and informants from both sides of the transaction would give more "*true*" estimations of alliance characteristics, like alliance involvement. Concerning strategic flexibility, gaining access to a partner could give information on the "*other side of the bargain*" giving insight on the "*total flexibility effects of an alliance*." Since my main aim is firm flexibility, one side is seen as sufficient.

Another reason why a single key informant approach was seen as appropriate here was the importance for each informant to be familiar with the alliance as well as knowledgeable about firm activities and environmental conditions. Since the firms in the sample were small, top executives often were the only ones who had this information. This condition was satisfactory in this study as 61 % of the informants were top executives, and others included marketing and sales personnel (10%), financial representatives (5%), and different department directors (24%). A comparative test between presidents and non-presidents revealed no significant differences regarding the dependent variables.

Even in larger firms there is a strong tendency for top executives to act, not as teams, but as "*mere constellations of executive talents*" (Simonin 1997). Bringing in additional informants would then be similar to bringing in people with less expert knowledge to the study, which would not improve the quality of the study.

Survey data can be biased as top managers report social desirable facts, rather than true facts (Podsakoff and Organ 1986). This issue was not seen as a major problem as all informants were shown full anonymity, and the topic of the study was not seen as sensitive.

About half of the informants that participated in the follow-up sample were the same that participated in the 1993 study (Haugland 1994). A t-test comparing the mean scores on the dependent variables indicated a significant (.05) difference only on the decision constraint variable. Mean score for the different informants was .29, while the same responses had a mean score of .25. Thus, there seem to be a tendency towards the same key informants to perceive fewer decision constraints. In the total sample only 71 out of 155 had been contacted before, thus this effect is not seen as a threat to the final results.

The dimensions of strategic flexibility I want to measure in this study have only limitedly been measured before. Thus, I had to develop an instrument that as accurate as possible captured the theoretical dimensions and also made sure that the words used were similarly interpreted and understood across informants. The first of these concerns were addressed in the pilot study, the second in the pretest.

#### 6.2.5 The Pilot Study

The objective of the pilot study was to make sure that the chosen dimensions of strategic flexibility actually were of concern to firms within this industry, and also to learn more about how these dimensions could be captured as precise questions. I was allowed access in one corporation for the pilot study and conducted interviews with three managers representing three different business units. This corporation was engaged in many different types of alliances. As I started reading annual reports, I learned that the corporation the last few years had gone through a strategic consolidation phase. Hence, if dimensions of flexibility were not found in this setting, I would have few chances of finding it in other settings.

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The interviews were open-phased, relatively low structured, and lasted from 1-2 hours. My objective in this phase was stated as:

- What kinds of alliances do the different units engage in and in what way is the firm involved in the alliance?
- In what ways can an alliance partner constrain actions of the firm? Is it important to avoid such constraints?
- What resources are accessed through the alliance? Do any of these resources contribute to the innovative ability of the firm? Do any of these resources reduce the overall risk of the firm?

The three interviews gave complementary information on the various forms of flexibility, reassuring me that these effects are actually found on the firm through alliances. I will not give a lengthy report from the interviews, since results are included in the formation of the survey instrument. Some indications on the types of flexibility are as follows:

- Evidence of avoiding activity level constraints was seen in supplier relationships as variations in volume supply could vary greatly both within one supplier relationship, and the ability to combine supplies from one supplier with alternative suppliers. Towards distributors, the firm had to set a minimum level of activity to keep up the relation.
- Decision constraints were evident in distributor relationships as choosing one distributor constrained the firm from doing business with another. Since distributors were located in other countries, they were difficult to control, and often it was hard to say whether firm decisions were not implemented because extra lags in the distributor firm.
- Portfolio considerations were of great concern in the business units. All of the units wanted access to a more complete portfolio. Also, they had, through a wide network of distributors, access to many different alternative distributors and markets. One unit also had access to alternative production facilities in an alliance partly owned.
- Innovation seemed to be performed mostly in-house, although some influences were seen from alliances. This was especially described in alliances with technologically advanced suppliers, local unrelated network partners, universities, and in an attempt with a competitor

that had failed. Statements like "*We can never be specialists in all fields, and need influences from outside to develop new applications*", imply possible effects from partner firms on innovation ability of a firm.

Based on these findings I felt that I had sufficient information and understanding of the field to design a more detailed measurement instrument.

### 6.2.6 The Pretest

Based on theory and the pilot study I developed a complete questionnaire. Since I expected some alliances from the 1993-study to have terminated, I had to develop two questionnaires, one directed towards firms where the alliance was still going, and one directed towards firms where the alliance was terminated. The questionnaires were first sent to four research colleagues, to test the quality of the instrument. After their input was incorporated, the questionnaires were tested on 10 firms from the Federation of Norwegian Manufacturing and Engineering Industries (TBL). In all of these firms I talked to the president and asked him to choose one of the alliances that his firm was engaged in. Six informants tested the "*still in business*" questionnaire, while four informants described alliances that had terminated. The questionnaire was then mailed to the firms. A few days later we went through the questions by phone. While they gave an assessment of their alliance according to the questions, I also asked for their immediate responses towards the clarity of the question. All of these firms were organized in the Machine Section of the Federation, but four of them also were represented in other sections. Since all of the firms in the Federation are involved in manufacturing, this skewness was not seen as a major problem.

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### 6.2.7 The Main Study

To test the theory, ideally I would like to limit excess variation. Manufacturing firms organized within the Federation vary as to what product they produce to which market, and what competencies they possess. Furthermore, there may be variations tied to the relatively loose notion of what an alliance is encompassing different cooperative relations that could bring in excess variance. To limit unrelated variance a prestudy could have been performed to ensure that enough variance existed within a more homogeneous subsample. This strategy was abandoned for three reasons. Firstly, the cost/benefit was considered too low, as this implied contacting all firms one extra time. Secondly one could risk that the subsample would be fairly low. Thirdly, the data from 1993 included both horizontal and vertical alliances, and I wanted to be able to use all observations in this sample.

As I was interested in alliances characterized by different involvement conditions, all firms with alliances within the Federation were included to maximize variation on the independent variables. I did, however, take some steps to get to know the types of alliances included. When firms were contacted by telephone for participation in the study, I asked them about the alliance they chose to describe through the questionnaire. In the vast majority of cases, the firms described what they termed "*our most important alliance*". In the new sample, firms were asked to only describe alliances that had lasted for over a year. Also in this sample, when discussing alliances over the phone, they clearly chose to discuss their most important alliances. Consequently, the more fleeting encounters are not included in this sample. This issue limits generalizations, as not all alliances firms may have are studied here and relations may be different in less important alliances. This skewness is, however, seen more as strength to internal validity than as a threat to external validity as including all types of possible alliances firms could obscure the relations the study intends to explore. In addition to talking to the firms, I included ownership and vertical/horizontal types as control variables.

Since the sample consisted of firms with alliances, I also had the option to make each firm fill out more than one questionnaire, describing more than one relationship. This option was abandoned due to excess inter-firm variation, and time demands required within each firm.



The samples and the total number of responses received are summarized in table 6.1:

	Total Sample	Responses (Benefit)		Only Sample (1000 of Business)	Added to Sample		Response rate	
Sample 1	100	55	17 <sup>2</sup>	9	12	7 <sup>3</sup>	82%	68% <sup>4</sup>
Sample 2	300	83		100 (9)	98		43%	

**Table 6.1: Sample Summary**

In 1996 the Federation of Engineering and Manufacturing Industries included 652 firms which constitutes my sampling population<sup>5</sup>. Of the members in 1993, 100 member firms participated. In 1998, 13 of these had left the Federation, while 87 were still members. Of the firms that had left the Federation, I was able to contact 9 that agreed to participate in the study.

Of the 100 original firms, all were contacted by telephone. Then a questionnaire was sent by mail to those who agreed to participate. The questionnaire was developed for this research purpose, but included questions for other research purposes. After 2 weeks I followed up by telephone, and after 4 weeks I sent new questionnaires to those who had not yet answered. Of the initial 100 firms, 66 firms still had the same alliance, 25 firms had terminated the alliance, and 9 firms were either bankrupt, did not want to participate, or the alliance had terminated. Of the 66 firms where the alliance still existed, I received 55 filled out questionnaires, of which one was rejected because the majority of the data were missing. Of the 25 firms that had terminated the alliance, 18 sent in filled out questionnaires, 17 of which were usable. The response rate counting only the

<sup>2</sup> Terminated  
<sup>3</sup> Terminated  
<sup>4</sup> Terminated  
<sup>5</sup> Industrifakta '97

used cases, was 82% for existing alliances, 68% for terminated, with a total response rate of: 78%.

120  
194  
21.198  
To increase statistical power, I decided to increase the sample. Hair et al. (1995) give some guidelines about adequate sample sizes. In the original sample I received a total of 71 cases. At this sample size and at an alpha level of .05 detect significantly only approximately 22% of small effects (.2) and 80% of moderate effects. If this sample increases to 150, the numbers rise to 41% and 99% respectively. Therefore I decided to collect additional data. Removing the original sample, the pilot and pretest sample, 558 firms remained in the original Federation member group. Of these 300 were randomly chosen and received a questionnaire. The questionnaire was sent to the president, asking him/her to deliver it to a person being central in one alliance.

A sampling procedure was used to avoid selection biases. By random sampling each firm has the same probability of being chosen. By using this method, I tried to avoid selecting a sample that was systematically different from the population.

In the cover letter I asked them to answer the questions based on one alliance, either with a customer, supplier, competitor or another type of firm. To make sure that the alliance had been there long enough for effects to occur, I asked that the relationship had lasted at least one year. Instead of alliance, the Norwegian word "*samarbeid*" was used. Both in literature and among many firms, the word "*alliance*" refers to a close, long term, involving agreement between horizontal partners. In this study we also wanted to include less close relationships, thus the word "*samarbeid*", denoting a relation closer than a market relation, but weaker than a strategic alliance, was preferred.

The mail survey resulted in a disappointing 8% response rate, and I decided to start calling the firms to ask them to fill out the form. As calling is a time-consuming process I suspected it would not be necessary to call all the firms, thus, the firms were ordered in a random number, and contacted thereafter. Of the remaining 280 firms, I ended up talking to 230. 100 of these firms did not engage in any form of cooperation, 9 firms were out of business. If we take these

firms out of the sample, there are 193 firms left of the original sample. To the firms that had agreed to respond, but failed to do so within 4 weeks, I sent a new letter. Totally, I received 93 responses, but 10 were rejected because some of the questions were not addressed. I was left with 83 responses, which in this sample gives a response rate of 42 %, a reasonable rate in this type of study.

#### 6.2.8 Validity Discussion

Cook and Campbell (1979) discuss four dimensions of validity: *statistical*, *internal*, *construct* and *external*. If we look at the manner in which the non-experimental field study is able to claim these types of validity, we see that this design is relatively weak.

*Statistical validity* refers to inferences about whether it is reasonable to presume co-variation given a specified level of  $\alpha$ , and the obtained variances. Threats to this type of validity include violating statistical methods assumptions (treated in the next chapter), and low sample size. Statistical methods and assumptions are treated more thoroughly in chapters 8 and 9. Sample size for the cross sectional part of the model is 132, for the comparison parts about 55, which for the number of relations involved should be adequate.

*Construct validity* refers to the fit between theoretical and empirical constructs. What we want to avoid is “*confounding*”, in the sense that indicators meant to measure one construct can be applied and understood as another. Concerns with construct validity are essential in all empirical studies, and will be treated more thoroughly in the next chapter.

*Internal validity* concerns the relationship between variables in the model, more specifically whether we can draw a causal relationship between them. Cook and Campbell (1979), based on John Stuart Mill, present three criteria for inferring causality: 1) Covariation between cause and effect, 2) Temporal precedence of the cause, and 3) Ability to rule out alternative interpretations.

Covariance is established through statistical correlation and control (Statistical conclusion validity). Concerning temporal precedence, independent variables should ideally be measured well before effects are seen. In this study I have data on the alliance five years prior to potential effects. This lag is seen as too long to draw direct causal effects, and is seen as more appropriate as an anchor to study developments in alliance involvement over time. We could argue that alliance commitment naturally precede alliance constraints and resource access. This is a theoretical argument claiming that a time series design is not needed to claim causality. There are two issues that should be considered against this. First, alliance conditions develop gradually. Thus, an alliance may become more strategic over time, and social investments may build up over years. Second, it seems reasonable to assume that constraints and resource access could be a factor influencing these processes. Therefore, the requirement of time precedence is at not met in this thesis. No causal conclusions can therefore be drawn on the basis of this study.

*External validity* is related to whether results from the study can be generalized to other contexts. Calder, Phillips & Tybout (1981) distinguish between *theoretical* and *effect* application. The difference lies in what is to be generalized; specific effects, or the explanations. In this study I have developed a theoretical framework I want to test, and am concerned with test of the theory rather than the results being representative to the population. To obtain this, an experimental design is preferred. For reasons already discussed, another design has been chosen, allowing more heterogeneous informants. I have, however, selected firms from one industry, which may remove some of this variance.

### **6.3 Chapter Summary**

In this chapter I have argued for cross sectional design. This design does not make allowance for causal conclusions, but ensures the need for a real setting not constructable in an experiment. I have also presented my study and argued for the various choices that had to be made regarding the empirical setting. Even if my strategic flexibility variables have not been studied empirically before, two issues in this design have led me to apply a quantitative design. First, through the theoretical treatment in chapters 2,3, and 4, I have extracted narrow theoretical constructs and been able to use previous approaches to construct testable relations between these. Second, through a design starting with initial qualitative interviews, I was able to establish the empirical foundation for these variables.

Based on theory, the pilot test, and the previous questionnaire, a new questionnaire was designed and tested again in a pre test. The final study included the original 100 firms, with 55 usable responses of continuing alliances, and 17 usable responses of terminated alliances. Data was also collected from a second sample from the Federation, originally consisting of 300 firms. 109 of these firms reported no alliances or were terminated. I received 83 usable responses.

In the next chapter the empirical “*translation*” of the constructs is presented. Developing a measurement model is the theme of chapter 8, whereas the results of the study are presented in chapter 9.

## 7. Measurement

In chapter 4 I developed theoretical constructs and in chapter 5 the relations between these variables were developed. To test these relations in an empirical setting, I need to “*translate*” or operationalize these constructs from a theoretical to an empirical level, to be able to test the hypothesized relations in an empirical setting. The objective of this chapter is to describe the process of operationalization.

Churchill (1979) recommends the following operational procedure:

1. *A pool of usable items is developed for each construct, based on theory and previous items*
2. *These items are tested by experts and a pilot study*
3. *Develop a multimeasure instrument*
4. *Test the instrument on a pre-test group*
5. *Develop a final instrument.*

To a great extent, this procedure was followed. The only exception was the small pre-test sample that did not allow for a construct validity testing of the measures.

Construct validity concerns whether the measures developed reflect the theoretical measure, and has four dimensions; *face validity*, *convergent validity*, *discriminant validity* and *nomological validity* (Reve 1985). If the items “*look right*”, the measure has high face validity. Face validity is addressed in this chapter, as the logic of each operationalization is discussed. Often, a variable is measured through several items. When intra construct-items converge, convergent validity is high. Discriminant validity is high if the correlation between items aimed at measuring one construct and items aimed at measuring a different construct is low. Nomological validity is high when the variables behave as expected. Convergent, divergent and nomological validity is treated in chapter 8 through factor and correlation analysis. A Likert scale was chosen for all items. Likert scales are much used in the social sciences (Nachmias and Nachmias 1981) and Likert scales were also used in the 1993 questionnaire. To get consistence throughout the questionnaire, this scale was preferred also for the flexibility items.

The indicators presented are translated from Norwegian to English. The original questions are included in the appendix.

For two of the main constructs: uncertainty and alliance involvement, I had measurements both in 1993 and 1998. Alliance involvement indicators are identical in the two questionnaires, while the uncertainty indicators are different. In this chapter I present both operationalizations and discuss content differences, and whether or not a comparison can be performed.

All variables in the study are perceptual observations from one key informant giving information about firm level variables. One may argue that these are biased and untrue and do not represent “*real factors*”. A counter argument is, however, that managers, when for example choosing which alliances to enter and what elements to include in the cooperative agreement, do not base their decisions on “*real factors*”, but on how they perceive factors like the environment and asset specificity. Thus, these observations are the ones that should be studied.

## **7.1 Resource Access**

This construct consists of two variables that I believe are connected but still reflect separate variables: Portfolio diversification and innovation flexibility

### **7.1.1 Portfolio diversification**

Portfolio diversification is theoretically seen as having access to strategic alternatives that reduce overall firm risk exposure. By having access to alternatives the firm becomes more flexible because it can choose between alternatives if claims on the organization change.

Empirically I choose to see the variable as *perceived access to alternative design of production processes, alternative distribution systems, alternative products and alternative markets weighed by perceived risk reduction.*

Items measuring this variable were developed by first collecting items from previous studies. These have not previously been tested. Items were found in Ansoff (1965) (number of independent technologies, customers and market segments) and Aaker & Mascarenhas (1984) (multiproduct programs, multiple plants, multiple distribution channels, maintain presence in multiple markets). Thereafter the issues were studied in the pilot study. Several relations in the firm were explored, and indications of these alliances giving access to alternative distribution channels, alternative markets, alternative products and alternative distribution channels were found. For example, in one alliance relation, the partner had production facilities in another country and at a lower technical level than own factories. If demand for more sophisticated products were reduced the firm still had access to production capacity at another end of the scale. The firm also cooperated with other firms supplying products that were complementary to own products. Thus, if demand for own products decreased, the firm could still distribute partner products. A series of partners in different countries spread market risk and also offered alternative distribution channels. Based on this insight the following items were developed:

### **Portfolio diversification<sup>1</sup>**

*As a consequence of this cooperation, to what extent has your firm gained access to alternative choices regarding:*

*"Alternative designs of production" (PO1)*

*"Alternative modes of distribution" (PO2)*

*"Offering alternative products" (PO3)*

*"Offering products in alternative markets" (PO4)*

*"To what extent is your firm's risk reduced as a consequence of this cooperation?" (PO5)*

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This variable was measured on a seven point Likert scale anchored by "To a little extent" and "To a great extent". A 0 – value choice was also offered as "The issue does not relate to this cooperation".



### 7.1.2 Innovative Capacity

Theoretically this variable was defined as innovative capacity. Innovative capacity makes the firm more flexible strategically either because the firm has knowledge to a wider range of technologies, or because a strong innovative capacity gives a firm a running start when an area emerges as attractive (Aaker and Mascarenhas 1984). Empirically I see this variable as:

*Perceived contributions to innovative ability.*

Innovations are by definition unique, and include an element of newness (Nohria and Gulati 1996; Schumpeter 1934). My interest lies, however, not in measurement of the actual innovative capacity in firms, but rather in looking at the influences on innovative capacity from alliance partners. Thus, indicators attempting at ranging firms innovative capacity directly, were not considered (examples of such rankings are found in Nohria & Gulati, 1996 and Goes & Ho Park, 1997).

When I developed these items, I sought inspirations from various sources. Most important was Ansoff (1965) and Aaker & Mascarenhas (1984), who acknowledge the difficulty of measuring this concept, but suggest two different ways of going about it. One is measuring the level of technologies in ferment. This was difficult to do in my study since promising technologies would be difficult to identify and compare across the entire sample. The other method was to identify R&D strengths. Aaker & Mascarenhas (1984) argue that strategic flexibility is obtained if R&D strengths is maintained. Since my aim is to study how an alliance may impact dimensions of strategic flexibility within a firm, I chose to operationalize this variable as influences on R&D strengths or capacity from the alliance.

Other influences to the items include Dyer (1997) who looked at the information-sharing aspects in alliances, including a measure of alliance influences that have resulted in new solutions (See Item IN2). Another influence is Simonin (1997) looking at knowledge transfer and protection. Five items were developed reflecting innovative flexibility, while one measure was developed to measure loss of core knowledge to alliance partner or knowledge protection. The pilot study also

gave influences to items for example as one supply relationship increased firm creativity (IN5) and influenced process improvements (IN4).

## **Innovative capacity<sup>23</sup>**

*"Our cooperative partner plays a key role in the development of our firm" (IN1)*

*"Without our partner we would not have had the new solutions that we have today" (IN2)*

*"This cooperation has not contributed to our ability to create new solutions" (IN3)*

*"An important part of this cooperation consist of discussing how we can improve our products and work processes" (IN4)*

*"This cooperation contributes to our firm's creative abilities" (IN5)*

## **7.2 Constraints**

As stated in chapter 3, constraints are seen as limitations to the strategic flexibility of a firm set by the alliance partner. These constraints are seen as limitations to making changes within the alliance relation. Three such limitations were identified: decision constraints, activity level constraints, and opportunism.

### **7.2.1 Decision Constraints**

Theoretically decision constraints are seen as limitations to the ability to take independent strategic decisions. As alliances always involve combining two independent parties, the firm never has full autonomy over the partner firm, and can, to varying extents, risk delays in the decision process, or experience constraints in terms of looking into new strategic opportunities. I chose to operationalize this variable as: *Perceived level of limitations to firm decision- making imposed by partner firm.*

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<sup>2</sup> This variable was measured on a 7-item Likert scale anchored by "very bad description" to "very good description".

<sup>3</sup> The scale of items IN3 is reversed

Influences to this measure were taken from Hladik (1988) concerning lack of autonomy and ability to unilaterally control outcomes (DE1 and DE3), and Moxon et al (1988), concerning delays in decision processes (DE2). These concerns were also seen in the pilot study.

## Decision constraints<sup>45</sup>

*"Mainly we take the decisions we want to, and do not experience constraints from our partner"* (DE1)

*"We often experience delays in our decision processes due to our partner"*(DE2)

*"Connection to this partner constrain us from looking into strategic opportunities that could have been interesting to us"*(DE3)

### 7.2.2 Opportunism

Theoretically, opportunism was defined as level of distortions experienced by the alliance partner. If a firm expects opportunism to be present in the alliance, it would regard it as probable that any change attempts was distorted and killed by the alliance partner. Operationalizations of opportunism include John (1984) and Haugland (1994). I have used Haugland`s (1994) operationalizations, and see opportunism as Perceived level of distortions in the alliance.

## Opportunism<sup>6</sup>

*Our partner occasionally tries to hold back information that could be useful to us (OP1)*

*Our partner occasionally tries to hold us out (OP2)*

*It has happened that our partner ha given the impression that we do not fulfill our obligations even if this is not true (OP3)*

*We are confident that our partner does not try to exploit this cooperation (OP4)<sup>7</sup>*

<sup>4</sup> This item was measured on a seven item Likert scale anchored by "A very bad description " to a "very good description"

<sup>5</sup> The scale of item DE1 is reversed

<sup>6</sup> These items were measured on a seven point Likert scale anchored by "A very bad description " to a "very good description"

<sup>7</sup> The scale of OP4 is reversed

### 7.2.3 Activity Level Constraints

On a theoretical level this variable was defined as limitations to vary level of activity. If level of activity in a firm is set, or constrained by any activity in the value chain, the firm must stay at a certain level of activity and is unable to vary this according to fluctuations in demand. In this study I am interested in activity level constraints imposed on the firm through the alliance and see activity level constraints as: Perceived ability of the firm to vary its level of activity represented by the alliance.

Volume flexibility has been operationalized in a series of studies related to a certain specific production process (Fiegenbaum and Karnani 1991; Gupta and Somers 1992). Gupta and Somers refer to and develop further operationalizations focusing on the range of activities, and the speed and cost of implementing these. Fiegenbaum and Karnani measure variations in output in firms. Other influences include a previous study of the shipping company Laboremus (Lunnan 1992) where this firm reported that increases, and decreases in the volume of the activity the alliance offered and alternative alliance sources could easily be acquired (VO1, VO3, VO5). The pilot study demonstrated levels of cooperation that were set, and not up for alterations (VO2, VO4). Thus, five items were developed;

#### Activity level constraints<sup>89</sup>

*"If we need to, we can quickly increase the scope of our common business" (VO1)*

*"We have set a level of products/services and are not able to exceed this" (VO2)*

*"We share a clear understanding with our partner that if our firm experience periods of problems we can reduce the volume of the cooperation"(VO3)*

*"Even small changes in cooperative volume must be renegotiated" (VO4)*

*"In this cooperation it is clearly understood that we can enter a cooperation with another partner if we need more services and the capacity in our partner firm is limited"(VO5)*

<sup>8</sup> This item was measured on a 7 point Likert scale anchored by "a very bad description" to "a very good description".

<sup>9</sup> The scale of items VO1, VO3 and VO5 are reversed

### **7.3 Alliance Involvement**

As described in chapter 4, the alliance involvement construct consists of 3 variables: asset specificity, strategic importance and relational investments.<sup>10</sup>

#### **7.3.1 Asset Specific Investments**

As defined in chapter 3, asset specificity consists of assets that are specific to a certain relation. Operationally I define asset specificity as physical equipment, skills and relational investments that are specific to dealing with the alliance partner.

Previous studies that have measured asset specificity include Anderson (1985), John and Weitz (1989), Heide and John (1988), and Zaheer and Venkatraman (1995). The human skill indicators in these studies relate to customized or specialized issues, but are directed towards general tasks in the focal firm compared to other firms, whereas the indicators used in this study are phrased towards the physical, relational and skill specific investments in this particular relation. These items are identical to the 1993 questionnaire.

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<sup>10</sup> All involvement items are measured on a seven item Likert scale anchored by “very bad description” to “very good description”

## Specific investments in physical equipment

*"To perform this cooperation it has been necessary to invest in equipment and buildings" (ASPH1)*

*"It is important to us that this cooperation continues since a termination will result in financial losses due to lost investments" (ASPH2)*

*"A necessary requirement to realize this cooperation was to undertake investments to be seen as specialized towards this relation" (ASPH3)*

*"It has been necessary to adapt our production equipment to our partner to pursue this cooperation" (ASPH4)*

## Specific investments in human assets

*"It has been necessary to give employees who are working with our partner specific training in the particular business area" (ASCO1)*

*"In this cooperation it has been necessary to thoroughly learn different areas of our partners business" (ASCO2)*

*"To pursue challenges in this cooperation it has been necessary for us to acquire competence that has little value if this cooperation is terminated" (ASCO3)*

*"Through this cooperation our firm has gained new competence. It is, however, difficult to see how this competence is to be used if the relation terminates" (ASCO4)*

## Specific investment in the relation

*"It would be a great loss to our firm if this cooperation terminated" (ASRE1)*

*"We spent much time and resources building this cooperation" (ASRE2)*

*"Through this cooperation it has been necessary to adjust our own organization and strategy to our partner" (ASRE3)*

*"The resources we have spent to build a good connection to our partner are seen as investments that will bring future return (ASRE4)*

### 7.3.2 Strategic Involvement

Alliances will be more or less strategically important to a firm (Contractor and Lorange 1988; Yoshino and Rangan 1995). Yoshino & Rangan (1995) argue that for an alliance to be strategic, the cooperation must take place in one of the firm's key strategic areas. By being in a key strategic area, alliance importance is also seen as involving the most strategically future attractive areas. In chapter 3 strategic importance was defined as: Level of strategic closeness to the firm. Operationalizing the concept, I choose to view strategic importance as the perceived importance of the alliance related to firm strategy.

Previous studies that have measured strategic importance in alliances include Harrigan (1985) who used three indicators of being in the major business of the firm, association and corporate identity and effects on core customers of abandonment of the alliance. Cullen, Johnson & Sukano (1995) used a single item measure in their study asking respondents to indicate strategic importance of alliance to the partner firm. In a recent study Contractor & Kundu (1998) looked at perceived strategic importance of a number of factors related to mode of entry. Their factors are very specific to the hotel industry, however, but represent a more specific operationalization of this variable. In this study I chose to follow the operationalizations of Haugland (1994). These items have similarities with Harrigans (1985) first two items and Cullen et al (1995):

### Strategic involvement

*"The content of this cooperation is close to our firms key strategic areas" (STR1)*  
*"This cooperation is strategically important to the future development of our firm (STR2)*  
*"This cooperation gives valuable knowledge and competence regarding our future core areas" (STR3).*

### 7.3.3 Social Involvement

In chapter 3 I defined social investments as social bonds developing between alliance participants. Empirically, I choose to see these bonds as *perceived level of favorable personal relations, mutuality and solidarity in the alliance relation*

The role of the manager is seen as crucial for creating trust (Yoshino and Rangan 1995). As Håkanson (Håkansson 1982; Håkansson and Johanson 1988; Håkansson and Snehota 1989) and Harrigan (1985) both point to, favorable personal relations may pose as an exit barrier for firms. Face to face contact is seen as important for the reduction of information asymmetry and (Heide and Miner 1992). Kanter (1994) argues that personal sides of alliances do not deny strategic issues, but maintains that deals often turn on rapport between executives. Personal relations may open up to conflict, hence it is the *favorable* personal relations act as exit barriers (Harrigan 1985) Thus, empirically, personal relations are seen as *the perceived importance of having developed good personal relations in the alliance*

I have not been able to locate other operationalizations of favorable personal relations than Haugland (1994) and the indicators used are identical to these.

#### Personal relations

*"In this cooperation it is vital to have good personal relations" (PERS1)*  
*"Cooperating with this partner is uncomplicated because we know each other well" (PERS2)*  
*"Favorable personal relations have been a driving force in this cooperation" (PERS3)*  
*"Favorable personal relations have caused few problems in this cooperation" (PERS4)*

Two additional variables were chosen to indicate level of social bonds developing between alliance participants: Solidarity and Mutuality, both of which are relational norms (Macneil 1980). Kaufmann & Dant (1992) give operational examples of both solidarity and mutuality.



This study relies on reversed item scales. I chose to use the operationalization of Haugland (1994).

Solidarity is defined theoretically as: A sense of unity among members of the network. It is the "common conscience," a norm of stability, preservation, and sometimes sacrifice (Macneil 1980). Empirically I choose to define this variable as the perceived level of preservation of the alliance relation

Macneil (1980) noted that positive values and affect rather than lack of conflicts and little "love lost" drive this norm which should favor positively framed indicators.

## Solidarity

*"It is important to us that our connection to this partner is continued" (SOL1)*

*"Through our contact with this partner we continuously plan how the relation may be developed further" (SOL2)*

*"A characteristic with this relation is that no party will do anything that can hurt the other" (SOL3)*

*"If our partner has a problem, we are always there to help" (SOL4)*

Due to the content of these items, they were excluded from the follow-up sample that had terminated.

Mutuality is defined theoretically as alliance partners acting in the interest of the mutual good and equitable sharing of future benefits and burdens. I choose to see mutuality empirically as the *perceived level of equity sharing in the alliance*.

## Mutuality<sup>11</sup>

*"We feel that we and the partner receive equal benefits from this cooperation" (MUT1)*

*"We feel that our partner receives a disproportionate share of benefits from this cooperation" (MUT2)*

*"To us it is as important that both parties receive their share, than that we receive our share" (MUT3)*

## 7.4 Environmental Uncertainty<sup>12</sup>

The construct of uncertainty denotes elements that may change in an unpredictable manner. I chose to include two dimensions of uncertainty: complexity and dynamism. In filling out the questionnaire, informants were asked to answer the questions describing their environments the last four years. This was done for two reasons. First, I wanted a description that did not include the period before 1994 when part of the sample had been responding. Second, by anchoring the questions over a period, I hoped to not get a situation of only today, as flexibility issues are expected to follow uncertainty perceptions. Thus, I wanted to make sure that the responses matched the general uncertainty over the period, and not just indicate perceptions of just today. Buchko (1994) compared perceptual and factual measures of uncertainty, and found little correlation. I chose to measure this construct through perceptual measures, since these are the signals that managers will act upon.

### 7.4.1 Complexity

Organizations producing a product requiring many different inputs and outputs, find resource acquisition and disposal more complex than other organizations. There is a premium on ability to moderate existing volume and alter strategies. Due to the uncertainty on buyer needs there is a

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<sup>11</sup> The MU2 scale is reversed

premium on being able to diversify into products with other features, being able to distribute to meet customer needs or balance off risk with entering other markets.

Theoretically complexity is defined as the heterogeneity and range of an organizations activities (Child 1972). I follow the operationalization of Bensaou (1992) seeing complexity as product level of customization. Achrol & Stern (1988) see diversity/complexity as preferred variety and Miller (1987) as needed diversity which also have been an inspiration when developing my measures. Operationally I choose to see complexity as the perceived extent to which main products in the firm have low levels of standardization and high level of customization.

Low levels of customization implies that there is uncertainty towards what exactly are customer needs. Low level of standardization implies that even as complex customer needs are unfolded, either the scale is to low or the changes too great for standardization. Thus, handling customer needs always imply an “*element of newness*”.

## Complexity

“Our products have a low level of standardization” (UNC1)

“Our main products generally must be individually adapted towards each customer” (UNC2)

### 7.4.2 Dynamism

Theoretically the variable is defined as change in key environmental areas that is difficult to predict. Operationally I choose to define the variable as perceived, unpredictable change the last four years in key areas of product demands, customer supply, technology change, expertise supply, and supplier stability

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<sup>12</sup> All uncertainty items are measured on a seven item Likert scale anchored by “Very bad description” to “Very good description”.

Operationalization of items is based on Achrol & Stern (1988), looking at dynamism in marketing practices, and towards customers and competitors. Several articles have looked at technology uncertainty (Bensaou 1992; Gulati 1995). In the Engineering industries in Norway an internal study showed that many firms faced difficulties finding competence, or personnel with expertise. Thus this dimension was also included. I also added frequent supplier changes as a dimension to indicate input unpredictability.

## Dynamism

*"Our main competitors often surprise us with product changes" (UNC4)*

*"It is difficult to predict product development changes" (UNC5)*

*"We have, during the last four years had some problems getting the needed expertise" (UNC6)*

*"We have, during the last four years often exchanged key suppliers" (UNC7)*

Haugland's (1994) measures of uncertainty were thus not followed up exactly in my study. Haugland (1994) measured a general level of uncertainty pertaining to the alliance relation. I wanted my measure to be a general uncertainty measure of the environmental conditions of the firm. I will still argue that it is possible to do a comparison of the two measures based on an *"general level of uncertainty"* reported in the two time periods, and based on the similarities of item content. Thus, I argue, the measures cannot be directly compared, but each give a general indication of the perceived level of uncertainty facing the firm, and in my view changes in this general uncertainty may be used to predict flexibility outcomes. The items studied by Haugland (1994) are:

*Competitive and market issues*

*Access to important input factors*

*Technological development*

*Competitor actions*

The items were measured on a seven point Likert scale anchored by “*related to little uncertainty*” and “*related to much uncertainty*”.

Although my measures were related to the firm level and Haugland`s to the alliance, to respond to Haugland`s questions firms necessarily must look at issues outside the alliance. Furthermore, both customer, important input factors (competence was seen as a critical input factor in an internal report), competitor relations and technology developments are considered in both questions, allowing for a general comparison. Thus, as long as a direct comparison is not sought after, I argue that the two variables are sufficiently comparable to give an indication as to whether stable environmental conditions or changing conditions affect strategic flexibility variables.

## ✕ 7.5 Termination

Termination was measured by asking the key informants over the phone the question:

*Do you still cooperate with this particular alliance partner?*

## ✓ 7.6 Control Variables

A number of control variables were included to see whether the dimensions resource diversification and alliance constraints actually are predicted by uncertainty or alliance involvement, or whether alternative explanations are more powerful.

**SIZE OF FIRM.** The size of the firm has traditionally been connected with production efficiency, through scale economies, and better bargaining powers towards financial institutions, customers and suppliers (Ashkenhas et al. 1995). Fiegenbaum and Karnani (1991) also mention brand name recognition, experience curve effects and monopoly power as factors that generally support a positive relation between size and profitability. Managing large organizations seems to require relatively more administrative personnel, although this may differ between occupational groups (See Scott, 1991 for closer examination). The Weberian idea that size go together with bureaucratization, also seems generally supported (See Scott 1991, Child 1972). The larger a firm is, the more complex are relations within the firm, and the more rules replace a personal management style. Large firms thus generally enjoy lower production costs, and higher market shares. If the environment changes, due to their financial position and higher market share, they are less vulnerable than firms with higher production costs are and weaker brand names. Thus, it seems as larger firms would be generally less interested in flexibility.

Small firms, on the other hand, are found to have more interactions between departments, and being able to better reap synergies between departments. Furthermore, decision-making is centralized and much faster than in larger firms (Neilsen 1974). Fiegenbaum & Karnani (1991) also refer to managers of smaller firms as having higher achievement, and taking higher risks.

Empirical studies that have addressed the issue of size include Fiegenbaum and Karnani (1991) who tested the relation between size and output flexibility on a sample of over 3000 firms in 83 industries. This finding is consistent with Mills and Schumann (1985) who saw that small firms absorbed a disproportionate share of industry-wide output fluctuation as output volume varied more in small firms.

Berg et al (1982) found that size of the firm had positive effects on joint venture participation. They explained this finding by underlining the larger resource base in larger firms. Large firms, they argue, have better and more opportunities to seek external linkages through economies of scope. Larger firms are also more attractive partners, although small, specialized, high tech firms also desirable partners. The idea that larger firms are the ones that enter alliances were also

supported by Hagedoorn and Shakenraad (1994). Thus, there are no consistent predictions that size will have either positive or negative effects on alliance constraints or resource diversifications, but there are arguments that firm size can predict the hypothesized relations either way.

Firm size (SIZE) is measured as number of employees.

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**VERTICAL / HORIZONTAL ALLIANCES:** This study includes both vertical and horizontal alliances. It is possible, however that flexibility content in vertical and horizontal alliances may differ. In the pilot study it seemed, for example, that alliance constraints was a larger concern in vertical than horizontal alliances. Gaining access to for example alternative distribution channels, may also be a vertical undergoing, even if a horizontal supplier could offer this possibility. Harrigan (1988) found that horizontal ventures were more likely to be judged as success stories, which could indicate that firms experienced higher levels of resource transfers in these relations.

This variable (TYPE) was measured as a dummy variable:

- 1: Vertical relation consisting of customers and suppliers
- 2: Horizontal relation: consisting of competitors and other horizontally related firms.

**YEAR:** The study only includes alliances that at minimum had existed a year. As alliance formation processes may take time (Yoshino and Rangan 1995), it could, however be so that new alliances did not have the time yet to have experiences resource access, for example. Additionally, social bonding would normally be more established in older alliances, and unsuccessful matches terminated (Anderson 1985).

Year (YEAR) was measured as number of years the alliance had existed.

**CONTROL.** Amount of equity control was also included as a control since equity has a positive effect on learning and resource transfer (Grant and Baden-Fuller 1995), and could be related to ability to avoid constraints by authority. This item was measured by

- 1: Equal control: No equity control or equal equity control
2. Partner dominant equity control
- 3: Firm dominant equity control

## **7.7 Chapter Summary**

In this chapter I have given each theoretical construct defined in chapter 4 an empirical content suitable for a questionnaire format. Except for opportunism, items for each strategic flexibility construct were developed in this study, based on theoretical imperatives and information from the pilot study. The alliance involvement items were taken directly from the 1993 Haugland study. This was done to directly be able to compare the two samples. The uncertainty scales were based on previous studies and differ somewhat from Hauglands measures. Based on previous theories on environmental uncertainty I chose to see this construct in two rather than one dimension, and influences from studies that previously have done this, guided the operationalization process. I argue, however, that the 1993 uncertainty measure and my dynamism measure are so close, that they can be compared.

In the next chapter I will discuss the development of the measurement model.



## 8. Developing and Validating Scales

In chapter 7 the specific items reflecting the underlying theoretical constructs were developed. To increase construct validity, multi-item measures were developed for each variable. In this chapter, I will discuss the process of combining these items into a scale, and in this process validate the scale concerning reliability, convergent validity, discriminant validity and nomological validity.

Using several items to represent a construct has different functions relating to a construct being reflexive or formative (Troye 1994). A formative construct is made up by a series of items and it is important that the items capture the entire domain of the construct. Reflexive constructs, on the other hand, are observed through items that should be highly correlated. All constructs in this thesis are perceived to be ~~reflexive~~. Reliability, or the extent to which indicators consistently measure the same unobserved construct, is assessed by Cronbach's Alpha. Reliability is a consistency measure, looking at the stability or consistency of a measure across indicators or over time. A value close to 1 indicates high reliability. In early writings Nunally (1978) argued that acceptable values had values over .70. Hair et al (1995) have, however, later modified this "*rule of thumb*," accepting lower levels (0.5-0.6) when the construct is developed in earlier stages of research. Most scales measuring uncertainty usually have not demonstrated values higher than 0.5 – 0.7, and the alliance constraints and resource diversification constructs are new and developed in this study. Thus, values below 0.7 should be tolerated for these scales.

Discriminant and convergent validity is assessed through factor analysis. All items are pooled together, and convergent and discriminant validity are acceptable due to the extent that the expected number of factors result and that items load on the factors they are supposed to load on.

Scale development is based on a combination of convergent and discriminant validity concerns. In this chapter I present results of this process including the deletion of certain items. Towards the end of the chapter a correlation matrix is included. This matrix gives the Pearson coefficients between all variables in the study to assess nomological validity.

Items in the survey were measured on a 1-7 graded Likert scale. This scale was rescaled into a 0-1 scale, with an average of 0.5. This procedure is recommended by Petersen (1996) to obtain results that are easier to interpret and compare. The same procedure is followed for samples including all data collected in 1998, the 1993 sample and follow-up 1998 sample.

The resource portfolio variable also had a zero option, indication that the alliance did not offer any choices. In the analysis this score was put into the first category, i.e., those who got access to no or very low portfolio flexibility through the alliance were coded together. The informants that reported no increase in their portfolio flexibility were distributed as follows according to the 5 items making up this scale: 47 got no additional mode of distribution (30%), 26 informants reported no increased access to alternative products (17%), 36 informants reported no access to alternative markets (15%), and 23 informants reported no reduction in overall risk (15%). The other informants reported various increases in portfolio indicators. In my view there is not a large difference between “no increase” and a “very small increase”, thus this should not be a serious threat to the results.

### **8.1 Strategic Flexibility**

As dependent variables I identified five possible effects of alliance investments on decision choices: opportunism, decision constraints, activity constraints, all constraining responses and portfolio and innovation capacity facilitating strategic responses. I want to see whether these choices are independent dimensions of strategic flexibility or representing some underlying common factor. I therefore performed an exploratory factor analysis with all items. The result of the first try was a 6 factor solution that was difficult to interpret, and where some items had very little variance extracted. I excluded items with low extraction values and low divergent abilities, which amounted to in all 4 items. These items included VO2 and VO4. These items had a low correlation with the other activity level indicators, and consequently seem to indicate another dimension. The two items are more specifically directed towards products/services than the other three activity level items that describe increase, decrease and alternatives to the scope of the business. These items were excluded. The first portfolio item - modes of production – also diverged from the items distribution/products/markets that to a greater extent seemed to underlie a common dimension. Modes of production seem to

indicate a technical portfolio component correlating somewhat with the activity level items, whereas the other items loaded on a common factor indicating a marketing activity alternative. This item was therefore excluded. The reversed item IN3 also loaded less on the expected dimension. This item is reversed and with a stronger statement compared to the other items. The direction of the score was as expected, giving the measurement instrument validity. However it seems as if the question was asked in a way that could include an evaluation of the partner, which was not intended. The item was therefore excluded. The resulting factor solution is a five factor solution reflecting the initial variables. Two items were just below the 0.50 extraction limit mark (OPP4 (0,44) and PO5 (0,42)), but these items were considered to be so important, and their divergence so small that they were included. The following matrix resulted: <sup>1</sup>

	1	2	3	4	5
DE1	0.100	-0.078	0.066	<b>0.646</b>	<b>0.430</b>
DE2	0.166	0.234	-0.040	<b>0.729</b>	-0.131
DE3	-0.004	0.097	0.192	<b>0.723</b>	0.104
IN1	<b>0.811</b>	-0.062	0.252	0.050	0.006
IN2	<b>0.748</b>	0.048	0.312	-0.023	0.003
IN4	<b>0.824</b>	-0.048	0.152	0.164	-0.009
IN5	<b>0.864</b>	-0.023	0.132	0.050	0.040
OP1	-0.070	<b>0.773</b>	0.079	0.279	-0.170
OP2	-0.003	<b>0.870</b>	-0.064	0.114	-0.047
OP3	-0.001	<b>0.622</b>	-0.072	0.354	0.158
OP4	-0.005	<b>0.599</b>	0.064	-0.188	0.227
PO2	0.209	0.132	<b>0.691</b>	0.096	0.030
PO3	0.271	-0.047	<b>0.710</b>	0.071	-0.021
PO4	0.197	0.102	<b>0.764</b>	-0.080	0.027
PO5	0.099	-0.274	<b>0.581</b>	0.080	-0.057
VO1	-0.145	0.069	-0.198	0.108	<b>0.679</b>
VO3	0.064	0.187	0.044	-0.077	<b>0.653</b>
VO5	0.019	-0.157	0.092	0.156	<b>0.710</b>
Eigenvalues	3.970	2.739	1.767	1.244	1.203
% Variance	22.053	15.195	9.818	6.912	6.681

Table 8.1 Factor Analysis with Strategic Flexibility Items

As can be seen there is some interlap between the decision variables decision constraints and activity level constraints. The basic overall structure seems to have been supported, and the scales of the variables were built as originally intended for most of the variables:

*Decision Constraints* = (DE1+DE2+DE3)/3  
*Activity level Constraints*= (VO1+VO3+VO5)/3  
*Opportunism*= (OP1+OP2+OP3+OP4)/4  
*Innovation Capacity*= (IN1+IN2+IN4+IN5)/4

The only scale that I chose to build differently was the portfolio scale. The intention behind this scale was to grasp alternative choices offered to the firm through the resources of the alliance partner. I was not, however, only interested in the flexibility choices per se, but also related to the risk reduction effect the alliance had on the firm. Thus, I chose to weigh the added choices against the risk reduction offered through the alliance:

*Portfolio*= {(PO2+PO3+PO4) /3} + PO5/2

Reliability indicators are seen in table 8.2:

Variable	Cronbach Alpha
Decision Constraints	0,60
Opportunism	0,69
Activity Level Constraints	0,51
Portfolio	0,71
Innovation	0,86

**Table 8.2: Cronbach Alpha of Strategic Flexibility Factors**

As we can see, the scores for both decision constraints and especially activity level constraints are on the low side. This indicates that the items developed are not completely tapping into the underlying construct. Especially activity level constraints may also have combinatory elements, as increasing volume may not necessarily be related to decreasing volume. As the scores are within the acceptable level on newly constructed variables they are acceptable in this study.

<sup>1</sup> Varimax rotation

## 8.2 Alliance Involvement

Recall from chapter 4 that this construct is represented by three main variables; asset specificity, strategic involvement and social involvement. Asset specificity is seen as a combination of three variables; investments in physical equipment, human resources and relation specific investments, each measured by a set of indicators. The variables personal investments, mutuality and solidarity represent social involvement. These are my independent variables aiming to predict resource access and constraints on decisions. They are dependent, however, concerning the uncertainty variables. To see whether these investment variables actually are different or whether there is are underlying variables that better capture this construct, I performed an exploratory factor analysis of these variables, ~~using varimax rotation~~. The first solution created 6 underlying factors with an eigenvalue greater than 1. The variable that clearly created problems was the solidarity variable, where the first two items loaded on the factor consisting of strategic involvement and relational investment, and item 2, 3, and 4 loaded on an uninterpretable factor together with items from personal relations and human specific investments. Whereas the first two items clearly describe long term importance of this relation, the last two items more ask for partners willingness to help each other, which clearly are seen as different dimensions. I therefore chose to exclude solidarity items 3 and 4. The first competence specific item (ASCO1) loaded only partly on the factor with the other competence items, but loaded even higher on the factor containing physical investments and relations. This may be due to the design of the questionnaire, or to the wording. To clean up these factors, I chose to exclude this item. The pattern matrix is reported in table 8.3. Loadings higher than 0.40 are bolded.

	1	2	3	4	5
ASCO2	0.355	0.163	0.212	0.046	<b>0.567</b>
ASCO3	0.135	0.159	-0.156	0.027	<b>0.816</b>
ASCO4	0.021	0.190	-0.057	-0.059	<b>0.757</b>
ASRE1	<b>0.769</b>	0.193	0.057	0.160	0.067
ASRE2	<b>0.645</b>	0.253	0.030	-0.086	0.320
ASRE3	<b>0.601</b>	0.338	0.045	-0.176	0.343
ASRE4	<b>0.714</b>	0.202	0.221	0.169	0.110
ASPH1	0.248	<b>0.822</b>	0.049	0.080	0.169
ASPH2	<b>0.447</b>	<b>0.660</b>	-0.079	0.129	0.113
ASPH3	0.145	<b>0.865</b>	-0.019	-0.020	0.181
ASPH4	0.091	<b>0.817</b>	0.043	-0.122	0.122
MUT1	0.086	0.056	0.302	<b>0.806</b>	-0.042
MUT2	-0.095	-0.032	0.047	<b>0.806</b>	-0.220
MUT3	0.222	-0.052	0.071	<b>0.730</b>	0.267
PERS1	0.179	0.057	<b>0.624</b>	0.197	0.097
PERS2	0.111	-0.048	<b>0.749</b>	0.320	-0.095
PERS3	0.138	-0.001	<b>0.832</b>	0.037	0.006
PERS4	0.128	0.001	<b>0.758</b>	-0.042	-0.098
STR1	<b>0.708</b>	-0.011	0.143	0.015	0.019
STR2	<b>0.891</b>	0.089	0.060	0.020	0.010
STR3	<b>0.785</b>	0.201	0.113	-0.111	0.040
SOL1	<b>0.640</b>	0.060	0.336	0.399	0.064
SOL2	<b>0.585</b>	0.116	0.226	0.276	0.179
Eigenvalues	5.123	2.949	2.653	2.363	2.079
% of Variance	22.274	12.824	11.536	10.275	9.038

**Table 8.3; Factor Matrix with Alliance Involvement Items <sup>2</sup>**

From nearly all items at least half the variance was extracted. The only item below 0.5 was PERS1 where .47 of the variance was extracted. From table 8.4 we see that five interpretable factors have been extracted. These are reasonably clean, with only two indicators loading over .30 on more than one factor. Hair et al (1995) present rules of significance maintaining that as factor loadings have high standard errors, smaller loadings are only significant in large samples. In my case, a sample of 155 should only consider factor loading of .45 and above. All loadings considered in table 7.1 meet these criteria, while the two items that load on other factors only barely pass the 0.30 mark. Thus, these are not considered critical to the factor interpretations.

**Strategic involvement** is now seen as covering investments that are relational and strategic. Theoretically I saw strategic involvement, relational specific investments and solidarity as independent variables, but in the factor solution they loaded on the same factor. This factor seems to represent idiosyncratic investments in the relation, i.e. investments in organization, strategy and in building a relation that is specific and not transferrable to another relation, representing a long term view on the relation. It seems reasonable that these investments will take place in areas considered core and strategic to the firm, and it also seems reasonable that as these investments have been made, great effort is put in to maintain this relation and being concerned for its future.

The scale for the variable was created by using the following formula:

$$\text{Strategic Involvement} = (ASRE1+ASRE2 + ASRE3 + ASRE4+STR1+STR2 +STR3+ SOL1+SOL2)/9$$

The other four factors behaved more as expected, identifying investments in physical equipment and human resources as separate variables, and seeing personal investments and mutuality as separate variables. Scales for each of these variables were constructed straightforwardly, by simply adding items and dividing them by the number of items. Thus, physical investments and personal involvement each consists of four indicators, while competence investments and mutuality each consist of three items. I used Cronbach`s alpha to assess reliability:

Variable	Cronbach Alpha
Strategic Involvement	0,90
Specific Competence Investment	0,63
Specific Physical Investment	0,85
Mutuality	0,72
Personal Investments	0,77

*Table 8.4 Cronbach Alpha of Alliance Involvement Factors*

<sup>2</sup> Varimax Rotation

As we can see, reliability is satisfactory. The only scale on the low side is specific competence involvement, but this score is not deemed so low that the variable should be excluded.

### 8.3 Environmental Uncertainty

In chapter 7, items trying to capture two uncertainty dimensions, complexity and dynamism were developed. Before settling on a scale, I wanted to see whether these measures behave independently in a factor analysis, or if we in reality are talking about one underlying dimension. The analysis only extracted a little over .30 from item UNC6, which is very low. Due to the higher reliability this item gave, I chose to still include the item. Additionally, item 5 (predictability of product development) was split between the two factors.

	1	2
UNC1	0.875	-0.004
UNC2	0.840	0.053
UNC4	0.047	0.749
UNC5	0.488	0.548
UNC6	0.153	0.528
UNC7	-0.163	0.750
Eigenvalues	1.761	1.705
% Variance	29.355	28.410

*Table 8.5: Factor Matrix of Environmental Uncertainty Items<sup>3</sup>*

An only problem is item UNC5 that loads significantly on both factors. What this indicates is that uncertainty regarding product development issues both indicates complex, but also dynamic environments. As this item loads higher on the dynamism factor, converges better with the other dynamism indicators, and also conceptually more seems to belong in that category, I chose to include this item in the dynamism scale. It should be remembered, however, that this item raises some questions on the independence between the scales.

The scales were again constructed in a straightforward fashion:



$$\text{Complexity} = (UNC1 + UNC3) / 2$$

$$\text{Dynamism} = (UNC4 + UNC5 + UNC6 + UNC7) / 4$$

Assessment of reliability:

Variable	Cronbach Alpha
Complexity	0,72
Dynamism	0,56

Table 8.6 Cronbach Alpha of Uncertainty Factors

The score on dynamism is on the low side, indicating either that the indicators developed do not reflect the underlying measure very well, or that more measures are reflected. As this measure was developed, I was interested in getting a grasp of the overall uncertainty/dynamism facing the firm, i.e. a picture of the “*perceived necessity to change strategies*”. Looking at this measure, one can reflect on whether alternative strategies would have been better.

### 8.4 Correlation Matrix

The last type of validity considered in this chapter is nomological validity, or the extent to which the variables included seems to behave as predicted. To analyze this, a correlation matrix is presented, including all variables in the model. Significance levels of 0.1, 0.05 and 0.01 are pointed out.

<sup>3</sup> Varimax Rotation

	Strat	Asco	Asph	Mut	Pers	Dyn	Compl	Dec	Opp	Volc	Inn	Port
Strat	1.00	.42***	.49***	.18**	.29***	.14	.08	.23***	-.18**	.12	.66***	.38**
Asco	.42***	1.00	.44**	-.04	.00	.22***	.00	.32***	.13	.06	.29***	.18**
Asph	.49***	.44***	1.00	.00	.00	.08	-.04	.31***	-.01	.17**	.46***	.31**
Mut	.18**	-.04	.00	1.00	.32**	-.17**	.02	-.31***	-.50***	-.10	.11	.13
Pers	.29***	.00	-.01	.32**	1.00	-.03	.17**	-.20**	-.46***	-.16**	.14*	.07
Dyn	.14	.22***	.08	-.17**	-.03	1.00	.21**	.21***	.10	-.04	.12	.16*
Compl	.08	.00	-.04	.02	.17**	.21**	1.00	-.08	-.13	-.03	-.04	-.06
Dec	.23***	.32***	.31***	-.31***	-.20**	.21***	-.08	1.00	.32***	.24***	.21**	.13
Opp	-.18**	.13	-.01	-.50***	-.46**	.10	-.13	.32***	1.00	.11	-.05	-.10
Volc	.12	.06	.17**	-.10	-.16**	-.04	-.03	.24***	.11	1.00	-.02	-.02
Inn	.66***	.29**	.46***	.11	.14*	.13	-.04	.21**	-.05	-.02	1.00	.44**
Port	.38***	.18**	.31***	.13	.07	.16*	-.06	.13	-.10	-.02	.44***	1.00

\*\*\* $p > 0.01$  \*\* $p > 0.05$  \* $p > 0.1$

**Table 8.7: Correlation Matrix**

From this table we see that there are many significant correlation's in the upper right quadrant indicating relations between the involvement and the flexibility variables. There are also some relations between involvement and uncertainty although less than expected. Overall, there seems to be enough promising relations to deem nomological validity satisfying.

## 8.5 Properties of the Variables

Variable	N	Mean (Range)	SD	SE.Mean	Skewness	SE Skewness	Kurtosis	SE Kurtosis
Portfolio	155	.33 (0-1)	.23	.018	.483	.195	-.265	.387
Innovation	154	.43 (0-1)	.25	.020	.017	.195	-.890	.389
Decision	154	.28 (0-.93)	.21	.017	.791	.195	.097	.389
Opportunism	153	.28 (0-1)	.20	.017	.921	.196	1.365	.390
Activity level	151	.49 (.06-1)	.24	.017	.244	.197	-.652	.392
Ph.Assets	155	.30 (0-1)	.27	.021	.695	.195	-.440	.387
COAssets	155	.31 (0-.94)	.20	.016	.457	.195	.114	.387
Strategic	137	.63 (.06-1)	.21	.018	-.468	.207	-.235	.411
Mutual	155	.70 (.11-1)	.20	.016	-.379	.195	-.604	.387
Personal	155	.72 (.17-1)	.20	.016	-.655	.195	-.123	.387
Dynamism	155	.36 (0-.71)	.16	.013	-.057	.155	-.555	.387
Complexity	155	.59 (0-1)	.30	.024	-.306	.195	-.943	.387

**Table 8.8 Variable Descriptives full sample 1998**

If we use the rule of thumb of skewness less than one and kurtosis less than two, all variables are well within this range. Although for most variables the full scale is not in use, a reasonable range is present for all variables.

## 8.6 Developing Scales for Comparisons 1993-98

To compare involvement in 1993 and 1998 we need scales that are reliable and show divergent validity in both samples. To create these scales, factor analysis were performed both for the 1993 and 1998 involvement factors separately.

If we look at the original sample on the two observation points, the following may be stated:

	<i>Total</i>	<i>Continued 1998</i>	<i>Terminated 1998</i>	<i>Out of sample 1998</i>
<i>Original Sample 1993</i>	100	66	25	9
<i>Follow-up 1998</i>	72	55	17	

**Table 8.9 1993 – 1998 Survey Comparisons**

In 1993, 100 firms participated in the study. In 1998, I found that 66 of the firms still had their original alliance, 17 had terminated the alliance and 9 firms had gone out of business. Of the 66 that still existed, I received 55 usable questionnaires, and 17 usable of the 25 that had been terminated.

In the 1993 and 1998 samples all involvement variables were measured exactly the same way, using the same indicators. Both questionnaires were 11 pages. Although some questions differed between the two questionnaires, the layout of the involvement questions was similar to the original questionnaire. The main difference between the two questionnaires is that the first could appear as more homogeneous, as all pages contain a similar lay-out, whereas my questionnaire contain some pages with fewer questions. One possible bias of this could be that there is a tendency to answer more similarly where each page is similar, which could help to explain the generally higher skewness in some items in the 1993 sample.

If we throw all 1993 involvement items together in a pool and perform an exploratory factor analysis with varimax rotation, a seven factor solution results. The only items that loaded completely as expected were the strategic involvement indicators. An analysis without the

two last solidarity items (similar to the main sample) yield a six-factor, but also uninterpretable solution (cumulative variance explained 64%). An interpretable solution required the exclusion of several items, resulting in the following factor analysis:

	1	2	3	4	5
<b>1Asph93</b>	0.150	<b>0.841</b>	0.002	-0.015	-0.180
<b>2Asph93</b>	0.118	<b>0.774</b>	0.037	0.130	0.243
<b>3Asph93</b>	0.102	<b>0.835</b>	0.034	-0.006	0.035
<b>4Asph93</b>	-0.084	<b>0.745</b>	-0.050	-0.006	0.137
<b>2Asco93</b>	0.341	<b>0.487</b>	- 0.033	-0.222	<b>0.349</b>
<b>3Asco93</b>	0.107	0.251	-0.020	-0.194	<b>0.768</b>
<b>4Asco93</b>	0.120	-0.012	-0.006	-0.005	<b>0.856</b>
<b>1Asrel93</b>	<b>0.479</b>	<b>0.457</b>	0.207	-0.248	0.071
<b>2Asrel93</b>	<b>0.587</b>	<b>0.409</b>	0.047	-0.149	0.151
<b>4Asrel93</b>	<b>0.720</b>	0.103	0.130	-0.089	0.041
<b>1Stra93</b>	<b>0.786</b>	- 0.016	- 0.032	0.128	-0.108
<b>2Stra93</b>	<b>0.798</b>	0.088	-0.183	0.050	0.067
<b>3Stra93</b>	<b>0.628</b>	0.049	0.017	0.171	0.111
<b>2Per93</b>	0.058	0.152	<b>0.815</b>	0.280	-0.072
<b>3Per93</b>	0.173	-0.066	<b>0.839</b>	0.059	-0.130
<b>4Per93</b>	-0.094	-0.025	<b>0.738</b>	0.171	0.167
<b>1Mut93</b>	0.242	0.005	0.29	<b>0.854</b>	-0.034
<b>2Mut93</b>	-0.039	-0.019	0.301	<b>0.843</b>	-0.181
<b>1Sol93</b>	<b>0.601</b>	0.002	<b>0.481</b>	0.114	0.008
<b>2Sol93</b>	<b>0.612</b>	0.084	0.225	-0.005	0.218
<b>Eigenvalues</b>	3.758	3.290	2.439	1.793	1.737
<b>% Variance</b>	18.79	16.45	12.19	9.00	8.68

**Table 8.10 Factor Analysis 1993 Involvement items**

In this solution, a part from the items also excluded in the full sample, asset specific relation item 3 (specific strategy and organization), personal involvement item 1 and mutual involvement item 3. Whereas the other three asset specific relational items point generally to relational investments, item 3 specifies investments in the alliance. This could introduce another dimensions, and the item is excluded here. Personal involvement item 1 is more strongly stated than the rest, indicating that informants want to score this item lower, while mutuality item 3 is formed in a general sense, whereas item 1 and 2 point to the present

conditions of the alliance. Only one item is below the 0.50 communality extraction, item 3Stra93 with 0.42. A few items load high on more factors.

A comparable solution with the sample from the 1998 data yielded also yielded a five factor interpretable solution with the full set of items. To get the two sets comparable, the same items were deleted, which resulted in the following factor matrix:

	1	2	3	4	5
1Asph98	0.337	<b>0.844</b>	0.054	0.017	0.048
2Asph98	0.380	<b>0.779</b>	-0.155	0.058	0.158
3Asph98	0.212	<b>0.825</b>	-0.166	-0.122	0.217
4Asph98	0.298	<b>0.825</b>	0.093	-0.139	0.114
2Asco98	<b>0.409</b>	0.218	<b>0.406</b>	0.232	<b>0.528</b>
3Asco98	0.298	0.039	-0.067	-0.042	<b>0.791</b>
4Asco98	0.070	0.315	-0.001	-0.218	<b>0.765</b>
1Asre98	<b>0.757</b>	0.355	0.055	0.232	0.087
2Asre98	<b>0.674</b>	0.389	-0.079	-0.074	0.220
4Asre98	<b>0.826</b>	0.222	0.187	0.021	0.131
1Sol98	<b>0.750</b>	0.205	0.189	0.218	0.124
2Sol98	<b>0.607</b>	0.212	0.183	0.191	0.337
1Mut98	0.279	0.205	0.257	<b>0.818</b>	-0.058
2Mut98	-0.097	-0.153	-0.039	<b>0.907</b>	-0.121
2Per98	0.221	-0.136	<b>0.708</b>	<b>0.376</b>	0.046
3Per98	0.201	-0.028	<b>0.708</b>	0.137	0.156
4Per98	-0.097	-0.024	<b>0.842</b>	-0.165	-0.089
1Stra98	<b>0.776</b>	0.112	0.196	-0.038	0.046
2Stra98	<b>0.897</b>	0.225	0.098	0.137	0.156
3Stra98	<b>0.773</b>	0.304	0.208	-0.165	- 0.189
Eigenvalue	5.486	3.442	2.216	1.932	1.917
% Variance	27.43	17.21	11.02	9.66	9.58

Table 8.11 <sup>4</sup>Factor Analysis 1998 Involvement Items

<sup>4</sup> Varimax Rotation

In this analysis well above 0.50 was extracted from all items. Component 1 in both samples is the strategy/relation specific/solidarity variable. As we can see, in 1998 this variable accounts for about 18% of the total variance, while in 1998 it amounts for 27%. Thus, regarding the involvement factor, this dimension has become more important over the years.

The same tendency that was seen in the main sample from 1998 can be seen in the 1993 sample. Strategic involvement, relational specific investments and solidarity are conceptually related, describing a strategic and relationally important dimension, whereas physical and competence investment, personal relations and mutuality can be seen as independent dimensions. The following variables were created for both the 1993 sample and the 1998 follow-up sub sample:

$$Asph = (1Asph + 2Asph + 3Asph + 4Asph) / 4$$

$$Asco93 = (2Asco + 3Asco + 4Asco) / 3$$

$$Strat93 = (1Stra + 2Stra + 3Stra + 1Sol + 2Sol + 1Asre + 2Asre + 4Asre) / 8$$

$$Mut93 = (1Mut + 2Mut) / 2$$

$$Pers93 = (2Per + 3Per + 4Per) / 3$$

Reliability assessments for both scales are seen in the next table:

<i>Variable</i>	<i>1993</i>	<i>N</i>	<i>1998</i>	<i>N</i>
<b>ASPH Asset Specificity Equipment</b>	<b>0.84</b>	<b>(100)</b>	<b>0.91</b>	<b>(55)</b>
<b>ASCO Asset Specificity Competence</b>	<b>0.64</b>	<b>(100)</b>	<b>0.67</b>	<b>(55)</b>
<b>STRA Strategic Involvement</b>	<b>0.83</b>	<b>(100)</b>	<b>0.93</b>	<b>(54)</b>
<b>PERS Personal Involvement</b>	<b>0.76</b>	<b>(100)</b>	<b>0.71</b>	<b>(55)</b>
<b>MUT Mutuality</b>	<b>0.86</b>	<b>(100)</b>	<b>0.77</b>	<b>(55)</b>

**Table 8.12: Reliability Involvement Factors 1993, 1998 Samples.**

In both samples reliability is satisfactory.

An exploratory factor analysis of the four uncertainty items of the 1993 sample showed unidimensionality. All items loaded higher than 0.60 on the single component extracted. A problem however is that communality levels were low on all items, indicating that none of the items describe well the underlying factor. The four items explained only 41% of the variance.

From the 1998 sample the four uncertainty items also were unidimensional, loading over .56 on the single factor. Two of the items had low communalities, and 50% of the variance were explained. As we can see, the 1998 measures performed better, but still as well as intended. Cronbach Alpha values for uncertainty:

1993: 0.51 (n=100)  
1998: 0.64 (n=55)

### Properties of the variables

Variable	N	Mean (Range)	SD	SE Mean	Skewness	SE Skewness	Kurtosis	SE Kurtosis
Asph93	100	0.30 (0-1)	0.27	0.027	0.765	0.241	-0.439	0.478
Asco93	100	0.33 (0-.95)	0.21	0.021	0.412	0.241	0.091	0.478
Strat93	100	0.68 (.25-1)	0.17	0.017	-0.418	0.241	-0.291	0.478
Mut93	100	0.75 (.08-1)	0.22	0.022	-0.921	0.241	0.250	0.478
Pers93	100	0.79 (.17-1)	0.19	0.019	-0.992	0.241	0.756	0.478
Asph98	72	0.34 (0-.93)	0.21	0.024	0.093	0.283	-0.418	0.559
Asco98	72	0.32 (0-.83)	0.20	0.024	0.279	0.283	-0.206	0.559
Strat98	54	0.61 (.06-1)	0.24	0.033	-0.232	0.325	-0.836	0.639
Mut98	72	0.66 (0-1)	0.24	0.029	-0.325	0.283	-0.727	0.559
Pers98	74	0.70 (.17-1)	0.20	0.019	-0.104	0.283	0.107	0.559
Unc93	100	0.40 (0-.79)	0.17	0.017	-0.159	0.241	-0.390	0.478
Unc98	74	0.36 (0-.71)	0.16	0.019	-0.104	0.279	-0.724	0.552

Table 8.13 Properties of the Variables in the 1993 and 1998 Samples

From this table we see that most variables do not represent the whole range of possible values. Furthermore, two variables are dangerously skewed according to the rough thumb rule of critical value=1. Hair et al (1995) suggest a square root transformation for negatively skewed variables. This procedure was performed with negative results, and these variables are not transformed. If we compare the two years, we can see that for the asset specific variables, the mean is fairly stable, although the range is reduced. Strategy and the social involvement variables all have a lower mean and wider range, except for personal involvement.

## **8.7 Chapter Summary**

In this chapter I have developed and validated the measurement scales. Starting with the full set of items from the 1998 sample three sets of factor analyses were performed. Theoretically I see the dependent strategic flexibility constructs as independent, and the factor analysis reported in this section confirmed this idea, as the items demonstrated satisfactory convergent and divergent validity. Furthermore I looked at the alliance involvement items and studied their interdependencies. I found that the strategic involvement items were close to relational asset specificity and solidarity and chose to combine these in one factor. This factor seems reasonable pointing towards the strategic and relational importance of this alliance to the firm. Otherwise the alliance involvement factors behaved as expected. The uncertainty items were also analyzed. Apart from one item, divergence and convergence was satisfactory. This item was included, however, due to an overall factor reliability and validity assessment.

Furthermore, to be able to compare the data sets in 1993 and 1998, I performed factor analyses for both of these samples. A satisfactory solution was found representing the main theoretical constructs in the model.

With these constructed variables I am now able to test the hypothesis set forward in chapter 5.



## 9. Research Findings

In this chapter I present the results of the data analysis. I will start with the full cross sectional sample (1998 data) and give 2x5 sets of regression models of the relationship between alliance involvement and strategic flexibility, one with and one without control variables. Next, I look at uncertainty and alliance involvement with the 1998 cross-sectional set involving two sets of regression equations.

I present 3 sets of regression models to look at the development of the alliance involvement factors over time and the relation between this development and strategic flexibility. First, I want to see if there is a “*lag-effect*” of the alliance involvement factors on strategic flexibility, regressing the 1993 alliance involvement factors on my five dependent variables in five separate regressions. Second, I am looking for the “*total*” effect of alliance involvement over years adding the 1993 and 1998 scores, take their mean and regress these factors on each strategic flexibility factor. Third, I am looking for the “*change effect*” defined as the increase or decrease in the individual alliance involvement factors and the relation between these effects and the five strategic flexibility factors.

Finally, I want to look at the difference between alliances that terminate or continue. Logistic regression is applied to see whether uncertainty and alliance involvement factors differ between alliances that continue and alliances that terminate.

### 9.1 Choice of Methods

The research model consists of predicted relations between continuous independent and dependent variables. Since the research model contains more than one dependent variable, appropriate statistical methods include canonical correlation or structural equation modeling (Hair et al. 1995). Structural equation modeling was ruled out because of a large number of items compared to the number of observations. Schumacher and Lomax (1996) present various studies indicating different opinions as to the relevant sample size. They all, however, exceed the number of observations in this study. Canonical correlation was not considered because the dependent factors are perceived as theoretically independent, and the focus was on finding

whether my chosen independent variables could predict these rather than looking for simultaneous or inter-factor effects. The appropriate tool was then considered to be multiple regression analysis that is used for all the relations in the research model. Logistic regression is used to look at which alliances terminate or not. Alternatively, discriminant analysis could have been applied. Since only two groups are compared, and the groups vary in size, logistic regression was chosen since it has less strict assumptions regarding differences in group size (Hair et al. 1995)

By use of the SPSS program (version 8.0), collinearity diagnostics were performed in all regressions. All tolerance levels were between .60 and .90, indicating that no independent variable is a linear combination of the other independent variables. Homoskedasticity was inspected through scatterplots and found to be satisfactory.

In all of the following analysis I have chosen to look at only those alliances that were up and running in 1998, i.e. those 17 that had terminated were excluded. This was done of primarily two reasons. First, these alliances were terminated some time in the period between 1993 and 1998. Biases concerning remembering over this time could then be introduced and distort the findings. It also seems reasonable to assume that firms may associate different sentiments towards a terminated vs. ongoing alliance, which also could introduce extra noise. Second, in comparing the development of alliance involvement, I want to compare the alliances at the same point in time to rule out any alternative external environmental explanations specific to the time the alliance was terminated.

Through inspection of scatterplots, one outlier was identified and excluded from the sample. By excluding this case, all cases were well within the SPSS default range of 3 standard deviations.

## 9.2 Alliance Involvement – Strategic Flexibility

In this section the 1998 alliance involvement variables are regressed on the five strategic flexibility variables testing hypothesis 1-3 and 6-7. Significance levels of 0.01\*\*\*, 0.05\*\* and 0.1\* are reported. Normally, significance levels of 0.1\* are not considered, but due to the early stage of this research where flexibility variables have not been tested before, this level of significance is also seen as giving interesting information. All regression models in Table 9.1 except activity level constraints are statistically significant at  $p < 0.01$ \*\*\*. Thus, the independent variables chosen seem to predict activity level flexibility less well. The best fit is found in the innovation capacity model, predicting 46% of the overall variance.

dependent variables	Dependent Variables				
	Innovation Beta (SIG) (N=135)	Portfolio Beta (SIG) (N=136)	Decision Beta (SIG) (N=135)	Opportunism Beta (SIG) (N=134)	Activity Level Beta (SIG) (N=133)
<b>Constant</b>	(.991)	(.507)	(.000)***	(.000)***	(.000)***
<b>Asset Specific Physical Investments</b>	.25 (.001)***	.19 (.049)**	.16 (.067)*	-.10 (.221)	.19 (.080)*
<b>Asset Specific Competence</b>	-.01 (.927)	.01 (.946)	.18 (.029)**	.21 (.009)***	-.04 (.703)
<b>Strategic Involvement</b>	.55 (.000)***	.28 (.007)***	.24 (.008)***	-.06 (.489)	.10 (.406)
<b>Mutuality</b>	-.00 (1.00)	.07 (.412)	-.33 (.000)***	-.42 (.000)***	-.06 (.531)
<b>Personal Involvement</b>	-.07 (.334)	-.03 (.712)	-.24 (.003)***	-.29 (.000)***	-.19 (.049)**
<b>R2 Adj.</b>	.464	.144	.320	.359	.042
<b>F (SIG)</b>	24.241(.000)***	5.548(.000)***	13.587(.000)***	15.913(.000)***	2.139(.065)*

\*\*\* $p < 0.001$  \*\* $p < 0.05$  \* $p < 0.01$

**Table 9.1 Multiple Linear Regression: Alliance Involvement - Strategic Flexibility**

Hypothesis 1a, 2a and 3a propose a positive relation between alliance involvement and constraints, arguing that the more the partners are involved in the alliance the less the firm is

free to make changes. Hypothesis 1b, 2b and 3b postulates a counter argument involving social involvement, arguing that the more socially involved the partners are, the more free the firm is to make changes.

*H1a: Alliance involvement is positively related to opportunism*

*H1b: Social involvement is negatively related to opportunism*

Only one alliance involvement variable shows support for hypothesis 1 a; asset specific competence with  $p < 0.01^{***}$ . Regarding hypothesis 1b, however, both mutuality and personal involvement show strong support for a negative relation with opportunism ( $p < 0.01^{***}$ ), rejecting hypothesis 1a and supporting hypothesis 1b. Consequently it seems like idiosyncratic investments in competence increase opportunism, whereas social involvement decrease opportunism.

#### **H 1: Alliance Involvement - Opportunism:**

##### **Results:**

*Asset specific competence is positively related to Opportunism ( $p < 0.01^{***}$ )*  
*Social involvement is negatively related to Opportunism ( $p < 0.01^{***}$ )*

Hypothesis 1b is thus supported, while hypothesis 1a is partly supported and partly rejected.

Hypothesis 2 has a similar prediction regarding alliance involvement and decision constraints. I first argue that all involvement factors have a positive relation with decision constraints, whereas a counter argument can be found, predicting that social involvement actually reduces decision constraints:

*H 2a: Alliance involvement is positively related to decision constraints*

*H 2b: Social involvement is negatively related to decision constraints*

From Table 9.1 we see that asset specific physical investments ( $p < 0.1^*$ ), asset specific competence ( $p < 0.05^{**}$ ) and strategic involvement ( $p < 0.01^{***}$ ) support hypothesis 2a, whereas

social involvement (mutuality and personal involvement) does not support this hypothesis ( $p < 0.01^{***}$ ). We may conclude that hypothesis 2b receives support, whereas hypothesis 2a receives partial support and partial rejection.

### **Hypothesis 2: Alliance involvement – Decision constraints**

#### **Results:**

*Asset specific physical investment is positively related to Decision constraints ( $p < 0.1^*$ )*

*Asset specific competence is positively related to Decision constraints ( $p < 0.05^{**}$ )*

*Strategic involvement is positively related to Decision constraints ( $p < 0.01^{***}$ )*

*Social involvement is negatively related to Decision constraints ( $p < 0.01^{***}$ )*

Hypothesis 3a and 3b are similar to the previous two, predicting the relation between alliance involvement and activity level constraints:

*H3a: Alliance involvement is positively related to activity level constraints*

*H3b: Social involvement is negatively related to activity level constraints*

Here we see weaker relations than with the two previous constraint dimensions, but the tendency is the same. Social involvement factors, here only personal involvement is significant, reduces activity level constraints, whereas asset specific physical investments increases constraints.

### **Hypothesis 3: Alliance involvement – Activity constraints**

#### **Results:**

*Asset specific physical investment is positively related to Activity constraints (p<0.1\*)*  
*Personal involvement is negatively related to Activity constraints (p<0.05\*\*)*

Looking at these three hypotheses a pattern seems to be emerging. Involvement in idiosyncratic investments in an alliance, either competence or physical investments and in strategy seems to increase the constraints on firms. Hence, if alliance involvement is high regarding investments and strategy, the firm is more likely to report that it has less freedom to make independent decisions. Obviously, these involvement factors describe a situation of “*lock-in*” where involvement in the alliance makes the firm stuck with fewer alternatives.

Social involvement, on the other hand, has the opposite effect. Even if the partners become involved in the alliance, which we would expect should create a “*lock-in*” situation, this “*lock-in*” seems to be of a different nature. Being involved socially seems to install a belief in the firm that it is allowed greater freedom from its partner to change its decisions and activity levels without having to fear opportunism. Hence, social involvement seems to allow some sort of smoothness into the relationship.

If we look back at Table 8.7 that gives the correlation between the independent factors, we see that the two asset specific factors are not at all correlated with the social involvement factors. Consequently we cannot argue that firms seem to be either “*socially involved*” or “*asset specific involved*”. What we can claim, however, is that these two types of involvement seem to have different predictions as to the constraints on firms.

Hypotheses 6 and 7 postulate positive relations between alliance involvement and resource flexibility:

*H6: Alliance involvement is positively related to innovative capacity*

### *H7: Alliance involvement is positively related to resource portfolio*

If we look at Table 9.1 it is interesting to note that social involvement factors (personal involvement and mutuality) seem to have no influence on resource flexibility. Consequently, innovative capacity and the level of portfolio choices do not seem to be dependent at all on whether the level of personal involvement and mutuality is high. It seems, however, to be very dependent on strategic issues, which do involve the norm of solidarity indicators, and therefore indicates high relational involvement. Furthermore resource flexibility seems to be highly dependent on the level of asset specificity of physical investments, indicating that for the firm to make use of the resources in the other firm, it is necessary to engage in a series of investments specific to the relation. It is surprising that these investments do not include competence specific investments, as one would think that the increased resource levels accessed also include competence, but this argument cannot be supported by these findings. In these models it seems clear that asset specific investments in competence introduce constraints on the relations, but do not increase resource access. Both hypothesis 6 and hypothesis 7 receives partial support.

#### **Hypothesis 6: Alliance involvement – Innovative capacity**

##### **Results:**

*Strategic involvement is positively related to Innovative capacity (p<0.01\*\*\*)*

*Asset specific physical investment is positively related to Innovative capacity (p<0.01\*\*\*)*

Hypothesis 7 is supported by the same factors, but receives less strong support from asset specific physical investments.

#### **Hypothesis 7: Alliance involvement – Resource portfolio**

##### **Results:**

*Strategic involvement is positively related to Resource portfolio (p<0.01\*\*\*)*

*Asset specific physical investment is positively related to Resource portfolio (p<0.05\*\*)*

Testing hypothesis 6 and 7 has given us some additional insights into alliance involvement and strategic flexibility. Whereas we have seen that asset specific involvement and strategic involvement have increased constraints, we here see that they also increase access to resources that make the firm more innovative, and thus ready to face new challenges. Furthermore these involvement types also give the firm risk reducing alternatives to existing distribution, markets and products. Hence, there seems to be “*no best way to organize*” to obtain flexibility from an alliance. Involving socially secures freedom from constraints, but allows no access to resources. Involving in investments secures access to resources, but creates a “*lock-in*” situation where the firm must be willing to accept constraints from its partner.

Table 9.2 includes the control variables of firm size (number of employees), the year the alliance was established (year), and the type of the alliance (vertical or horizontal). Only 5 out of the 155 alliances reported equity control, thus this variable was excluded. An interesting observation when comparing 1993 with 1998 data is the large change in the characterization of the same alliance. Of the 48 alliances that in 1993 were seen as customer alliances 19 were now characterized as suppliers, and 5 as similar companies. Of the 43 alliances characterized as supplier relations in 1993, 7 were seen as customers, 12 as competitors and 8 as similar companies, and of the 9 competitor relations, 2 were characterized as suppliers, one as similar companies and none as competitors. This can indicate either that an alliance is a set of different relations, measures are unclear, or that the content of the relation change. Certainly it indicates that at least over time this variable is not constant, and therefore not as important as a predictor.

None of the control variables are significant in any of the five models, indicating that the findings reported are robust towards these alternative explanations.



<b>Independent Variables</b>	<b>Innovation Beta (SIG) (N=127)</b>	<b>Portfolio Beta (SIG) (N=127)</b>	<b>Decision Beta (SIG) (N=127)</b>	<b>Opportunism Beta (SIG) (N=126)</b>	<b>Activity Beta (SIG) (N=125)</b>
<b>Constant</b>	(.905)	(.242)	(.767)	(.205)	(.227)
<b>Asset specific physical investments</b>	.25 (.002)***	.21 (.041)**	.12 (.179)	-.09 (.264)	.22 (.044)**
<b>Asset specific competence</b>	-.03 (.723)	.03 (.774)	.17 (.049)**	.21 (.010)**	-.01 (.911)
<b>Strategic involvement</b>	.58 (.000)***	.28 (.011)**	.21 (.035)**	-.11 (.217)	.01 (.902)
<b>Mutuality</b>	-.03 (.706)	.05 (.554)	-.32 (.000)***	-.40 (.000)***	-.00 (.989)
<b>Personal involvement</b>	-.05 (.534)	-.04 (.695)	-.25 (.003)***	-.36 (.000)***	-.22 (.024)**
<b>SIZE</b>	-.06 (.372)	.06 (.464)	-.07 (.384)	.02 (.835)	.05 (.557)
<b>TYPE</b>	.04 (.612)	.09 (.311)	-.05 (.572)	-.03 (.657)	.01 (.947)
<b>YEAR</b>	-.01 (.897)	.10 (.244)	.04 (.661)	.12 (.108)	.12 (.182)
<b>R2(adj)</b>	.458	.150	.298	.427	.050
<b>F (SIG)</b>	14.335(.000)***	3.772(.001)***	7.682 (.000)***	12.637 (.000)***	2.208 (.082)*

\*\*\* $p < 0.01$  \*\* $p < 0.05$  \* $p < 0.1$

**Table 9.2: Multiple Linear Regression: Involvement – Strategic Flexibility with Control Variables**

### **9.3 Environmental Uncertainty – Alliance Involvement**

In this section we move to the relations between environmental uncertainty and alliance involvement described by hypothesis 12:

*H12: Environmental uncertainty is negatively related to alliance involvement*

This relation is predicted to be negative. The two uncertainty factors complexity and dynamism are regressed on the five involvement factors in five regression models presented in Table 9.3. Overall fit is very low in all models, and it seems clear that uncertainty the way it has been operationalized and measured here, only to a very limited extent can explain level of involvement in an alliance.

Environments characterized by complexity only seem to be associated with a higher level of personal involvement, going against predictions set forward in hypothesis 12.

*Dependent Variables*

*Independent Variables*

	Asphysical Beta (SIG) (N=136)	Ascomp. Beta (SIG) (N=136)	Strategic Beta (SIG) (N=136)	Mutuality Beta (SIG) (N=136)	Personal Beta (SIG) (N=136)
<b>Constant</b>	(.000)***	(.000)***	(.000)***	(.000)***	(.000)***
<b>Complexity</b>	-.03 (.704)	-.03 (.697)	.05 (.550)	.10 (.261)	.23 (.009)***
<b>Dynamism</b>	.03 (.735)	.13 (.142)	.13 (.151)	-.13 (.131)	-.04 (.700)
<b>R2 adjusted</b>	-.013	.001	.001	.008	.036
<b>F (SIG)</b>	.109 (.897)	1.098(.337)	1.458(.236)	1.523(.222)	3.524(.032)**

\*\*\*p<0.001 \*\*p<0.05 \*p<0.01

**Table 9.3: Multiple Linear Regression: Environmental Uncertainty – Alliance Involvement**

<b>Hypothesis 12: Environmental uncertainty – Alliance involvement</b>
<b>Result:</b>
<b>Complexity is positively related to Personal involvement (p&lt;0.01***)</b>

Hypothesis 12 is thus partly rejected.

It is interesting to note the positive relation between complexity and personal involvement. I proposed that when environments become complex, firms would want to become less involved with their alliance partner, but these results show that the opposite is true for personal involvement. A complex environment was measured through high levels of customization and low levels of standardization. When the degree of customization is high, firms must often change their product, and it seems as if personal involvement could help facilitate these changes instead of functioning as a buffer against them, especially if the complexity is related

to the relation to this customer or supplier. Changes in the product must be communicated to partners, and the more personal the ties are, the easier this communications is.

Not finding a relation between dynamism and alliance involvement may suggest that the relation between dynamism and strategic flexibility is more complex than what is seen here. If, for instance, environments are unstable, shifting from dynamic to less dynamic situations, it is likely that alliance involvement is more stable over time, and does not instantly follow these shifts. We could also argue that even in highly dynamic environments some firms would rather strengthen their involvement in an alliance instead of performing the activity in-house, as alliances may be seen as less capital-binding agreements. Hence, alliance involvement can also be strong in highly dynamic industries. If this is the case, it is difficult to tease out the effect on alliances without including internal arrangements for the same types of transactions. Furthermore, the dynamism variable may also suffer from poor operationalization, which will be discussed further in the next chapter.

In hypothesis 13 I argue that increasing levels of environmental uncertainty is associated with lower levels of alliance involvement. Both regressions involving the total level of uncertainty over years  $((US93+US98) \cdot \frac{1}{2})$  and changes in uncertainty  $(US98-US93)$  were regressed individually on the involvement factors. None of these regressions were significant, and are not reported here, but can be seen in appendix 3.

## 9.4 Alliance Involvement over Time

Before we go on to test the hypotheses postulating relations between alliance involvement over time and strategic flexibility, I present a correlation matrix looking at the stability of involvement variables. One way of to look at this relation is to see how the 1993 involvement factors correlate with the 1998 involvement factors. This matrix is reported in Table 9.4, and includes the data on all alliances that gave information in 1998. (N=72)<sup>1</sup> Both the asset specific factors and personal involvement seem to be stable over years, while the strategic involvement is less related to the level this factor had in 1993, and mutuality is not related at all. Hence, investing competence and physical equipment, and the personal relations in the alliance are fairly stable, whereas the importance of strategic content and the level of mutuality may vary more between periods.

	<i>Asset specific physical investments (1998)</i>	<i>Asset specific competence (1998)</i>	<i>Strategic involvement (1998)</i>	<i>Mutuality (1998)</i>	<i>Personal involvement (1998)</i>
Asset specific physical involvement (1993)	.420***	.266**	.103	.091	-.150
Asset specific competence (1993)	.310***	.340***	.296**	.137	-.010
Strategic involvement (1993)	.249 **	.087	.233*	-.164	-.243**
Mutuality (1993)	-.180	-.121	-.257*	-.066	-.107
Personal involvement (1993)	-.081	-.128	-.146	.108	.322***

\*\*\* $p < 0.01$  \*\* $p < 0.05$   $p < 0.1$  \*  $N = 72$

**Table 9.4: Pearson Correlation Matrix: Alliance Involvement 1993 and 1998**

From table 9.4 we may also note that all involvement factors are negatively correlated to personal involvement except the personal involvement variable itself. Thus, being involved strategically at one point in time is negatively related to the personal involvement at a later

<sup>1</sup> For the strategic involvement factor N=54 due to the terminating alliances where solidarity were excluded from the questionnaire

stage. Hence we may be talking about alliance involvement, and especially strategic involvement creating an “*alliance gone sour*”. This effect is not significant if we take out the 17 alliances that terminate, indicating that this effect is stronger in this subsample. Otherwise, this subsample of existing relations demonstrates the same effects as the full sample.

## 9.5 Alliance Involvement over time – Strategic Flexibility

Hypothesis 4, 5, 8, and 9 describe relations between changes in alliance involvement and strategic flexibility. I propose that a high level of involvement over time and increased level over time increase both constraints and resource flexibility.

I start with looking at the 1993 involvement variables to see if there are “*lag-effects*” of the independent variables, and to have a starting point for the changes in these variables. Five multiple linear regressions were run, one for each dependent variable.

<i>dependent variables</i>	<i>Dependent Variables</i>				
	Innovation 1998 Beta (SIG) (N=55)	Portfolio 1998 Beta (SIG) (N=55)	Decision 1998 Beta (SIG) (N=55)	Opportunism 1998 Beta (SIG) (N=55)	Activity 1998 Beta (SIG) (N=55)
Constant	(.105)	(.0365)	(.047)**	(.022)**	(.001)***
Asset specific physical investments (1993)	.15 (.367)	-.10 (.557)	.04 (.789)	.04 (.817)	.25 (.123)
Asset specific competence (1993)	.22 (.169)	.21 (.206)	-.30 (.050)*	-.27 (.097)*	-.10 (.503)
Strategic involvement (1993)	-.10 (.570)	.11 (.527)	.30 (.076)*	.13 (.442)	.10 (.557)
Mutuality (1993)	-.10 (.553)	.02 (.907)	-.11 (.471)	.14 (.398)	-.15 (.360)
Personal involvement (1993)	-.02 (.898)	-.01 (.977)	-.22 (.171)	-.32 (.061)*	-.15 (.353)
R2(adj)	.010	.037	.078	.105	.045
F (SIG)	.897 (.491)	.610 (.692)	1.918 (.108)	1.150 (.347)	1.511 (.204)

\*\*\* $p < 0.001$  \*\* $p < 0.05$  \* $p < 0.01$

Table 9.5: Multiple Linear Regression: Alliance involvement 1993 - Strategic Flexibility

No model shows overall significance. Four relations seem, however, to be worth noting. If we look at lag effects, asset specific competence seems to reduce decision constraints and opportunism (both  $p < 0.1^*$ ), whereas personal involvement reduces opportunism ( $p < 0.1^*$ ). Hence, it seems like having undertaken asset specific investments in competence at one point in time could reduce constraints on the alliance (decision constraints and opportunism) at a later stage. Also, being involved over time personally could create less grounds for fearing opportunistic behavior at a later point in time.

We also see that being strategically involved in the alliance in 1993 may increase decision constraints at a later point in time.

To test hypothesis 4 and 8, I am interested in seeing whether stable involvement over time predicts strategic flexibility. A stable or total level of involvement is found by adding the 1993 and 1998 involvement variable and dividing it by two. The results are shown in Table 9.6.

<i>Independent Variables</i>	<i>Dependent Variables</i>				
	<b>Innovation Beta (SIG) (N=54)</b>	<b>Portfolio Beta (SIG) (N=54)</b>	<b>Decision Beta (SIG) (N=54)</b>	<b>Opportunism Beta (SIG) (N=54)</b>	<b>Activity Beta (SIG) (N=54)</b>
<b>Constant</b>	(.089)*	(.314)	(.004)***	(.000)***	(.000)***
<b>Total Asset specific physical investments</b>	.16 (.269)	.06 (.731)	.19 (.264)	.07 (.665)	.331 (.062)*
<b>Total Asset specific competence</b>	.04 (.742)	.02 (.884)	-.06 (.725)	.06 (.706)	-.05 (.759)
<b>Total Strategic involvement</b>	.52 (.001)***	.41 (.021)**	.14 (.414)	-.43 (.011)**	-.01 (.937)
<b>Total Mutuality</b>	.04 (.742)	.11 (.460)	-.37 (.006)***	-.15 (.221)	-.16 (.303)
<b>Total Personal involvement</b>	.03 (.823)	.02 (.880)	-.24 (.066)*	-.41 (.002)***	-.17 (.273)
<b>R2(adj)</b>	.367	.148	.198	.247	.064
<b>F (SIG)</b>	7.138(.000)***	2.837 (.025)**	3.620 (.007)***	4.482 (.002)***	1.721(.148)

\*\*\* $p < 0.001$  \*\* $p < 0.05$  \* $p < 0.01$

**Table 9.6: Multiple Linear Regression: Total Involvement– Strategic Flexibility**

Regarding constraints, hypothesis 4a states that there is a positive relation between alliance involvement over years, whereas hypothesis 4b postulates a negative relation between total social involvement and constraints:

*H 4a: Total alliance involvement over time is positively related to constraints on firm decisions, opportunism and activity levels*

*H 4b: Total social involvement over time is negatively related to constraints on firm decisions, opportunism and activity levels.*

The only support found for hypothesis 4a, is the positive relation between total asset specific physical investments and activity constraints. The negative relation between strategic involvement and opportunism ( $p<0.05^{**}$ ), and the negative effects of the social involvement factors all reject this hypothesis.

Total mutuality is negatively related to decision constraints ( $p<0.01^{***}$ ), and total personal involvement is negatively related to decision constraints ( $p<0.1^{*}$ ) and opportunism ( $p<0.01^{***}$ ). Consequently, hypothesis 4a gains partial support, partial rejection, whereas hypothesis 4b gains partial support.

**Hypothesis 4: Total Alliance involvement – Constraints**

**Results:**

*Personal involvement is negatively related to Opportunism ( $p<0.01^{***}$ ) and Decision constraints ( $p<0.1^{*}$ )*

*Mutuality is negatively related to Decision constraints ( $p<0.01^{***}$ )*

*Strategic involvement is negatively related to Opportunism ( $p<0.05^{**}$ )*

*Asset specific physical investments is positively related to activity constraints ( $p<0.1^{*}$ )*

Hypothesis 8 states that:

*H8: Total alliance involvement over time is positively related to innovative capacity and resource portfolio*

This hypothesis receives partial support as total strategic involvement seems is positively related to innovative capacity ( $p < 0.01^*$ ) and resource portfolio ( $p < 0.05^{**}$ ).

**Hypothesis 8: Total Alliance involvement – Resource access**

**Results:**

*Total Strategic involvement is positively related to Innovative capacity ( $p < 0.01^{***}$ )*  
*Total Strategic Involvement is positively related to Resource portfolio ( $p < 0.05^{**}$ )*

The one variable that seems decisive for both resource flexibility factors is strategic involvement. A high level of strategic involvement over time also has a positive association with opportunism. Hence, having a high strategic involvement over time has only positive effects on our strategic flexibility variables.

It is not only stable involvement levels we are interested in, but also change in these levels. Change is computed as the difference between 1998 and 1993 levels, and may range from 1 (max. positive increase) to -1 (max. decrease). The results of these regressions are shown in Table 9.7.



### *Dependent Variables*

<i>Independent Variables</i>	<b>Innovation Beta (SIG) (N=54)</b>	<b>Portfolio Beta (SIG) (N=54)</b>	<b>Decision Beta (SIG) (N=54)</b>	<b>Opportunism Beta (SIG) (N=54)</b>	<b>Activity Beta (SIG) (N=54)</b>
<b>Constant</b>	(.000)***	(.000)***	(.000)***	(.000)***	(.000)***
<b>Change Asset specific physical investments</b>	.02 (.851)	.18 (.271)	.29 (.071)*	.04 (.801)	.05 (.792)
<b>Change Asset specific competence</b>	-.11 (.290)	-.14 (.337)	.42 (.006)***	.08 (.528)	.04 (.798)
<b>Change Strategic involvement</b>	.92 (.000)***	.49 (.021)**	-.18 (.394)	-.26 (.164)	-.06 (.808)
<b>Change Mutuality</b>	.12 (.248)	.08 (.574)	.03 (.812)	-.44 (.000) ***	-.01 (.945)
<b>Change Personal involvement</b>	-.29 (.029)**	-.21 (.228)	-.11 (.5531)	.05 (.793)	.02 (.934)
<b>R2(adj)</b>	.553	.169	.125	.382	.10
<b>F (SIG)</b>	14.116(.000)***	3.163(.015)**	2.521(.042)**	7.554(.000)***	0.030(.100)

\*\*\* $p < 0.001$  \*\* $p < 0.05$  \* $p < 0.01$

**Table 9.7 Multiple Linear Regression: Involvement Differences – Strategic Flexibility**

Hypotheses 5 a, 5b and 9 postulate relations between changes in alliance involvement levels and strategic flexibility.

*H 5a: Increasing alliance involvement over time is positively related to constraints on firm decisions, opportunism and activity levels*

*H 5b: Increasing social involvement over time is negatively related to constraints on firm decisions, opportunism and activity levels*

With these hypotheses we are interested in looking at what happens if alliance levels change over the years. Here we see that increasing levels of asset specific competence and physical investments are positively related to decision constraints. These findings support hypothesis 5a. Increasing levels mutuality, however, rejects hypothesis 5a. Growing levels of mutuality seems to reduce opportunism that gives some support to hypothesis 5b.

### **Hypothesis 5: Increasing Alliance Involvement – Constraints**

#### **Results:**

*Increasing Mutuality is negatively related to Opportunism (p<0.01\*\*\*)*

*Increasing Asset specific competence is positively related to Decision constraints (p<0.01\*\*\*)*

*Increasing Asset specific physical investments is positively related to Decision Constraints (p<0.1\*)*

Hypothesis 9 concerns the relation between changes in alliance involvement and access to resources:

*H 9: Increasing alliance involvement over time is positively related to innovative capacity and resource portfolio*

Increasing levels of strategic involvement is positively related to both innovative capacity and resource portfolio.

### **Hypothesis 9: Increasing Alliance involvement – Resource access:**

#### **Results:**

*Increasing Strategic involvement is positively related to Innovative capacity (p<0.01\*\*\*)*

*Increasing Personal involvement is negatively related to Innovative capacity (p<0.05\*\*)*

*Increasing Strategic involvement is positively related to Resource portfolio (p<0.05\*\*)*

From Table 9.5 it is interesting to note the large effect increases in strategic involvement has on innovation capacity and resource portfolio. Whereas the asset specific physical investment level in 1993 is positively (although not significantly) related to innovation capacity in 1998, strategic involvement in 1993 is negatively (not significantly) related to innovation capacity.

We also know that asset specific involvement alliances are more stable than strategic involvement alliances. Hence, alliances undertaking high specific investments in 1993 are to some extent the same that have high specific investments in 1998, and these are the alliances having high innovative capacity. Alliances being strategically involved in 1993, however, are to a lesser extent those that are involved strategically in 1998. The alliances with high innovative capacity are clearly those that presently are heavily involved strategically, this involvement growing steeply in the last couple of years. In this line of thinking, it seems as if the “*history effect*” of strategic involvement is very small. It does not matter whether the firms have been strategically involved over time to gain access to resources. What matters, however, is the short term, present rise in strategic involvement, possibly signalling commitment to the alliance that make the partner open up its resource base. Thus, innovative capacity is stimulated positively by stable, gradually increasing levels of asset specificity in physical investments, and radically increased levels of strategic involvement.

Whereas strategic involvement supports hypothesis 9, personal involvement rejects this hypothesis. In fact, the more important personal involvement becomes in the relation, the less innovative capacity the firm reports. This finding is interesting because one would think that being personally involved would create an environment of resource sharing and development. This does not seem to be the case. Instead we are almost led to think that to get resource access and development from your partner, it is not the personal involvement that is the key issue. On the contrary it seems as in situations where personal involvement becomes more important in the relation, the resource development potential diminishes.

## ***9.6 Alliance Involvement and Uncertainty - Termination***

In hypotheses 10 and 11 I argue that the more a firm is involved in an alliance, and the lower uncertainty levels it works under, the higher is the likelihood that the firm will stay in the alliance:

*H 10: Alliance involvement is negatively related to termination*

*H 11: Uncertainty is positively related to termination*

Both alliance involvement factors and uncertainty were analyzed using Logistic Regression analysis. I had data on 100 alliances in 1993. Of these 9 were not in the sample due to mergers or bankruptcies. Of the 91 alliances left in the sample, 66 still continued and 25 were terminated.

The SPSS program gives Wald statistics, providing the statistical significance for each estimated coefficient (Hair et al. 1995). The dependent variable is alliance termination.

	Wald statistics	B	SIG	R
ASPH93	0.5946	0.78	.44	0.00
ASCO93	0.0025	0.07	.96	0.00
MUT93	0.2996	0.81	.58	0.00
PERS93	1.2246	-1.6434	.27	0.00
STRA93	3.5666	-3.1180	.06*	0.12
US93	1.9250	-2.6392	.10	0.08

\*\*\* $p < 0.001$  \*\* $p < 0.05$  \* $p < 0.01$

**Table 9.8: Logit Analysis: Uncertainty/ Involvement 1993 - Termination**

From Table 9.8 we see that three of the coefficients are positive pointing towards high termination rates; asset specific physical investments, competence investments and mutuality. Three involvement factors are negative, pointing towards low rates of termination. One factor is however significant only at the 0.1 level. In line with my predictions, those firms that report high strategic involvement in their alliances in 1993 seem to have terminated the alliance at a lower rate than those with higher levels have. Furthermore, those firms experiencing higher uncertainty levels seem less likely to have terminated their alliance. This finding is not, however, significant.

## 9.7 Chapter Summary

In this chapter I have presented the statistical tests of the research hypothesis set forward in chapter 5. The relations between alliance involvement and the strategic flexibility variables have shown some support, mainly indicating that the alliance involvement variables of asset specificity and strategic involvement seems to be related to increased resource flexibility, but also to constraints. The social involvement factors, however, seem to reduce constraints, but are not related to resource flexibility. The results of the hypothesis testing are showed in Table 9.9:

	Hypothesized relationship	Findings
Hypothesis 1a: Alliance Involvement -Opportunism	+	+ Partial support - Partial rejection
Hypothesis 1b: Social Involvement –Opportunism	-	- Support
Hypothesis 2a: Alliance Involvement- Decision Constraints	+	+ Partial support - Partial rejection
Hypothesis 2b: Social Involvement –Decision Constraints	-	- Support
Hypothesis 3a: Alliance Involvement –Activity Levels	+	+ Partial support - Partial rejection
Hypothesis 3b: Social Involvement – Activity Levels	-	- Partial support
Hypothesis 4a: Total Alliance Involvement – Constraints	+	+ Partial support - Partial rejection
Hypothesis 4b: Total Social Involvement– Constraints	-	- Partial support
Hypothesis 5a: Increasing Alliance Involvement - Constraints	+	+ Partial support - Partial rejection
Hypothesis 5b: Increasing Social Involvement - Constraints	-	- Partial support
Hypothesis 6: Alliance Involvement –Innovative Capacity	+	+ Partial support
Hypothesis 7:Alliance Involvement –Resource Portfolio	+	+ Partial support
Hypothesis 8: Alliance Involvement over time- Resource Access	+	+ Partial support - Partial rejection
Hypothesis 9: Increasing Involvement- Resource Access	+	+ Partial support
Hypothesis 10: Alliance Involvement 1993 – Termination	-	- Partial support
Hypothesis 11: Uncertainty - Termination	+	0 No support
Hypothesis 12: Uncertainty – Alliance Involvement	-	+ Partial rejection
Hypothesis 13:Uncertainty over time – Alliance Involvement	-	0 No support

**Figure 9.9: Summary of Findings**

Strategic involvement is an interesting variable in the sense that its content is not so stable in the alliance relation over time. Alliances with high strategic involvement in 1993 are not necessarily alliances with high strategic involvement at a later point in time. Strategic involvement does, however, keep the firm from terminating the alliance. Hence, high strategic involvement alliances will tend to go on longer than alliances with high asset specificity or social involvement, but the content of these alliances may not be that as time goes on. The once strategic alliance seem to stimulate to idiosyncratic investments in physical assets, but will reduce personal involvement. Being strategic at one point in time seems to stimulate a more “*locked-in*” alliance concerning physical assets with a lower degree of personal involvement. Concerning governance, Bradach and Eccles (1989) have argued that social mechanisms may be one form of governance in an alliance. In the once strategic alliance, we may assume that governance mechanisms increasingly will be others than social mechanisms. We also see that the level of mutuality is unstable over years. Hence, even if the alliance once is thought of as important socially, it may not be later on.

High levels of strategic involvement is positively stimulated by high levels of competence investments in 1993. Thus, if the partners had to develop specific competence in 1993, the alliance has obviously become more strategic in 1998, which seems reasonable as this common specific competence could be a basis for new common strategic opportunities. It is interesting to note that only asset specific competence has this effect, not asset specific physical investments, perhaps demonstrating the tacit component of competence and therefore the higher potential for common strategic positioning. It is also interesting to note that alliances reporting a high degree of mutuality in 1993 are negatively correlated to those that are strategic in 1998. Thus, this social involvement issue is not one to “*open up the partners eyes*” for possible new strategic opportunities. On the contrary, being willing to invest socially may open up to potential mismatches. It is the willingness to invest in competence that cannot be applied outside of the relation that matters, not the social issues.

Concerning innovative capacity, the development pattern of sharp growth in strategic involvement seems highly positive. Hence, historic levels seem to matter less than the ability to increase strategic involvement rapidly. When it comes to asset specific physical involvement, however, the story to a larger extent seems to be one of path dependency. The same sharp growth in strategy involvement also seems to have a negative effect on constraints. The overall

effect, however, seems to be that strategic involvement is positively related to decision constraints.

Investing in asset specific competence seems not to be good for strategic flexibility, although there could be a negative lag effect on decision constraints and opportunism. This seems to indicate that being willing to invest in competence specific to the relation at one point in time restrains the firm from making a series of decisions and increases opportunism at a short term horizon, but could reduce these constraints over time. Additionally, as we have discussed, investing in specific competence is positive for later developments of strategic involvement.

The social involvement factors are negatively related to constraints, but have no positive association with resource access. Thus, the alliance that is socially "*thick*" seem to be a kind of an "*arm`s length*" alliance where the firm is free of constraints, but will not access resources.

The environmental uncertainty variables do not seem to relate ongoing alliances. This could mean that the level of alliance involvement does not form barriers to exit of an alliance. If this is true, firms are as likely to terminate high involvement as low involvement alliances. Due to the low reliability of this measure, it is also likely that this construct has not been tapped well enough to draw firm conclusions. In the next chapter I will start with a more thorough discussion of these findings.

# 10. Discussion and Implications

In this chapter I will discuss the findings and implications of the study. First, I would like to continue on the discussion started in chapter 9 and look more closely into the major findings. This study has implications for theory, methodology and practice that are discussed in section 10.2. The findings should be considered according to the strength and weaknesses of the study, a topic I will look into in section 10.3. Issues for further research naturally follows this topic and constitutes the final section of this chapter.

## 10.1 Discussion of Findings

### 10.1.1 Alliance Involvement – Strategic Flexibility

The relations between alliance involvement and strategic flexibility seem to indicate a pattern where the two asset specific involvement variables and strategic involvement is positively related to both dimensions of resource access *and* to constraints. That is, having undertaken asset specific investments and being strategically involved gives the firm resources that increase overall firm choices, but at the same time elevates constraints. The two social involvement factors, mutuality and personal involvement, on the other hand, seem to reduce constraints, but are not associated with resource access. These relations can be illustrated in figure 10.1:

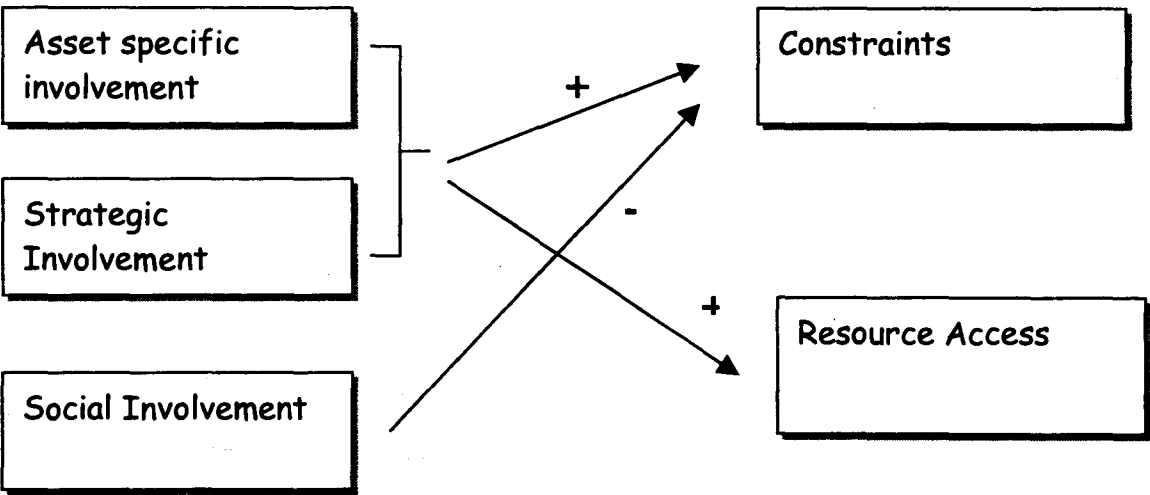


Figure 10.1: Summary of Findings: Alliance Involvement – Strategic Flexibility



Consequently, one main conclusion from this study seems to be that entering an alliance does neither increase nor decrease the overall flexibility of a firm. Being engaged in an alliance may be positively associated with some dimensions of flexibility, but be negatively or have no associations with others. Thus, engaging in an alliance may open up for different ways that can affect the strategic choices available to firms. It seems, however, as if it is difficult to achieve access to resources while avoiding constraints. If the firm is to increase its strategic flexibility by increasing its pool of resources, this study shows that to do so the firm must accept a “*lock-in*” situation in which the partner limits the freedom of the firm to make decisions. Additionally, opportunism is increased and the firm must limit its operations to a set activity level. Therefore, it seems as if a firm must decide whether it is most important to be flexible in terms of:

1. **Avoiding constraints**, and thereby not get access to resources, or
2. **Accessing resources**, and thereby accepting increased constraints.

If we look at each alliance involvement factor, we see that they have different development patterns and predictions over time.

**An asset specific physical investment** is the most stable factor in the alliance over years. That is, the firms that reported a high level of physical investments in 1993, were also the ones that reported a high level of physical investments in 1998. In line with this finding we see that changes in asset specific physical investments have no effects on flexibility; it is the stable, gradual increases that matter. An asset specific physical investment is clearly positively related to resource access, especially innovative capacity, and also to constraints, clearly pointing to a “*lock-in*” situation in the alliance. However, this situation of lock-in seems to be directed towards the ongoing alliance, as it does not seem to prevent the firm from terminating the alliance. Although not significant, the findings point towards the opposite. This seems to suggest that if the alliance is not useful to the partners anymore, the partners will be willing to accept losses of idiosyncratic investments when they terminate the alliance.

**Asset specific competence investments** are associated with increased constraints, but this factor is not associated with resource access. Hence, in a flexibility context, investing in asset specific competence may not be so smart. There seems to be, however, a negative lag effect

of asset specific competence investments on decision constraints and opportunism. Consequently, decision constraints and opportunism may be higher in the short run after a competence investments has been undertaken, but could be reduced in the long run. Additionally, asset specific competence investments seem important for strategic involvement over time. For two firms to discover mutual strategic opportunities, it may be positive to have invested in competence that is specific to the relation. As tacit components, for example, often are central in strategy, developing a mutually distinguished competence could be necessary to be able to share such tacit knowledge.

**Strategic involvement** in an alliance is the most influential factor on resource access, both significantly related to innovative capacity and portfolio. If we look at the lag effects from the 1993 involvement factors we see that strategic involvement is negatively (although not significantly) related to innovation capacity, whereas the increases in strategic involvement have huge effects on innovative capacity. We have also seen that there is a certain correlation between alliances that are strategic in 1993 and 1998, but that this relation varies more than the asset specific factors. In line with this argument it seems as if getting access to resources is dependent on the strategic importance placed on the relation presently, more than how important strategically this relation was several years ago. Consequently, we may argue that in the alliances in this study the strategic importance over years has been changed, and this change is the most influential factor on the resources accessed by the firm in the alliance relation.

Being strategically involved in an alliance also seems to have a lagged effect on decision constraints, i.e., decision constraints is not only associated with the present level of strategic involvement, but also with historic levels. This is thus a “*lock-in*” effect over time. Either if the firm has been or presently is strategically involved in the alliance, it will report that its decision options are reduced. The short term effect of strategic involvement on constraints, however, seems to be negative, indicating a constraint reducing effect when strategic involvement increases.

Strategic involvement is the only factor that has a negative impact on termination. If the firm was strategically involved in the alliance in 1993 there is a lower chance that the alliance was terminated in the years between 1993 and 1998. Consequently, it seems as if firms will tend

to hold on to their strategic alliances longer than less strategic alliances, and that this is the most important factor to be considered by the firm.

In most approaches, strategic alliances are treated as a separate category of alliances (Contractor and Lorange 1988; Yoshino and Rangan 1995). My findings indicate that a relation between firms may go on for years, but how this relation is perceived and what it encompasses varies greatly over time. Only 27 % of the alliances that were in the survey in 1993 had terminated, which is lower than estimates given by Bleeke and Ernst (1993). It seems, however, that the content and perception of the alliance had changed in the surviving alliances. Alliances that were defined as supplier relations in 1993 could be in 1998 characterized as customer relations or relations with a competitor, and alliances that were characterized as less strategic in 1993 could be characterized as very strategic in 1998. Consequently, if we only study an alliance in a short time perspective, we miss important information on what an alliance is, how it develops, and its implications on the participating firms.

Looking at correlations between all 1998 and 1993 factors we see that the two asset specific involvement factors are highly correlated, also over time, while the two social involvement variables are correlated, but the two “*groups*” of asset specificity and social involvement are not related. Strategic involvement, however, is correlated to both, and seems to be a “*mediating*” factor between these dimensions. This is not surprising as it contains both asset specific relational items and the norm of solidarity. Over time, the strategic involvement variable is positively associated with asset specific physical equipment. This seems reasonable, as firms that perceive of the alliance as strategically important are more likely to consider increased investments in the alliance. Furthermore, strategic involvement at one point in time seems to be associated with less personal involvement at a later stage, possibly indicating that being involved may not only cause firms to invest more, but also that the alliance has “*gone sour*”. This is also indicated by the finding that being strategically involved in the alliance at one point in time seem to have a “*lag effect*” (positive) on decision constraints. Consequently, being strategically involved in an alliance seems to reduce constraints in the short term, but elevate these over time suggesting a positive short term engagement, but a “*lock-in*” situation over time.

Whereas personal involvement is stable over the years, the importance placed on mutuality in 1998 has no connection to the same level in 1993. Hence, this factor seems to be dependent on the current situation the alliance is in, and not a stable characteristic of the alliance. Both factors, however, have clear effects on constraints, clearly pointing to the finding that if these factors are present, the firm will report that it is experiencing few constraints from this alliance.

**Mutuality and personal involvement** can be interpreted as indicators of trust, which seems reasonable since mutuality clearly is trust related and personal involvement can be seen as a prerequisite to trust. From this study we see that trust reduces constraints, but is not associated with access to resources in the relation. In fact, evidence of the opposite may be found. Mutuality, for instance, is negatively correlated to strategic involvement at a later point in time. In this sense, at one point in time expressing the importance of a mutually important alliance, may be negative to the discovery of mutual strategic opportunities, rather than positive.

Furthermore, increasing levels of personal involvement over years is negative for innovative capacity, rather than the opposite. This finding can be explained in three ways. First, it could be a sign that personal involvement represents a leakage, so that engaging in the alliance actually reduces innovation capacity, rather than increasing it. Alternatively, it could be the case that alliances with high personal involvement are mainly loose connections, where the aim is to get access to superfluous information rather than actually establish a more permanent transfer of resources relevant for innovation purposes. Finally, alliances with strong personal relations could be a sign of “*groupthink*”, especially if the personal relations are entered on the basis of similar backgrounds and experiences (Bantel and Jackson 1989). If firms become too similar, nothing new can be learned from the alliance firm. Thus, trust is associated with the ability to make changes and to act less restrained, but it has nothing to do with resource transfer in the alliance. For that to happen, expressions of mutuality and importance placed on personal relations are not important, the partners must be willing to make specific commitments, either in terms of physical equipment or be strategically involved.

In most alliance studies, trust is seen as the most important variable for alliance gains, survival and success (Contractor and Lorange 1988; Lorange and Roos 1992; Miles and

Snow 1995; Powell, 1990; Yoshino and Rangan 1995). This study moderates this view somewhat. One of the major findings in this study is that trust clearly reduces constraints in an alliance. That is, in alliances where firms trust each other, the firm to a greater extent feels free to suggest and make changes in its strategies. It seems clear, however that trust is not related to resource access in the alliance. One should think that if firms in an alliance trusted one another, they would feel freer to reveal information, and allow resources to be transferred and commonly used between the firms. This condition seems to be neither important nor sufficient, as firms must either demonstrate the willingness to take on asset specific investments or clearly be involved in the relational side of the alliance (strategic involvement). Hence, trust is an important factor in an alliance relation, but it is not the only important factor, and its associations to alliance gains seem to be limited.

In Appendix 4 I have extended the analysis of termination to include the variables of *year of establishment* and *expected duration of the alliance*. In this appendix we see that year of establishment comes out significant ( $p < 0.05^{**}$ ). That is, recent alliances seem to have a significantly higher rate of termination than older alliances, implying some sort of “*evergreen*” effect. If the alliance has prolonged over some time, changes increase that it will continue to go on longer. This seems to indicate that alliances go through some sort of trial period that once passed open up for long term relations.

### 10.1.2 Environmental Uncertainty – Alliance Involvement

Neither of the uncertainty - alliance involvement hypothesis received support. The one finding that was significant, was a positive association between complexity and personal involvement. This finding can be understood as firms seeking to reduce complexity by developing personal relations. Hence, when environments are complex and products have a low level of standardization, personal relations may help to ease adaptations of products and their differing specifications.

The level of dynamism was not associated with alliance involvement, which seems rather strange compared to the present body of theories suggesting that uncertainty and involvement are clearly connected (Harrigan 1985; Williamson 1985). There may, however, be some explanations to this finding. First, the relationship between uncertainty and alliance

involvement may be two- sided. It seems rational to assume that firms should appreciate the ability to withdraw from an alliance under conditions of high dynamism, as they would like the freedom to design value activities freely according to the new environmental conditions. At the same time, the choice of organizational mode most firms face is not only between different types of alliances, but also between internal organizations and markets. Hence, when uncertainty is high, engaging in an alliance, even if this requires high involvement, could be a better choice than organizing internally. Consequently, the specter goes from internal organizations to market, and looking at only alliances does not capture the full relation between involvement and uncertainty.

Secondly, there may not be a connection between alliance involvement as it is defined here and uncertainty at all. If the firm finds that the alliance is obsolete and decides to terminate it, the firm will do so regardless of the level of involvement, although it seems strange, as the firm would have losses tied to idiosyncratic investments.

Third, we should also consider the measurement issues of the uncertainty construct and be open to the errors being introduced in the ways in which this construct was measured. Uncertainty scales have demonstrated low reliability and low correlations between perceptual measures and “*neutral*” measures (Buchko 1994), and seems to be a difficult concept to measure. These findings should therefore be tested in other studies where the measurement issues are improved before any final conclusions are drawn.

These explanations may also be used to understand the surprising finding that uncertainty is not related to alliance termination. That is, under conditions of high uncertainty, firms do not tend to terminate their alliances more often, on the contrary, they seem to stick to their partners. If the alliance represents an alternative to internal organization, this alliance may be seen as an outsourcing alternative, reducing the ownership risks of the firm in situations of high uncertainty. We should also remember that the alliances included in this sample are the ones the firm considers as its most strategic. Hence, the relation between uncertainty and termination could be stronger in less strategic alliances.

### 10.1.3 Summary of Major Findings

The “*story*” that unfolds in this study seems to shed some new light on our previous understanding of alliances and strategic flexibility. Strategic flexibility from alliances has previously only been assumed but never tested. Many previous studies of alliances are cross-sectional or if longitudinal, only involving one case, and there is little information on how alliances develop over time. This study offers information on a set of alliances, and gives a broader picture on alliance development. The major findings may be summarized under the following headlines:

1. ***Asset specific investments and strategic involvement*** seem necessary if the firm is to get access to resources. These factors do, however also place constraints on the firm, creating a “*lock-in*” situation with the alliance partner. However, this “*lock-in*” situation only seems to concern strategic involvement when it comes to termination.
2. ***Strategic alliances are not necessarily strategic over time***. Strategic and relational involvement in the alliance seems to be the most important factor to explain resource access. However, what seems to be important is not stable levels of strategic involvement over years, but current high levels. An alliance being viewed by the firm as strategically important at one point in time can be viewed as less important in another. This finding suggests that the strategic side of alliances is a variable more than a way to categorize the alliance.
3. ***Alliance relations change over time***. This study suggests that alliances based on no-ownership may go on for years. Even if the relation persists, however, the alliance content may change over time, as sometimes the firm may view its partner mainly as a customer, sometimes mainly as a competitor. Furthermore, the personal content seems stable, whereas the mutuality level varies. Additionally there seems to be a trial period in these types of alliance relationships, which once passed, will lower the chance of termination of the alliance.
4. ***Trust is important, but not for resource access***. Most of the alliance literature has stressed the importance of trust and personal relations as important in all types of alliances (Inkpen 1998; Larson 1992; Powell 1990). In this study I have found that trust

has one particular function: It allows the firm to avoid constraints on its decisions and lowers the fear of opportunism. However, trust does not seem to imply the right kind of environment for transfer of resources between the alliance and the firm. On the contrary, being too involved socially may deteriorate the possibilities for resource access at a later point in time. In line of these findings, it could seem as if the importance placed on trust in alliance relations is overrated.

5. *The link between uncertainty and strategic flexibility based on use of alliances is complex.* This study has not been able to test the hypotheses that alliances will tend to terminate more often under condition of uncertainty, and that alliances will tend to be less involved under conditions of high uncertainty. This could be due to several things: First, the alliance relations here could be alternatives to internal organizations, thus in fact representing a less involved alternative. Furthermore, even if I did look at uncertainty over time, uncertainty levels could also fluctuate, and the decision to terminate or becoming less involved being awaiting or lagging. Most likely, the concept of uncertainty is still not well understood, at least not well measured, which is problematic regarding the testing validity.

## **10.2 Implications of the Study**

In this section I will discuss the following implications of these findings: Theoretical, Methodological, and Managerial.

### **10.2.1 Theoretical Implications**

In this study I have combined theories on strategic flexibility and alliances, and contributions to these two bodies of literature will be discussed in this section.

There are few empirical studies of strategic flexibility of this kind except in the field of operational or technical flexibility (see section 2.2.2). Hence, this study is a contribution that tries to increase our understanding of strategic flexibility by looking at empirical data.



Approaches to strategic flexibility propose that strategic flexibility is a multifaceted concept, consisting of several dimensions. Based on previous approaches I defined five dimensions of strategic flexibility in this study. My findings are consistent with Suarez et. al (1995) and Upton (1995) who found that factors positively associated with some dimensions of flexibility may be negatively related or unrelated to others. If we look at the perspectives on flexibility from chapter 2 in this dissertation, the finding seems to suggest that Evans` (1991) idea that firms can be flexible in many different ways at the same time, is problematic. The findings from my study rather seem to indicate that firms may have to choose some dimensions of flexibility acknowledging that this may limit the development of others. In this sense it seems reasonable to define strategic flexibility as a relative concept. It is difficult at one point in time to denote one firm as more flexible than another. On the other hand, we may say that a firm holds certain positions that could make it relatively better prepared to face some kinds of external changes better than another firm can. The other firm could, however, be better prepared for other external changes.

Furthermore, my findings seem to be more in line with Volberda`s (1996) ideas than Sanchez` (1995). Volberda (1996) argues that certain flexibility dimensions can be stimulated according to the external challenges met. Hence, the firm does not support all dimensions simultaneously. Sanchez`(1995) argues that flexibility is dependent on a complete set of dimensions, that must be met for the firm to be flexible. Regarding the inconsistencies between dimensions, this position could prove difficult to accomplish. The main contribution to theories of strategic flexibility thus seems to be summed up as following: Different ways in which firms can be flexible are in conflict with each other. Hence, when discussing strategic flexibility, we should clarify the dimensions we are looking at, and be aware that:

1. No firm is more flexible than other firms *on all dimensions*
2. The relationship between uncertainty and strategic flexibility from alliances seems to be complex, both in relation to changes allowed within the alliance, and in relation to alliance termination. Termination does not seem to be a spontaneous response in reaction to external events.

This study also has implications for the theory of strategic alliances. The results from this study question that alliances are distinctly strategic vs. non-strategic, at least over time. Whereas the asset specific and the personal involvement content of alliances seem to be fairly

stable over time, we see that strategic involvement is less stable, and the mutuality content is not stable at all. From these results we see a picture of an alliance as partly changing over years. We have seen that the alliance may take on different roles in different periods of time being described as customers in one period or a competitor in another. Hence it may seem as if the firm seems to form *a relation* with another firm rather than form *a specific type of alliance*. This finding poses some warning to theories of strategic alliances (Lorange and Roos 1992; Yoshino and Rangan 1995) viewing strategic alliances as substantially different from other types of alliances. One contribution from this study, where strategic involvement is seen as a variable rather than a way of categorizing the alliances, is that alliances may be defined by the firm as more strategic in some periods of time, and less in other, but the relation between the two firms persists.

If we look at the three theoretical approaches presented in chapter 3, these findings may contribute the following: Transaction cost economics (TCE) is a theory looking at efficiency between transaction characteristics and governance forms at one point in time. My findings suggest that asset specificity is important for resource access, but also creates a “*lock-in*” situation that supports the predictions of the theory (Reve 1990). Additionally, we have seen that there is a positive relation between asset specific competence and opportunism that supports this theory. Asset specific physical investments and strategic involvement, however, are not positively related to opportunism. Strategic involvement seems to have the opposite effect, which could be related to the positive weight put on a strategically important relation.

Four issues, however, raise some concerns regarding the applicability of this theory. First, the theory does not include the concept of strategic importance that seems to be more influential than the other two asset specificity variables. One may argue that the strategic involvement variable involves asset specific relational investments where this issue is covered. There is, however a clear link to strategy that is not recognized by the TCE, but proves to be very important to certain alliance gains. Secondly, the Transaction cost theory is a static theory, not looking at alliance changes over time. From this study we have seen that alliances do indeed change their content and direction, which are areas TCE can not help us understand. Thirdly, TCE provides clear predictions between uncertainty and alliance involvement. Williamson argues for instance that relations with low asset specificity will deal with changes in the market, whereas relations with high asset specificity will deal with changes internally. No support can be found for this hypothesis. Fourth, TCE does not include the variable of

trust, and argues that this variable is obsolete (Williamson 1993). In this study there is a clear link between social involvement and opportunism, suggesting that trust does have merit as one governance mechanism (Bradach and Eccles 1989; Haugland 1994).

As a contribution to the resource based perspective (RB), this study shows that firms actually access resources through alliances, going against Barneys predictions (Barney 1986). Hence, firms do not only develop their innovative capacity based on internal resources, but through cooperation with others. This finding suggests that resource mobilization through external actors (Haugland and Lunnan 1996; Haanæs 1997) is a manner in which firms learn. This idea should, therefore, be given more attention within the Resource Based perspective.

How important resources accessed through alliances are relative to their internal resources (Conner 1991) has not been addressed in this study. The link between resources and strategic importance suggests that the innovative capacity gained by the firm could be important to the competitiveness of the firm. The importance of asset specificity in order to obtain these resources suggests that transfer of these resources are “*sticky*”, as idiosyncratic investments must be undertaken to get these resources, which support Resource based predictions.

Although access to resources seems less dependent on historic than present involvement levels, my findings suggest that alliance contents change. Thus approaches like the Dynamic Capabilities Approach (Teece, Pisano, and Shuen 1997), being concerned with resource development processes, may have a greater knowledge creation potential than static resource based approaches in the alliance context.

The process elements stressed in the International Marketing and Purchasing Approach (Hagg and Johanson 1982; Håkansson 1982) are very much in line with the story that seems to unfold in my data. This theory approach stresses the importance of the process and the relation rather than focusing on characteristics of the alliance at one point in time. The “*evergreen*” aspect of alliances seen here as risk of termination is reduced as time goes on is also debated in this perspective. Hence, contrary to Bleeke and Ernst’s (1993) statement that most alliances terminate in a perspective of 5-7 years, some alliances tend to go on for decades, although their content over the years may differ.

This study also shows that trust is not necessarily a prerequisite for all types of alliances, especially not for learning and resource access, contradicting some of the predictions of the IMP approach. This study therefore calls for some refinements of this approach, pointing out types of alliances where learning and innovation are more important and the factors that supports this development.

Results from this study question the idea that alliance success is a unidimensional construct. Consistent with Hamel (1991) we see that being involved in an alliance may have different associations, that all can be desirable but difficult to align. Thus, success of the alliance depends on the situation and the intentions of the firm with the alliance. If the external situation values new products, stimulating resource flexibility could be perceived of as a success. If ability to adapt, and make changes are more appreciated by customers and external stakeholders, avoiding constraints would be preferred. Hence, evaluation of the success of an alliance depends on the purpose it is set to serve.

This study also gives some implications to our understanding of the role of trust in alliances. In alliance studies trust is proposed to be the most important element of the alliance (Kumar 1996; Larson 1992; Lorange and Roos 1992). These results show that trust reduces constraints, but is not associated with access to resources in the relation. In fact being too concerned with the mutuality of the relation and the personal bonds may in fact prohibit the firm from learning. Consequently, all theories that deal with trust, both the IMP perspective and other alliance contributors, should include in their theories the limitations of trust in predicting alliance outcomes.

### 10.2.2 Methodological Implications

Items measuring all strategic flexibility variables, except opportunism, were developed from theory and the pretest. Hence these items have never been used in an empirical study before. Some measures seemed to work well, like innovation capacity and portfolio, whereas decision and activity level constraints clearly can gain from further development. This study gives, however, a "*first try*" that is a contribution to further construct development and measurement in these areas. The low reliability of some of these items suggests that more than one factor is confounded within the intended constructs. One implication of this issue is

qualitative approach where constructs like activity constraints and decision constraints were inductively understood to suggest an additional set of items. These could later be explored in an exploratory factor analysis.

Uncertainty factors have received relatively low reliability also in previous studies (Boyd, Dess, and Rasheed 1993). It is thus difficult to test the main hypothesis in the strategic flexibility approaches: That high uncertainty matched with high strategic flexibility leads to high efficiency. My experiences in this research process seem to give two implications. Either dynamism must be identified as a narrower construct, for example as technological uncertainty relevant to firms in a more homogeneous sample. Another implication could be to understand all areas of the environment that could cause dynamism to the firm and create a formative index. The first of these approaches would require a focused approach into segments of one industry where the external threats to firms are identifiable, or to focus on only one potential external threat, like technological uncertainty. This approach would could improve construct validity, but decrease external validity. The second approach means improving the route applied in this study, but using a formative, rather than reflexive approach. Requirement would be that all areas of possible treats are identified, and scaled appropriately to give a proper picture of all the treats facing the firm. Boyd et al. (1993) advocates that an approach to uncertainty should be weighted, as critical areas of uncertainty easily are masked in an aggregated scale. Buchko (1994) and Milliken (1987) suggest that instead of measuring uncertainty regarding output, measures should look at the organizational processes, as firm decisions may be more concerned with uncertainty in different phases.

Most studies of alliances use one of two approaches. Either a cross-sectional sample or a longitudinal sample of a few alliance cases. This study gives a methodological contribution as it includes data from a larger set of alliances from two points in time. This design allows us to get a broader picture of how alliances change, develop and terminate, being able to test whether the predictions are statistically sound or not. Seeing how alliances develop over time greatly enhances our understanding of what factors are related to strategic flexibility and in what ways. Based on a cross sectional sample, for example, we could argue that asset specific competence is worthless in a strategic flexibility context. Over time, however, we see that asset specific competence may stimulate strategic involvement and reduce decision constraints, hence this factor has some importance after all. A problem with this method is the loss of informants, as firms quit or refuse to follow up over time. Thus, the success of the

method requires the researcher to spend some effort on encouraging the firms to stay in the sample. Another problem with follow up studies are biases introduced by informants remembering or being affected by previous participation. Allowing some time between the tests or using different informants could reduce these biases.

I have suggested that mutuality and personal involvement can be seen as indicators of trust. It should be noted, however, as a methodological implication, that personal involvement is a more stable over time indicator than mutuality.

The results from this study show that alliance involvement factors influence strategic flexibility. These factors can, however, only explain part of the variance, hence there are other influential factors that affect strategic flexibility. The design applied in this study only allows for a deductive approach. An inductive approach allowing for observation of firms responses could give information on other important factors.

Finally, this study assumes a causal relationship between the variables, but the relations of the 1998 data are clearly cross-sectional. Stronger results would have been found if the three requirements of causality, temporal precedence, ruling out third variables and correlation could be established. Additionally, this study was not designed to look at inter-relations between the strategic flexibility dimensions. A design allowing statistical methods like canonical correlation or Lisrel could look at the relationships between the flexibility dimensions in the alliances.

### 10.2.3 Managerial Implications

If the stories of the pace of change told by researchers and authors are at best only partially true, being a manager in the 1990s is living in a paradoxical world balancing commitment and flexibility (Parnell 1994). In popular writing, there seems to be a larger share of advocates towards the need for developing flexibility, for example arguing that “*flexibility rules the marketplace*” (Haeckel and Nolan 1993). The management of strategic change entails both reactions to external events and the management of activities to cause such changes. Hence managing changes involve activities that design, implement and control strategies (Mattson 1988). Being able to make changes within the alliance, access resources

in the alliance, and even terminate the alliance should be of great value to the firm in this strategic process.

From most approaches to alliances, managers are encouraged to develop trust as trust is seen as the most important mechanism in alliances. This study modifies this encouragement somewhat. Developing an alliance where trust is central, ensures the incremental changes and adjustments that gives the firm its freedom to act independently or at least not be hindered by its partner. Thus, if it important to the firm to hold its options open and minimize constraints from its partner, building trust is important. Over time, it seems to be important to keep personal involvement high, as the level of mutuality is very unstable. Trust is, however, not part of the “*lock-in*” arrangement that allows the firm access to resources. In fact, being socially involved may cause a redundancy of information, create leaks or open up for conflicts that could deteriorate the possibilities for resource transfer rather than stimulate them. Managers should therefore be aware of the delicacy of trust and its limited applications.

If a firm enters an agreement with another firm and the aim is to get access to resources, the only way to secure this access is to engage in idiosyncratic investments and do this involvement in an area that is strategically important to the firm. Consequently, to access resources the firm must be willing to let go of some of its freedom to make independent decisions to be able to increase its body of resources to build new responses. Being strategically involved seems to be a long-term endeavor, and the firm should be aware of the risks involved in entering these kinds of relationships. To managers it therefore seems especially important when entering these alliances of strategic importance, that sufficient time is spent in the introductory phases of partner selection and initial agreements, to secure a partner that will benefit the firm also over years. Additionally, the contract and the governance implicit in the contract seems to be important considerations as the firm would want to limit partner influence over own decisions and secure the right to use own partner resources. Being strategically involved is thus a far more committing decision than engaging in trust building.

Termination of alliances is associated with alliance age. The younger the alliance is, the more likely will the firm terminate the alliance. For flexibility purposes, firms should then recognize the “*sticky*” effect that makes it difficult to terminate old alliances. On the other

hand, it is again necessary to recognize the potential stability in alliances that survive the first critical years, and may be stable, reliable partners over a long time.

Alliance managers should also be aware that engaging in an alliance is far from a one-time shot that after the negotiation phase runs by itself. It could be difficult to foresee how the relation is going to develop and, and firms would have to balance the need to control current transactions vs. the options to change these. This study indicates that relations where trust is central will have fewer problems adjusting. Relations where strategic involvement is necessary, should be aware that the need to be strategically involved may change over years, and balance this need for change with the necessity to control alliance outcomes with other measures, like a strict contract or through ownership.

### **10.3 Limitations**

Troye (1994: 91) defines theory as “*proposed relations between phenomena*”. More specifically, he sees theory as primarily being concerned with establishing relations rather than postulating the existence of different phenomena. In the process of establishing relations between postulated phenomena, the researcher may run into a series of problems either leading the researcher to make the wrong inferences, or fail to see the inferences that are true (Troye, 1994: 180). One problem is the ability to draw causal inferences and rule out alternative explanations. This problem concerns internal validity in the study.

This study includes both a cross sectional design and a time-series design with two observation points. Some of the hypotheses received support in the cross-sectional part of the study, and development of the factors over time gave additional insight as to how alliances may develop, and what effects these developments may have on strategic flexibility. The hypotheses tested with the cross sectional data do not give any causal direction. Due to the long period of time between the observation points, it is difficult to draw causal conclusions from the first to the second observation point due to the failure to rule out alternative explanations entering in this period. Some alternative explanations were tested and ruled out, but there could be others not tested.



The overall research design does not allow us to draw causal conclusions. This could be a problem of mis-specification, if there, for example is a dynamic, mutual relation between for example strategic involvement and portfolio instead of a linear one. The conclusions drawn in this study are based on the assumptions presented on directions, and it is up to further studies with stricter longitudinal designs to give additional insights to these relations. Both within research traditions focusing on alliances (Doz 1996; Parkhe 1993) and marketing channels (Heide and John 1988; Reve and Stern 1986), cross-sectional designs are widely applied. Therefore, based on these traditions, this study offers some additional insight of possible developments over time.

Issues of formulating and developing constructs and their relations refer to construct validity of putative causes and effects (Cook and Campbell 1979). Construct validity is discussed throughout the dissertations, and specifically in chapters 7 and 8. A specification problem occurs if the relations we postulate misrepresent what factors there really are and the relation between them. In this particular study there are at least two ways in which the specification problem could come into play. First, the hypothesized relations should be postulated based on and through a critical evaluation of previous research to build on the previous knowledge of the research community. In chapter 2, 3 and 4 a series of studies both of strategic flexibility, alliance involvement, uncertainty and the relation between them were discussed building the hypothesis on previous knowledge. Thus, specification issues should not to a great extent be due to lack of use of previous knowledge. Second, if knowledge is limited within the field, the likelihood that the researcher can mis-specify relations increases. This study postulates relations between factors that have not been extensively studied, and risk therefore increases that some relations are inconsistent with reality.

Secondly, the researcher wants to make sure that the theoretical variables are captured empirically and that these variables measure “*real world*” relations. Mostly the procedure established by Churchill (1979) was followed in the operationalization process, combining the insights from theory, experts and the industry in developing empirical items. Through factor analysis convergent and discriminant validity was evaluated. In this process some items had to be excluded from the sample. Due to the fact that these had not been operationalized before, creating these items and their scales, and assessing their “*goodness*” is thus part of the learning process undertaken in this thesis. Although the items converged towards the same factor, reliability was still on the low side regarding some of the factors,

although within the acceptable boundaries of this type of research. This was the case for activity level constraints, decision constraints and dynamism. A reliable measure is one that has a small error component. Items used to measure these factors show low internal consistency, indicating that the measures have high error terms or reflect more than the intended construct.

Other possible threats to construct validity relevant in this study include mono-method bias, evaluation apprehension and single respondents. Care was taken in this study to represent each theoretical construct with more than one item, and also to reverse some of the items. However, all constructs were measured through a single questionnaire at one point in time, and consequently there could be an association between the method and the constructs. This approach is very common in this type of studies, however, and is also present in most of the studies its findings could be compared to.

Evaluation apprehension is present when respondents are apprehensive about being evaluated (Cook and Campbell 1979). The question in this study is therefore whether the respondents have any incentives to present their alliances in an advantageous manner. Care was taken in this study to assure full confidentiality. Furthermore, respondents were not asked about their personal situation, but about the alliance. Thus this threat is not seen as a problem in this study.

A potentially greater problem is the single respondent approach and one sided – data approach. Ideally, to assess alliance involvement I would like to have included both sides of the dyad to get a more accurate measure of alliance involvement. For all variables measures would improve if respondents at different levels in the firm were included. For structural dimensions of an alliance relationship, like asset specificity, however, dyadic data has been shown to be less critical (Anderson and Weitz 1992; John and Reve 1982). In this study I assume that the same finding include norms and personal involvement. The only variable that could be different is strategic involvement as the alliance may be more important strategically to one firm than the other, although it is likely that alliances where strategic involvement differ greatly between firms would be unstable. Additionally, to assess strategic flexibility on the firm level, selecting only one informant could cause measurement bias. However, Simonin (1997) argues that adding additional informants could increase noise rather than

validity as long if less expert knowledge is added. Thus, the single informant response is not seen as a serious threat to construct validity.

Third, we are concerned whether there is sufficient statistical evidence to draw conclusions, or with statistical conclusion validity. This issue is discussed in chapter 9 in this thesis.

Threats to statistical conclusion validity include low statistical power, violated assumptions of statistical tests, and reliability. In line with Hair et al (1995) this study should provide the sufficient sample size with five independent variables. It should be noted, however, that the statistical power is lower in the longitudinal part of the study as the sample size is lower.

Assumptions of the statistical tests were discussed in chapter 9, and these assumptions were found to be met in this study. Low reliability inflates the error variance, and makes it difficult to obtain true scores (Cook and Campbell 1979). As already mentioned some of the measures had low reliability although for this stage of research they were deemed within the accepted range.

Finally, we are concerned with whether we can extend the conclusions from this study to other settings, or the external validity of the study. In this study one industry was chosen to try to hold industry variance as another alternative explanation. A random sample of firms was drawn from this industry, and there is no reason to believe that the firms in the sample differ significantly from the other firms in this industry. The exceptions are the approximately 100 firms that reported no long-term (over 1-year) alliances. Hence we should be able to generalize the findings to the rest of firms within this industry engaging in alliances. The Federation of Norwegian Engineering Industries is comprised, however, of firms of various sizes and of firms both dealing with information technology and more traditional production activities. Consequently, the results found in this study could be generalized to other firms engaged in various forms of production activities.

#### **10.4 Issues for Further Research**

A strong assumption in most work on strategic flexibility has assumed that when uncertainty is high, firms will place more value on flexibility. This relation may not be so straightforward, as the results of this thesis have indicated. Even when uncertainty is high, there may be good reasons for firms not to seek out the most flexible solution. Folta (1998) for instance

argues that even when technological uncertainty is high, commitment must come before flexibility. Sharfman and Dean (1997) found that when competition was high and profits were low, firms actually made less flexible strategic choices. Consequently, there is a need for research pointing out the characteristics of the environment that make flexibility solutions effective, and the factors stimulating and counteracting these relations.

Furthermore, we may discuss the value of flexibility in itself. Although many will agree that firms need the ability to change and adapt their strategies, Parnell (1994) found that a change of strategy was negatively related to performance. Consequently, the cost of restructuring and change should not be undervalued. And it seems as if a good issue for further research would be to balance the gains and costs of flexibility.

One question left to be resolved is the connection between flexibility and core resources. To what extent is innovation capacity, for instance, related to core resources? In Prahalad and Hamel's (1991) definition of the concept, core resources are per definition flexible. If alliances contribute to increased innovation capacity, does this effect increase or decrease the core resources of the firm? Does this mean that commitment and flexibility are not opposites on a single dimension but represent two different dimensions? Adler et al (1999) found in a case study a firm that was highly bureaucratic, yet more flexible than its competitors. If flexibility and commitment can be combined, what dimensions of flexibility and commitment are we then talking about?

Relatedly, there has been a discussion on the value of external resources in the profitability of the firm. Porter (1990) discusses how local factors (in the cluster) are critical to the competitiveness of firms, whereas resource based writers argue that competitive resources must first and foremost be internal (Barney 1986). In this thesis I have found that firms can increase their innovative capacity through cooperation with other firms. To what extent external learning can be a part of the core competence of the firm, is yet to be studied.

Closely related to the resource access dimensions are learning, and transfer of information. Tyre and Hippel (1997) point to physical location in learning processes, and suggest that these are especially important when problems are unstructured. Thus, learning from a partner may not only be dependent on the "amount" of know-how represented by a partner, but also on who participates in the cooperative process, how the cooperative process is designed, and

where the learning physically takes place. The acquisition of learning process and division of collective outcomes are also critical issues to firms when learning from partners (Inkpen 1998; Kumar and Nti 1998; Larsson et al. 1998) Thus, there are many aspects to learning that are not addressed in this thesis, but that warrant further investigation.

As discussed in this thesis, the content and way firms characterize the alliance may vary over time. We also know that firms in an alliance may form multiple relations with each other, competing in some areas, cooperating in others. This is especially true in value network constellations of vertical and horizontal constellations between firms (Stabell and Fjeldstad 1998). Consequently it would be interesting to see alliances in a wider perspective, allowing these multiple dimensions, and their changes over time, to be presented and discussed. This idea is in line with the IMP perspective arguing that an alliance cannot be completely understood in isolation but must be seen in the light of the total relations and the connections between these.

Furthermore, insights can be gained from including both sides of the dyad. There could be situations of discrepant perceptions, power dependencies or conflicts that could give a very different picture of alliance involvement. It would also be interesting to know whether both parties in an alliance obtain strategic flexibility or if these associations are asymmetrical.

It also seems clear that the research community has much to learn from longitudinal studies, not only of single case studies, but following entire samples of firms over years. As there are presently few of these studies, and we presently know little about how alliances develop, this alley seems to be a fruitful one regarding alliances. My sample shows, for example that the termination rate is lower than expected, but that the alliance content changes over years. Including time of establishment of the alliance (see appendix 4) we see that recent alliances seem to terminate at a higher rate than older alliances. Thus, there seem to be a story of “*evergreen*” alliances unfolding. How alliance involvement is related to the intended purposes, new purposes or simply fail to be terminated is an area that needs to be further investigated.

*“ Rather than assume that transaction costs are always important, future work should recognize that that they may be more relevant in some types of alliances than in others. Researchers need to know when, where and what types of transaction based costs are salient for embedded configurations of alliances and networks”* (Osborn and Hagedoorn 1997: 265).

In this study this issue has not been resolved, but we have seen that different dimensions of asset specificity have different impacts on strategic flexibility, also over time. Hence some alliance involvement factors seem to be more relevant in some alliance situations than others. We also know that only a portion of the variance is explained, thus there are also other alliance, industry or maybe individual factors that should be included to improve the model. Individual level orientations and key manager perceptions were found to be important to alliance use in a study of 433 Norwegian Manufacturing firms. (Dickson and Weaver 1997). Consequently, individual level factors should be further explored.

In this study one major area where alliances could greatly impact strategic flexibility, namely external flexibility, was left out. Exploring the Resource Dependency perspective (Pfeffer and Salancik 1978), and the manner in which an alliance can be used to increase the strategic responses of firms could give a better picture on the potential role an alliance may in a firm.

Even if alliance involvement seems to be unrelated to termination, the clear relational side of alliances could make a strict financial theory, like strategic options theories, inappropriate in an alliance setting (Bartlett 1993). Dealing with people is different from dealing with financial investments, and alternative suppliers to the alliance may not be as readily available as in a financial situation. The value of options theories in alliance studies should therefore be studied in the future.

Increasing our knowledge further in this area should also take place in the area of construct and measurement development. The most poorly specified measures in this activity constraints and dynamism need to be further developed, possibly through a more thorough in-dept study learning the richer content of these construct and their measurement issues.

Finally, the main construct in this thesis, strategic flexibility, has only been scratched upon, in this thesis and in other works in this area. If we see the construct as the responses available to firms, we know from this work and related reports that different responses may be related, unrelated or not related, thus answering the simple questions of: *What is strategic flexibility? When is a firm flexible? What can a firm do to increase its flexibility?*

raise many issues of actions, consequences of these actions and interdependencies with other actions that are yet to be addressed.

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**Appendix 1:**

**Questionnaire to new and continuing alliances**

## STUDIE AV SAMARBEID INNEN TBL

### Et forskningsprosjekt om utvikling av samarbeid

Ansvarlig: Randi Lunnan, Handelshøyskolen BI og Norges Handelshøyskole  
i samarbeid med Teknologibedriftenes Landsforening

#### ORIENTERING OG INSTRUKSJONER:

- Alle opplysninger som blir gitt i dette skjemaet vil bli behandlet strengt konfidensielt.
- De fleste spørsmålene er formulert som påstander, og du svarer på spørsmålene ved å vurdere i hvilken grad påstandene er en god eller dårlig beskrivelse av forholdet til samarbeidspartneren. Du svarer ved å sette en ring rundt et av tallene fra 1-7. Tallet du velger skal gjenspeile i hvilken utstrekning påstanden er dekkende for samarbeidet med den valgte partner.
- Spørreskjemaet er basert på eksisterende internasjonal forskning og alle spørsmålene er på forhånd testet ut i flere norske bedrifter. Du vil likevel kunne oppleve at det for noen spørsmål er vanskelig å finne et svaralternativ som passer overens med din situasjon. I slike tilfeller er det viktig at du velger det svaralternativet som ligger nærmest det du mener er det riktige svaret, og ikke unnlater å svare. **ALLE SPØRSMÅLENE SKAL BESVARES.**
- Når skjemaet er ferdig utfyllt, vær vennlig å returnere det i den vedlagte frankerte svarkonvolutten. Om du skulle miste denne, kan skjemaet returneres til:  
Randi Lunnan  
Handelshøyskolen BI,  
Postboks 580, 1301 Sandvika
- Dersom du har spørsmål angående undersøkelsen, ta gjerne kontakt på telefon nr. 67570746, eller ved hjelp av e.post: randi.lunnan@bi.no.

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KONTAKTPERSON: \_\_\_\_\_

SAMARBEIDSPARTNERENS NAVN: \_\_\_\_\_

SAMARBEIDSPARTNERENS NASJONALITET \_\_\_\_\_

SAMARBEIDETS ETABLERINGSÅR: \_\_\_\_\_

## DEL 1: Om bedriften, samarbeidsbedriften, samarbeidet og deg selv

### 1.1 Generelle opplysninger om bedriften du representerer

- A) Bedriftens netto omsetning i 1997: Ca. \_\_\_\_\_kr  
(Dersom din bedrift er en del av et konsern, oppgi ditt datterselskaps omsetning)
- B) Antall ansatte i 1997: Ca. \_\_\_\_\_ ansatte  
(Dersom din bedrift er en del av et konsern, oppgi antall ansatte i ditt datterselskap)

### 1.2 Generelle opplysninger om samarbeidsbedriften

- A) Samarbeidsbedriftens netto omsetning i 1997: Ca. \_\_\_\_\_kr  
(Dersom samarbeidsbedriften er en del av et konsern, oppgi ca. omsetning i den enheten din bedrift samarbeider med)
- B) Hvor mange ansatte hadde din samarbeidspartners bedrift i 1997 : Ca. \_\_\_\_\_ansatte  
(Dersom samarbeidsbedriften er en del av et konsern, oppgi antall ansatte i den enheten din bedrift samarbeider med)

### 1.3 Noen opplysninger om samarbeidet

- A) Hvordan vil du klassifisere dette samarbeidet? (Sett ett kryss)

Samarbeid med en kunde	<input type="checkbox"/>	Samarbeid med en konkurrent	<input type="checkbox"/>
Samarbeid med en leverandør	<input type="checkbox"/>	Samarbeid med en tilsvarende bedrift som ikke er konkurrent	<input type="checkbox"/>

- B) Nedenfor har vi gjengitt en del årsaker til at bedrifter inngår samarbeid. Hva var de viktigste årsakene til at dette samarbeidet ble etablert? ((Ranger årsakene. Tallet 1 angir at dette var den viktigste årsaken, tallet 2 at dette var den nest viktigste, etc.)

___ Tilgang til ny teknologi/kompetanse	Ledd i en internasjonaliseringsprosess	___
___ Redusere produksjonskostnader	Tilgang til nye markeder	___
___ Redusere distribusjonskostnader	Tilgang til nye distribusjonskanaler	___
___ Omgå offentlige reguleringe	Redusere risiko	___
___ Oppnå større bredde i produkttilbudet	Komme konkurrenter i forkjøpet	___
___ Andre _____		

**C) Eier noen av bedriftene deler av den andre? (Sett ett kryss)**

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Nei, ingen av partene	Ja, og partenes eierinteresser er like	Ja, og våre interesser dominerer	Ja, og vår partners interesser dominerer

**D) I hvor mange år fra nå av forventes det at samarbeidet vil vare? (Sett kun ett kryss)**

Under 1 år	1-2år	3-5år	6-10år	Mer enn 10 år
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**E) Hvordan vil du best karakterisere måten samarbeidet utvikler seg på (Sett ring rundt det tallet som passer best)**

	Stor endring	Noe endring	Ingen endring	Noe endring	Stor endring	
Reduksjon	-2	-1	0	1	2	I vekst
Mindre Forpliktende	-2	-1	0	1	2	Mer Forpliktende

**Hvor stabilt er samarbeidet? (Sett ring rundt det tallet som passer best)**

Svært stabilt	Nokså stabilt	Noe endring	Nokså turbulent	Svært turbulent
1	2	3	4	5

**I hvilken grad løser samarbeidet de samme oppgaver som det gjorde i tidlige faser? (Sett ring rundt det tallet som passer best)**

Samme oppgaver	Liten utskiftning	Noe utskiftning	Stor utskiftning	Total utskiftning
1	2	3	4	5

**F) I hvilken grad har menneskene som jobber med samarbeidet vært stabile (Sett ting rundt det tallet som passer best)**

Fra vår bedrift:						STOR
DE SAMME	1	2	3	4	5	UTSKIFTNING
Fra vår partnerbedrift:						STOR
DE SAMME	1	2	3	4	5	UTSKIFTNING

**Del 2. Din bedrifts generelle forhold til kunder, konkurrenter og leverandører**

Vi er her interessert i å få vite noe om din bedrifts forhold generelt til kunder, leverandører og konkurrenter de siste 4 år, det vil si i perioden fra 1993-1997. Gi en vurdering der du formidler et hovedbilde av din bedrifts situasjon i de siste 4 år.

**Hvor gode er disse beskrivelsene i forhold til din bedrifts erfaringer?**

(Tallet 1 indikerer at beskrivelsen passer svært dårlig, tallet 7 at beskrivelsen passer svært godt, mens tallene 2-6 angir gradene mellom)

	Svært dårlig beskrivelse				Svært god beskrivelse		
1. De siste fire årene har vår bedrift hatt sterk vekst innen våre viktigste markeder	1	2	3	4	5	6	7
2. Vår bedrift har de siste fire årene hatt problemer med å få avsatt våre produkter	1	2	3	4	5	6	7
3. Vår bransje er i vekst	1	2	3	4	5	6	7
4. Våre produkter er lite standardiserte	1	2	3	4	5	6	7
5. Det hender ofte at kunder etterspør varianter vi ikke har	1	2	3	4	5	6	7
6. Hovedtyngden av våre produkter må individuelt tilpasses hver kunde	1	2	3	4	5	6	7
7. Våre viktigste konkurrenter overrasker oss til stadighet med endringer i sine produkter	1	2	3	4	5	6	7
8. Produktutviklingen innen våre viktigste markeder er vanskelig å forutsi	1	2	3	4	5	6	7
9. Vi har de siste fire årene hatt problemer med å skaffe oss god nok ekspertise innenfor sentrale områder	1	2	3	4	5	6	7
10. Det har de siste fire årene vært stor utskiftning blant våre viktigste leverandører	1	2	3	4	5	6	7

**Del 3: Bidrag fra samarbeidet**

Samarbeid mellom bedrifter kan gi ulike bidrag til den enkelte bedrift. Ett slikt bidrag er at bedriften kan få tilgang til samarbeidspartnerens ressurser, og med dette bli i stand til å kunne produsere og distribuere på alternative måter, tilby alternative produkter eller utvide sine markedsmuligheter.

(Tallet 1 indikerer at samarbeidet medførte valg i liten grad, tallet 7 at samarbeidet medførte valg i stor grad, mens tallene 2-6 angir gradene mellom. Tallet 0 angir at disse områdene ikke ble berørt av samarbeidet)

**3.1 Som en følge av dette samarbeidet, i hvor stor grad har din bedrift fått flere valg med hensyn på:**

	Ikke aktuelt	I liten grad					I stor grad	
A) å innrette produksjon på alternative måter	0	1	2	3	4	5	6	7
B) å kunne distribuere produkter på alternative måter	0	1	2	3	4	5	6	7
C) å kunne tilby alternative produkter	0	1	2	3	4	5	6	7
D) å kunne tilby produkter på flere alternative markeder	0	1	2	3	4	5	6	7
E) I hvilken grad er din bedrifts risiko redusert som en følge av dette samarbeidet	0	1	2	3	4	5	6	7



Gjennom samarbeid kan en bedrift få informasjon, kunnskap og hjelp til å utvikle nye måter å gjøre ting på i ulike deler av bedriften. Nedenfor har vi listet en del påstander som omhandler samarbeidspartnerens bidrag til din bedrifts nyskapning.

**3.2 Har dette samarbeidet bidratt til å endre din bedrifts evne til nyskapning? Hvor godt passer disse påstandene?**

(Tallet 1 indikerer at beskrivelsen passer svært dårlig, tallet 7 at beskrivelsen passer svært godt, mens tallene 2-6 gir gradene mellom)

	Svært dårlig beskrivelse							Svært god beskrivelse
A) Vår samarbeidsbedrift er sentral i vår bedrifts utviklingsarbeide	1	2	3	4	5	6	7	
B) Uten vår samarbeidsbedrift, hadde vi ikke hatt de nye løsningene som vi har i dag	1	2	3	4	5	6	7	
C) Dette samarbeidet har ikke bidratt til å øke vår evne til nyskapning	1	2	3	4	5	6	7	
D) En viktig del av dette samarbeidet går på å diskutere hvordan vi kan forbedre våre produkter og arbeidsmåter	1	2	3	4	5	6	7	
E) Dette samarbeider øker vår bedrifts evne til å tenke kreativt	1	2	3	4	5	6	7	

### 3.3 Samarbeidets bidrag til bedriftens kapasitet og endringsevne

Nedenfor har vi listet en del påstander som går på din bedrifts mulighet til å endre omfanget av samarbeidet til denne partneren. Vi er også interessert i føringer samarbeidet har på beslutninger i din bedrift. (Tallet 1 indikerer at beskrivelsen passer svært dårlig, tallet 7 at beskrivelsen passer svært godt, mens tallene 2-6 gir gradene i mellom)

	Svært dårlig beskrivelse				Svært god beskrivelse			
A) Dersom vi har behov for det, kan vi raskt øke omfanget av vår felles virksomhet.	1	2	3	4	5	6	7	
B) Vi har forpliktet oss til et bestemt antall produkter/ tjenester, og kan ikke gå utenom dette	1	2	3	4	5	6	7	
C) Vi har en klar forståelse med vår partner om at dersom det går dårlig for vår bedrift i perioder, kan vi redusere omfanget av samarbeidet	1	2	3	4	5	6	7	
D) Selv små endringer i samarbeidsomfanget vil føre til reforhandlinger av våre avtaler	1	2	3	4	5	6	7	
E) Det ligger i spillereglene for dette samarbeidet at vi kan opprette forbindelse til en annen samarbeidspartner dersom vi trenger flere tjenester, og vår samarbeidspartners kapasitet er begrenset	1	2	3	4	5	6	7	
F) For å få vår partner til å arbeide mest mulig effektivt, trekker vi til stadighet frem hvordan de rådende markedsforhold er	1	2	3	4	5	6	7	
G) Vi overvåker til enhver tid markedet nøye for å sikre oss at vår partner holder tritt med andre aktører	1	2	3	4	5	6	7	
H) Det er viktig for oss at mulighetene for å erstatte denne samarbeidsbedriften holdes åpne	1	2	3	4	5	6	7	
I) Det vil være enkelt for oss å avslutte dette samarbeidet	1	2	3	4	5	6	7	
J) Vi tar stort sett de beslutninger vi ønsker, og opplever ikke at vår samarbeidspartner legger føringer på oss	1	2	3	4	5	6	7	
K) Vi opplever ofte at vår samarbeidspartner forsinket våre beslutningsprosesser	1	2	3	4	5	6	7	
L) Tilknytning til denne samarbeidspartneren forhindrer oss fra se på en del forretningsmuligheter som kunne være interessante for oss	1	2	3	4	5	6	7	

	Svært dårlig beskrivelse				Svært god beskrivelse		
M) Vi har aldri opplevd at vår samarbeidsbedrift har utviklet produkt- eller markedsmuligheter som har redusert verdien av våre	1	2	3	4	5	6	7
N) Kompetansen i vår bedrift på de områder som vår samarbeidspartner er spesialist i, blir stadig dårligere	1	2	3	4	5	6	7
O) Det er stor sannsynlighet for at vår samarbeidsbedrift gjennom dette samarbeidet har lært mye om det som vi oppfatter som vår kjernevirksomhet	1	2	3	4	5	6	7

#### **Del 4: Beskrivelse av samarbeidet**

Nedenfor har vi listet noen påstander der vi ber deg om å vurdere ulike sider av dette samarbeidet. (Tallet 1 indikerer at beskrivelsen passer svært dårlig, tallet 7 at beskrivelsen passer svært godt, mens tallene 2-6 gir gradene i mellom).

	Svært dårlig beskrivelse				Svært god beskrivelse		
For å kunne gjennomføre dette samarbeidet har det vært nødvendig for oss å gjennomføre investeringer i utstyr og anlegg	1	2	3	4	5	6	7
Det er viktig at samarbeidet fortsetter ettersom et brudd ville påføre oss økonomiske tap, som følge av at vi har gjennomført investeringer som da vil gå tapt	1	2	3	4	5	6	7
En forutsetning for at samarbeidet kunne realiseres, var at vi gjennomførte investeringer som i stor grad kan betraktes som spesialtilpasset dette samarbeidet	1	2	3	4	5	6	7
Det har vært nødvendig å tilpasse vårt produksjonsutstyr til vår partner for å kunne gjennomføre dette samarbeidet	1	2	3	4	5	6	7
Det har vært nødvendig å gi ansatte som skal arbeide med denne samarbeidspartneren spesiell opplæring i det aktuelle forretningsområde	1	2	3	4	5	6	7
I dette samarbeidet har vi vært nødt til å sette oss grundig inn i mange sider ved samarbeidspartnerens virksomhet	1	2	3	4	5	6	7
For å løse samarbeidets oppgaver har vi vært nødt til å skaffe oss kompetanse som har begrenset verdi dersom samarbeidet brytes	1	2	3	4	5	6	7

	Svært dårlig beskrivelse				Svært god beskrivelse		
Gjennom dette samarbeidet har vår bedrift opparbeidet ny kompetanse. Det er imidlertid vanskelig å se hvordan denne kompetansen kan brukes dersom samarbeidet opphører	1	2	3	4	5	6	7
Det ville være et stort tap for vår bedrift om dette samarbeidet ble avsluttet	1	2	3	4	5	6	7
Vi brukte mye tid og ressurser på å bygge opp dette samarbeidet	1	2	3	4	5	6	7
Gjennom dette samarbeidet har det vært nødvendig å tilpasse vår egen organisasjon og strategi til vår samarbeidspartner	1	2	3	4	5	6	7
De ressurser vi har brukt for å bygge opp gode forbindelser til vår partner betrakter vi som en investering som vil gi fremtidige gevinster	1	2	3	4	5	6	7
Innholdet i dette samarbeidet ligger nært opp til vårt firmas sentrale forretningsområde	1	2	3	4	5	6	7
Dette samarbeidet er av stor strategisk betydning for vår bedrifts fremtidige utvikling	1	2	3	4	5	6	7
Dette samarbeidet gir verdifull kunnskap og kompetanse for den fremtidige utvikling av våre kjerneområder	1	2	3	4	5	6	7
Vår partner har den nødvendige kompetanse for å løse sine oppgaver i forbindelse med samarbeidet	1	2	3	4	5	6	7
For at dette samarbeidet skal lykkes må vår partner på flere områder tilegne seg ny kompetanse	1	2	3	4	5	6	7
Kombinasjonen av vår kompetanse og vår partners kompetanse er helt ideell for å løse samarbeidets oppgaver	1	2	3	4	5	6	7
Vår partner kan på mange områder av samarbeidet alene ta beslutninger som også er bindende for oss	1	2	3	4	5	6	7
For å få en effektiv styring av samarbeidet har vi fått gjennomslag for å ta selvstendige beslutninger uten at vi trenger å drøfte saken med vår partner	1	2	3	4	5	6	7
Hvordan den daglige styringen av samarbeidet skal foregå er klart uttrykt i en skriftlig avtale	1	2	3	4	5	6	7

	Svært dårlig beskrivelse				Svært god beskrivelse		
Det er utviklet klare regler og retningslinjer for de fleste sider ved samarbeidet	1	2	3	4	5	6	7
I den daglige styringen av samarbeidet legger begge parter stor vekt på å følge de regler og retningslinjer som vi i fellesskap har kommet frem til	1	2	3	4	5	6	7
I spørsmål som har med organisering og styring av samarbeidet legger vi stor vekt på å opptre formelt riktig	1	2	3	4	5	6	7

### Hvor gode beskrivelser gir disse påstandene med hensyn på forholdet mellom din bedrift og din partnerbedrift?

(Tallet 1 indikerer at beskrivelsen passer svært dårlig, tallet 7 at beskrivelsen passer svært godt, mens tallene 2-6 gir gradene i mellom).

	Svært dårlig beskrivelse				Svært god beskrivelse		
I dette samarbeidet er det avgjørende å ha gode personlige forbindelser	1	2	3	4	5	6	7
Det er enkelt å samarbeide med denne partneren fordi vi kjenner hverandre godt	1	2	3	4	5	6	7
Gode personlige relasjoner har vært en drivkraft i dette samarbeidet	1	2	3	4	5	6	7
Gode personlige relasjoner fører til få problemer i dette samarbeidet	1	2	3	4	5	6	7
Vi opplever at vi og samarbeidspartneren får en likelig fordeling av gevinstene ved samarbeidet	1	2	3	4	5	6	7
Vi synes samarbeidspartneren får en uforholdsmessig stor del av gevinstene ved samarbeidet	1	2	3	4	5	6	7
Det er like viktig for oss at partneren får utbytte av samarbeidet som at vi selv får utbytte	1	2	3	4	5	6	7
Vi legger stor vekt på å opprettholde forbindelsen til denne samarbeidspartneren	1	2	3	4	5	6	7
I vår kontakt med denne samarbeidspartneren planlegger vi kontinuerlig hvordan denne relasjonen kan utvikles videre	1	2	3	4	5	6	7

	Svært dårlig beskrivelse				Svært god beskrivelse		
Et kjennetegn ved denne samarbeidsrelasjonen er at ingen av partene vil gjøre noe som kan skade motparten	1	2	3	4	5	6	7
Dersom vår partner har problemer er vi alltid beredt til å hjelpe	1	2	3	4	5	6	7
Begge parter er opptatt av at konflikter skal løses i fellesskap og ikke ved hjelp av megler eller rettsapparat	1	2	3	4	5	6	7
I dette samarbeidet løses konflikter ved at begge parter bidrar på en konstruktiv måte	1	2	3	4	5	6	7
Samarbeidspartneren forsøker av og til og holde tilbake opplysninger som kan være viktige for oss	1	2	3	4	5	6	7
Vår partner forsøker fra tid til annen å føre oss bak lyset	1	2	3	4	5	6	7
Det hender at partneren gir inntrykk av at vi utfører dårlig arbeid, når dette i virkeligheten ikke er tilfelle	1	2	3	4	5	6	7
Vi føler oss trygge på at samarbeidspartneren ikke vil utnytte samarbeidet til egen vinning på vår bekostning	1	2	3	4	5	6	7

## I hvilken grad vurderes dette samarbeidet som tilfredsstillende?

(Tallet 1 angir at samarbeidet overhodet ikke er tilfredsstillende, tallet 7 at samarbeidet er svært tilfredsstillende, mens tallene 2-6 angir gradene i mellom.)

	Overhodet ikke tilfredsstillende				Svært tilfredsstillende		
A. Inneværende års nettobidrag fra samarbeidet	1	2	3	4	5	6	7

**Hvor godt fornøyd er din bedrift med resultatene av samarbeidets bidrag til:**

	Ikke aktuelt	Svært lite fornøyd					Svært godt fornøyd	
		1	2	3	4	5	6	7
B. vekst i egen virksomhet	0	1	2	3	4	5	6	7
C. markedsvekst	0	1	2	3	4	5	6	7
D. nye produkter	0	1	2	3	4	5	6	7
E. ny kompetanse til egen virksomhet	0	1	2	3	4	5	6	7
F. reduserte kostnader	0	1	2	3	4	5	6	7
G. innpass på nye markeder	0	1	2	3	4	5	6	7

(Tallet 1 angir at din bedrift er svært lite fornøyd, tallet 7 svært godt fornøyd, mens tallene 2-6 angir gradene i mellom. Dersom spørsmålet er irrelevant for samarbeidet velges tallet 0.)

**Om deg selv:**

1. Nåværende stilling?: \_\_\_\_\_

2. Hvilke ansvarsoppgaver har du i samarbeidet?: \_\_\_\_\_

3. Hvor lang er din arbeidserfaring?:

a) I nåværende bedrift: \_\_\_\_\_ år

b) I nåværende stilling \_\_\_\_\_ år

c) I nåværende bransje \_\_\_\_\_ år

**Ønsker du å kommentere noen av spørsmålene, eller fylle ut med andre opplysninger kan du gjøre dette her.**

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**TUSEN TAKK FOR HJELPEN!**

**Appendix 2:**

**Questionnaire to terminated alliances**



## **OPPFØLGINGSSTUDIE AV SAMARBEID INNEN TBL**

### **Et forskningsprosjekt om hvordan samarbeid utvikler seg over tid**

**Ansvarlig: Randi Lunnan, Handelshøyskolen BI og Norges Handelshøyskole  
i samarbeid med Teknologibedriftenes Landsforening**

#### **ORIENTERING OG INSTRUKSJONER:**

- Alle opplysninger som blir gitt i dette skjemaet vil bli behandlet strengt konfidensielt.
- Ved besvarelse av spørreskjemaet, vil vi at du beskriver det tidligere samarbeidet mellom din bedrift og samarbeidspartneren \_\_\_\_\_, og bidrag til din bedrift fra dette samarbeidet.
- Hvor annet ikke er spesifisert, vil vi at du beskriver samarbeidet det siste året før dette ble avsluttet.
- De fleste spørsmålene er formulert som påstander, og du svarer på spørsmålene ved å vurdere i hvilken grad påstandene er en god eller dårlig beskrivelse av forholdet til samarbeidspartneren. Du svarer ved å sette en ring rundt et av tallene fra 1-7. Tallet du velger skal gjenspeile i hvilken utstrekning påstanden er dekkende for det tidligere samarbeidet.
- **ALLE SPØRSMÅLENE SKAL BESVARES.**
- Spørreskjemaet er basert på eksisterende internasjonal forskning og alle spørsmålene er på forhånd testet ut i flere norske bedrifter. Du vil likevel kunne oppleve at det for noen spørsmål er vanskelig å finne et svaralternativ som passer overens med din situasjon. I slike tilfeller er det viktig at du velger det svaralternativet som ligger nærmest det du mener er det riktige svaret, og ikke unnlater å svare.
- Når skjemaet er ferdig utfyllt, vær vennlig å returnere det i den vedlagte frankerte svarkonvolutten. Om du skulle miste denne, kan skjemaet returneres til:  
Randi Lunnan  
Handelshøyskolen BI  
Postboks 580  
1301 Sandvika
- Dersom du har spørsmål angående undersøkelsen, ta gjerne kontakt på telefon nr. 67570746, eller ved hjelp av e.post: randi.lunnan@bi.no.

## **DEL 1: Om bedriften og samarbeidsbedriften**

### **1.1 Generelle opplysninger om bedriften du representerer**

- A) **Bedriftens netto omsetning i 1997:** Ca. \_\_\_\_\_ kr  
(Dersom din bedrift er en del av et konsern, oppgi ditt datterselskaps omsetning)
- B) **Antall ansatte i 1997:** Ca. \_\_\_\_\_ ansatte  
(Dersom din bedrift er en del av et konsern, oppgi antall ansatte i ditt datterselskap)

### **1.2 Generelle opplysninger om din tidligere samarbeidsbedrift**

- A) **Samarbeidsbedriftens netto omsetning i avslutningsår:** Ca. \_\_\_\_\_ kr  
(Dersom samarbeidsbedriften er en del av et konsern, oppgi ca. omsetning i den enheten din bedrift samarbeidet med)
- B) **Hvor mange ansatte hadde din samarbeidspartners bedrift:** Ca. \_\_\_\_\_ ansatte  
(Dersom samarbeidsbedriften er en del av et konsern, oppgi antall ansatte i den enheten din bedrift samarbeidet med)

### **1.3 Noen opplysninger om samarbeidet**

- A) **Hvordan vil du klassifisere dette tidligere samarbeidet?**

Samarbeid med en kunde	<input type="checkbox"/>	Samarbeid med en konkurrent	<input type="checkbox"/>
Samarbeid med en leverandør	<input type="checkbox"/>	Samarbeid med en tilsvarende bedrift som ikke er konkurrent	<input type="checkbox"/>

- B) **Nedenfor har vi gjengitt en del årsaker til at bedrifter inngår samarbeid. Hva var de viktigste årsakene til at dette samarbeidet ble etablert? (Ranger årsakene. Tallet 1 angir at dette var den viktigste årsaken, tallet 2 at dette var den nest viktigste, etc.)**

___ Tilgang til ny teknologi/kompetanse	Ledd i en internasjonaliseringsprosess	___
___ Redusere produksjonskostnader	Tilgang til nye markeder	___
___ Redusere distribusjonskostnader	Tilgang til nye distribusjonskanaler	___
___ Omgå offentlige reguleringer	Redusere risiko	___
___ Oppnå større bredde i produkttilbudet	Komme konkurrenter i forkjøpet	___
___ Andre _____		

**C) Eide noen av bedriftene deler av den andre ?**

☐

Nei, ingen av  
partene

☐

Ja, og partenes  
eierinteresser  
var like

☐

Ja, og våre  
interesser  
dominerte

☐

Ja, og vår partners  
interesser dominerte

**1.4 Om deg selv**

1. Nåværende stilling?: \_\_\_\_\_

2. Hvilke ansvarsoppgaver hadde du i samarbeidet?:

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3. Hvor lang er din arbeidserfaring?:

- a) I nåværende bedrift:
- b) I nåværende stilling
- c) I nåværende bransje


## ***Del 2. Din bedrifts generelle forhold til sine kunder, konkurrenter og leverandører***

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Vi er her interessert i å få vite noe om din bedrifts forhold generelt til kunder, leverandører og konkurrenter de siste 4 år, det vil si i perioden fra 1993-1997.

### **Hvor gode er disse beskrivelsene i forhold til din bedrifts erfaringer?**

(Tallet 1 indikerer at beskrivelsen passer svært dårlig, tallet 7 at beskrivelsen passer svært godt, mens tallene fra 2-6 gir gradene mellom disse)

	Svært dårlig beskrivelse							Svært god beskrivelse						
1. De siste fire årene har vår bedrift hatt sterk vekst innen våre viktigste markeder	1	2	3	4	5	6	7							
2. Vår bedrift har de siste fire årene hatt problemer med å få avsatt våre produkter	1	2	3	4	5	6	7							
3. Vår bransje er i vekst	1	2	3	4	5	6	7							
4. Våre produkter er lite standardiserte	1	2	3	4	5	6	7							
5. Vår bedrift opplever ofte at kunder etterspør varianter vi ikke har	1	2	3	4	5	6	7							
6. Hovedtyngden av våre produkter må individuelt tilpasses hver kunde	1	2	3	4	5	6	7							
7. Våre viktigste konkurrenter overrasker oss til stadighet med endringer i sine produkter	1	2	3	4	5	6	7							
8. Produktutviklingen innen våre viktigste markeder er vanskelig å forutsi	1	2	3	4	5	6	7							
9. Vi har de siste fire årene hatt problemer med å skaffe oss god nok ekspertise innenfor sentrale områder	1	2	3	4	5	6	7							
10. Det har de siste fire årene vært stor utskiftning blant våre viktigste leverandører	1	2	3	4	5	6	7							

### **Del 3: Bidrag fra det avsluttede samarbeidet**

Samarbeid mellom bedrifter kan gi ulike bidrag til den enkelte bedrift. Ett slikt bidrag er at bedriften kan få tilgang til samarbeidspartnerens ressurser, og med dette bli i stand til å kunne produsere og distribuere på alternative måter, tilby alternative produkter eller utvide sine markedsmuligheter.

(Tallet 1 indikerer at samarbeidet medførte valg i liten grad, tallet 7 at samarbeidet medførte valg i stor grad, mens tallene 2-6 angir gradene mellom. Tallet 0 angir at disse områdene ikke ble berørt av samarbeidet)

#### **3.1 Som en følge av dette samarbeidet, i hvor stor grad fikk din bedrift flere valg med hensyn på:**

	Ikke aktuelt	I liten grad					I stor grad		
A) å innrette produksjon på alternative måter	0	1	2	3	4	5	6	7	
B) å kunne distribuere produkter på alternative måter	0	1	2	3	4	5	6	7	
C) å kunne tilby alternative produkter	0	1	2	3	4	5	6	7	
D) å kunne tilby produkter på flere alternative markeder	0	1	2	3	4	5	6	7	
E) I hvilken grad ble din bedrifts risiko redusert som følge av dette samarbeidet	0	1	2	3	4	5	6	7	

Gjennom samarbeid kan en bedrift få informasjon, kunnskap og hjelp til å utvikle nye måter å gjøre ting på i ulike deler av bedriften. Nedenfor har vi listet en del påstander som omhandler samarbeidspartnerens bidrag til din bedrifts nyskapning.

### 3.2 Bidro dette samarbeidet til å endre din bedrifts evne til nyskapning? Hvor godt passer disse beskrivelsene på det tidligere samarbeidet?

(Tallet indikerer at beskrivelsen passer svært dårlig, tallet 7 at beskrivelsen passer svært godt, mens tallene 2-6 gir gradene mellom)

	Svært dårlig beskrivelse				Svært god beskrivelse		
A). Vår samarbeidsbedrift var sentral i vår bedrifts utviklingsarbeide	1	2	3	4	5	6	7
B) Uten vår samarbeidsbedrift, hadde vi ikke hatt de nye løsningene som vi har i dag	1	2	3	4	5	6	7
C) Dette samarbeidet har ikke bidratt til å øke vår evne til nyskapning	1	2	3	4	5	6	7
D) En viktig del av dette samarbeidet gikk på å diskutere hvordan vi kunne forbedre våre produkter og arbeidsmåter	1	2	3	4	5	6	7
E) Dette samarbeidet økte vår bedrifts evne til å tenke kreativt	1	2	3	4	5	6	7

### 3.3 Samarbeidets bidrag til bedriftens kapasitet og endringsevne

Nedenfor har vi listet en del påstander som går på din bedrifts mulighet til å endre omfanget av samarbeidet til denne partneren. Vi er også interessert i føringer dette samarbeidet hadde på beslutninger i din bedrift. (Tallet 1 indikerer at beskrivelsen passer svært dårlig, tallet 7 at beskrivelsen passer svært godt, mens tallene 2-6 gir gradene i mellom)

	Svært dårlig beskrivelse							Svært god beskrivelse						
A) Dersom vi hadde behov for det, kunne vi raskt øke omfanget av vår felles virksomhet.	1	2	3	4	5	6	7							
B) Vi hadde forpliktet oss til et bestemt antall produkter/tjenester, og kunne ikke gå utenom dette	1	2	3	4	5	6	7							
C) Vi hadde en klar forståelse med vår partner om at dersom det gikk dårlig for vår bedrift i perioder, kunne vi redusere omfanget av samarbeidet	1	2	3	4	5	6	7							
D) Selv små endringer i samarbeidsomfanget ville føre til reforhandlinger av våre avtaler	1	2	3	4	5	6	7							
E) Det lå i spillereglene for dette samarbeidet at vi kunne opprette forbindelse til en annen samarbeidspartner dersom vi trengte flere tjenester, og vår samarbeidspartners kapasitet var begrenset	1	2	3	4	5	6	7							
F) For å få vår partner til å arbeide mest mulig effektivt, trakk vi til stadighet frem hvordan de rådende markedsforhold var	1	2	3	4	5	6	7							
G) Vi overvåket til enhver tid markedet nøye for å sikre oss at vår partner holdt tritt med andre aktører	1	2	3	4	5	6	7							
H) Det var viktig for oss at mulighetene for å erstatte denne partneren med en annen ble holdt åpne	1	2	3	4	5	6	7							
I) Mens samarbeidet pågikk, kunne vi enkelt avslutte dette samarbeidet når vi ville	1	2	3	4	5	6	7							
J) Vi tok stort sett de beslutninger vi ønsket, og opplevde ikke at vår samarbeidspartner la føringer på oss	1	2	3	4	5	6	7							
K) Vi opplevde ofte at vår samarbeidspartner forsinket våre beslutningsprosesser	1	2	3	4	5	6	7							

	Svært dårlig beskrivelse							Svært god beskrivelse
L) Tilknytning til denne samarbeidspartneren forhindret oss fra se på en del forretningsmuligheter som kunne ha vært interessante for oss	1	2	3	4	5	6	7	
M) Vi har aldri opplevd at vår tidligere samarbeidsbedrift har utviklet produkt- eller markedsmuligheter som har reduisert verdien av våre	1	2	3	4	5	6	7	
N) Kompetansen i vår bedrift på de områder som vår samarbeidspartner var spesialist i, ble stadig dårligere	1	2	3	4	5	6	7	
O) Det er stor sannsynlighet for at vår samarbeidsbedrift gjennom dette samarbeidet har lært mye om det som vi oppfatter som vår kjernevirksomhet	1	2	3	4	5	6	7	

#### ***Del 4: Beskrivelse av samarbeidet***

Nedenfor har vi listet noen påstander der vi ber deg om å vurdere ulike sider av det tidligere samarbeidet. (Tallet 1 indikerer at beskrivelsen passer svært dårlig, tallet 7 at beskrivelsen passer svært bra, mens tallene 2-6 angir gradene i mellom)

	Svært dårlig beskrivelse							Svært god beskrivelse
For å kunne gjennomføre dette samarbeidet var det nødvendig for oss å gjennomføre investeringer i utstyr og anlegg	1	2	3	4	5	6	7	
Avslutning av dette samarbeidet påførte vår bedrift økonomiske tap ettersom våre investeringer gikk tapt	1	2	3	4	5	6	7	
En forutsetning for at samarbeidet kunne realiseres, var at vi gjennomførte investeringer som vi i stor grad kunne betrakte som spesialtilpasset dette samarbeidet	1	2	3	4	5	6	7	
Det var nødvendig å tilpasse vårt produksjonsutstyr til vår partner for å kunne gjennomføre dette samarbeidet	1	2	3	4	5	6	7	
Det var nødvendig å gi ansatte som skulle arbeide med denne samarbeidspartneren spesiell opplæring i det aktuelle forretningsområde	1	2	3	4	5	6	7	
I dette samarbeidet var vi nødt til å sette oss grundig inn i mange sider ved samarbeidspartnerens virksomhet	1	2	3	4	5	6	7	



	Svært dårlig beskrivelse				Svært god beskrivelse		
For å løse samarbeidets oppgaver var vi nødt til å skaffe oss kompetanse som hadde begrenset verdi da samarbeidet opphørte	1	2	3	4	5	6	7
Gjennom dette samarbeidet opparbeidet vår bedrift ny kompetanse. Det var imidlertid vanskelig å se hvordan denne kompetansen kunne brukes da samarbeidet opphørte	1	2	3	4	5	6	7
Det var et stort tap for vår bedrift at dette samarbeidet ble avsluttet	1	2	3	4	5	6	7
Vi brukte mye tid og ressurser på å bygge opp dette samarbeidet	1	2	3	4	5	6	7
Gjennom dette samarbeidet var det nødvendig å tilpasse vår egen organisasjon og strategi til vår samarbeidspartner	1	2	3	4	5	6	7
De ressurser vi brukte for å bygge opp gode forbindelser til vår partner betraktet vi som en investering som ville gi fremtidige gevinster	1	2	3	4	5	6	7
Innholdet i dette samarbeidet lå nært opp til vårt firmas sentrale forretningsområde	1	2	3	4	5	6	7
Dette samarbeidet var av stor strategisk betydning for vår bedrifts fremtidige utvikling	1	2	3	4	5	6	7
Dette samarbeidet ga verdifull kunnskap og kompetanse for den fremtidige utvikling av våre kjerneområder	1	2	3	4	5	6	7
Vår partner hadde den nødvendige kompetanse for å løse sine oppgaver i forbindelse med samarbeidet	1	2	3	4	5	6	7
For at dette samarbeidet skulle lykkes måtte vår partner på flere områder tilegne seg ny kompetanse	1	2	3	4	5	6	7
Kombinasjonen av vår kompetanse og vår partners kompetanse var helt ideell for å løse samarbeidets oppgaver	1	2	3	4	5	6	7
Vår partner kunne på mange områder av samarbeidet alene ta beslutninger som også var bindende for oss	1	2	3	4	5	6	7
For å få en effektiv styring av samarbeidet fikk vi gjennomslag for å ta selvstendige beslutninger uten at vi trengte å drøfte saken med vår partner	1	2	3	4	5	6	7

	Svært dårlig beskrivelse					Svært god beskrivelse	
Det var utviklet klare regler og retningslinjer for de fleste sider ved samarbeidet	1	2	3	4	5	6	7
Hvordan den daglige styringen av samarbeidet skulle foregå var klart uttrykt i en skriftlig avtale	1	2	3	4	5	6	7
I den daglige styringen av samarbeidet la begge parter stor vekt på å følge de regler og retningslinjer som vi i fellesskap hadde kommet frem til	1	2	3	4	5	6	7
I spørsmål som hadde med organisering og styring av samarbeidet la vi stor vekt på å opptre formelt riktig	1	2	3	4	5	6	7

### Hvor gode beskrivelser gir disse påstandene med hensyn på forholdet mellom din bedrift og din partnerbedrift?

(Tallet 1 indikerer at beskrivelsen passer svært dårlig, tallet 7 at beskrivelsen passer svært godt, mens tallene 2-6 gir gradene i mellom).

	Svært dårlig beskrivelse					Svært god beskrivelse	
I dette samarbeidet var det avgjørende å ha gode personlige forbindelser	1	2	3	4	5	6	7
Det var enkelt å samarbeide med denne partneren fordi vi kjente hverandre godt	1	2	3	4	5	6	7
Gode personlige relasjoner var en drivkraft i dette samarbeidet	1	2	3	4	5	6	7
Gode personlige relasjoner førte til få problemer i dette samarbeidet	1	2	3	4	5	6	7
Vi opplevde at vi og samarbeidspartneren fikk en likelig fordeling av gevinstene ved samarbeidet	1	2	3	4	5	6	7
Vi synes samarbeidspartneren fikk en uforholdsmessig stor del av gevinstene ved samarbeidet	1	2	3	4	5	6	7
Det var like viktig for oss at partneren fikk utbytte av samarbeidet som at vi selv fikk utbytte	1	2	3	4	5	6	7

	Svært dårlig beskrivelse					Svært god beskrivelse	
Samarbeidspartneren forsøkte av og til og holde tilbake opplysninger som kunne være viktige for oss	1	2	3	4	5	6	7
Vår partner forsøker fra tid til annen å føre oss bak lyset	1	2	3	4	5	6	7
Det hendte at partneren ga inntrykk av at vi utførte dårlig arbeid, når dette i virkeligheten ikke var tilfelle	1	2	3	4	5	6	7
Vi følte oss trygge på at samarbeidspartneren ikke ville utnytte samarbeidet til egen vinning på vår bekostning	1	2	3	4	5	6	7

### I hvilken grad ble dette samarbeidet vurdert som tilfredsstillende?

(Tallet 1 angir at samarbeidet overhodet ikke var tilfredsstillende, tallet 7 at samarbeidet var svært tilfredsstillende, mens tallene 2-6 angir gradene i mellom)

	Overhodet ikke tilfredsstillende						Svært tilfredsstillende
A. Siste års nettobidrag fra samarbeidet	1	2	3	4	5	6	7

### Hvor godt fornøyd var din bedrift med resultatene av samarbeidets bidrag til:

	Ikke aktuelt	Svært lite fornøyd				Svært godt fornøyd			
B. vekst i egen virksomhet	0	1	2	3	4	5	6	7	
C. markedsvekst	0	1	2	3	4	5	6	7	
D. nye produkter	0	1	2	3	4	5	6	7	
E. ny kompetanse til egen virksomhet	0	1	2	3	4	5	6	7	
F. reduserte kostnader	0	1	2	3	4	5	6	7	
G. innpass på nye markeder	0	1	2	3	4	5	6	7	

(Tallet 1 angir at din bedrift var svært lite fornøyd, tallet 7 svært godt fornøyd, mens tallene 2-6 angir gradene i mellom. Dersom spørsmålet er irrelevant for samarbeidet velges tallet 0.)

### **DEL 5 : Avslutningen av samarbeidet**

I denne delen ønsker vi å stille noen spørsmål rundt selve avslutningen av samarbeidet.

1. Når sluttet dere å samarbeide med denne bedriften? 19 \_\_\_\_\_

2. Hvem tok initiativet til å avslutte samarbeidet? (Sett ett kryss)

☐

Vi

☐

Vår partner

☐

Begge

3. Ble samarbeidet: (Sett ett kryss)

☐

avsluttet etter planen, som følge av at oppgavene var løst

☐

avbrutt

☐

ført videre, men i en annen form

4. Hvilke var de viktigste grunnene til at samarbeidet opphørte? (Gi en rangering. Tallet 1 indikerer at dette var den viktigste årsaken, tallet 2 at dette var den nest viktigste årsaken, etc.)

\_\_\_\_ Vår partner hadde ikke noe mer å tilføre vår bedrift

\_\_\_\_ Vi ble vurdert som å ikke ha noe mer å tilføre vår partner

\_\_\_\_ Samarbeidet fungerte ikke på det personlige plan

\_\_\_\_ Intensjonen med samarbeidet var fullført

\_\_\_\_ Samarbeidet var preget av for mange konflikter

\_\_\_\_ Vår partner la seg for mye opp i våre beslutninger

\_\_\_\_ Vår partner oppfylte ikke sin del av den opprinnelige avtalen

\_\_\_\_ Samarbeidsoppgavene kunne løses bedre på andre måter enn i samarbeidets nåværende form

\_\_\_\_ Strukturelle endringer gjorde dette samarbeidet mindre interessant

\_\_\_\_ Samarbeidspartneren fikk en for stor del av gevinstene ved samarbeidet

Andre årsaker \_\_\_\_\_

5. I forbindelse med at dette samarbeidet ble avsluttet, hadde din bedrift problemer med takle fovergangen til andre løsninger? (Sett ett kryss)

☐ Nei, ingen problemer

☐ Store problemer

☐ Små konsekvenser i form at noe omlegging for å tilpasse oss andre løsninger

6. Hvordan har din bedrift erstattet dette samarbeidet? (Sett ett kryss)

☐ Vi og samarbeidspartneren fikk felles eierskap

☐ Samarbeidsbedriften ble erstattet med en annen tilsvarende partner

☐ Samarbeidsbedriften ble erstattet med en annen type partner

☐ Vi overtok samarbeidspartnerens oppgaver selv

☐ Vi får nå tilsvarende produkter/tjenester i markedet

7. Hvilken kontakt har din bedrift med den tidligere partneren ?(Besvares ikke om partene har fått felles eierskap) (Sett ett kryss)

☐ Ingen kontakt

☐ Noe privat kontakt mellom personer i de ulike bedriftene

☐ Noe formell kontakt mellom ledelsene i de to bedriftene

8. Er det sannsynlig at din bedrift vil komme til å inngå nye samarbeid med denne bedriften i de neste 3 årene? (Besvares ikke om partene har fått felles eierskap) (Sett ett kryss)

☐ JA

☐ NEI

☐ VET IKKE

Ønsker du å kommentere noen av spørsmålene, eller fylle ut med andre opplysninger, kan du gjøre dette her.

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**TUSEN TAKK FOR HJELPEN!**

## Appendix 3

### Total Uncertainty (UNC 93+ UNC 98)/2 – Alliance involvement

<i>Independent Variables</i>	<i>Dependent Variables</i>				
	Asset Specific Physical(SIG) (N=54)	Asset Specific Competence(SIG) (N=54)	Strategic Involvement(SIG) (N=54)	Mutuality (SIG) (N=54)	Personal Involvement (SIG)(N=54)
<b>Constant</b>	(.018)**	(.000)***	(.000)***	(.000)***	(.000)***
Total Uncertainty	.08 (.572)	.14 (.308)	-.11 (.433)	-.14 (.322)	-.10 (.466)
<b>R2 (adj.)</b>	.00	.00	.00	.00	.00
<b>F (SIG)</b>	.323 (.572)	1.061(.308)	.624(.433)	.998(.322)	.540(.466)

\*\*\* $p < 0.001$  \*\* $p < 0.05$  \* $p < 0.01$

### Multiple Linear Regression: Total Uncertainty – Alliance Involvement

### Increasing Uncertainty (Unc98-Unc93) – Alliance Involvement

<i>Independent Variables</i>	<i>Dependent Variables</i>				
	Asset Specific Physical(SIG) (N=54)	Asset Specific Competence(SIG) (N=54)	Strategic Involvement(SIG) (N=54)	Mutuality (SIG) (N=54)	Personal Involvement (SIG)(N=54)
<b>Constant</b>	(.000)***	(.000)***	(.000)***	(.000)***	(.000)***
Increasing Uncertainty	.18 (.123)	.14 (.241)	.07 (.609)	-.13 (.286)	.18 (.141)
<b>R2 (adj.)</b>	.02	.00	.00	.00	.02
<b>F (SIG)</b>	2.431 (.123)	1.399(.241)	.265(.609)	1.156(.286)	2.215(.141)

\*\*\* $p < 0.001$  \*\* $p < 0.05$  \* $p < 0.01$

### Multiple Linear Regression: Increasing Uncertainty – Alliance Involvement

Appendix 4

Termination including year of establishment (YEAR) and number of years the alliance is expected to last (EXP).

	Wald statistics	B	SIG	R
ASPH93	0.4290	0.71	.51	0.00
ASCO93	0.2851	0.85	.59	0.00
MUT93	1.7839	1.86	.18	0.00
PERS93	0.7263	-1.49	.39	0.00
STRA93	4.0707	-3.98	.04**	0.14
US93	0.7690	-1.59	.38	0.00
YEAR	6.0890	0.41	.01**	0.20
EXP	0.927	-0.27	.33	0.00

\*\*\*p<0.001 \*\*p<0.05 \*p<0.01

*Logit Analysis: Uncertainty/ Involvement 1993/year/expected years - Termination*

