



THESIS  
2004  
60352965

This is to certify that the  
dissertation entitled

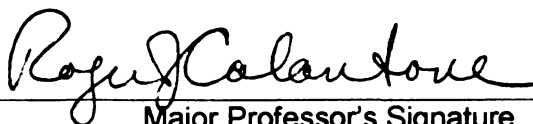
CREATING NEW PRODUCT ADVANTAGE THROUGH  
COLLABORATION

presented by

ZEYNEP EMDEN

has been accepted towards fulfillment  
of the requirements for the

Ph.D. degree in MARKETING

  
Major Professor's Signature

10 August 2004

Date

**LIBRARY**  
**Michigan State**  
**University**

**PLACE IN RETURN BOX** to remove this checkout from your record.  
**TO AVOID FINES** return on or before date due.  
**MAY BE RECALLED** with earlier due date if requested.

DATE DUE	DATE DUE	DATE DUE
AUG 27 2007		

**CREATING NEW PRODUCT ADVANTAGE THROUGH COLLABORATION**

**By**

**Zeynep Emden**

**A DISSERTATION**

**Submitted to  
Michigan State University  
in partial fulfillment of the requirements  
for the degree of**

**DOCTOR OF PHILOSOPHY**

**Department of Marketing and Supply Chain Management**

**2004**



## ABSTRACT

### CREATING NEW PRODUCT ADVANTAGE THROUGH COLLABORATION

By

Zeynep Emden

Considerable numbers of studies in the extant literature deal with inter-partner relationships. Yet only a few studies focus their scope on aspects of inter-firm collaboration for new product development, and none examine the role that inter-firm collaboration may play in creating or enhancing new product advantage. This dissertation investigates the role of inter-firm collaboration in new product development and creating product advantage. The relational aspects as well as technological competencies of the partners are the focal points of this investigation.

This research consists of three interrelated parts. The first part examines the selection of a partner with the highest potential to create new product advantage. The second part deals with the underlying factors that influence the manager's decision for collaboration for new product development. The third part tests a model, which includes the necessary collaboration processes that lead to new product advantage. The rationale of the first two parts of this study is to identify the best foundation for co-development alliances for maximum synergy creation. The rationale of the third part is to determine the best practices that lead to sustained collaboration during the course of a co-development partnership.

The following research questions are addressed in these three parts: (1) which criteria of partner selection yield stable and productive new product alliances; (2) what are the factors that elicit managerial choice of collaboration for new product development; and (3) what are the underlying factors that facilitate sustained collaboration at the operation stage.

Because the goal of this research is to establish a theory of inter-firm collaboration for new product development, a theory development orientation for the first two parts of this dissertation research is adopted. The literatures on inter-firm learning, inter-organizational relationships, and new product development are used as starting points for examining the co-development alliances. Then a series of interviews with managers are conducted. To collapse multiple indicators into single constructs in theory building from case studies, the method of narrative analysis has been adopted.

The first two studies are followed by a third study in which a model of new product advantage creation through collaboration is tested. This study employs survey sampling for data collection and quantitative techniques to test the proposed model.

**Copyright by**

**ZEYNEP EMDEN**

**2004**

**Dedicated to my parents...**

## **ACKNOWLEDGEMENTS**

This dissertation is a fruit of many years of educational accumulation. At Michigan State University, I have had the opportunity to work with outstanding people. I am pleased to have an opportunity to thank those who have been instrumental in helping me to complete this dissertation.

I would like to express my earnest gratitude to Dr. Roger J. Calantone, my advisor, for being with me every step of the way over the past five years. He has been a true mentor who graciously supported me through the difficult times in the program. I would not have been here without his encouragement, guidance, and support. The benefits I have gained from his intellect and futuristic thinking will extend to my future career endeavors. I feel especially fortunate for having the opportunity to work with Dr. Cornelia Droge. I am indebted for her belief in me particularly during the early years in the program. Her generosity in devoting her time to extensive discussions and providing feedback was exceptionally helpful during my dissertation research. She has also been a family away from home, who kindheartedly showed interest in every aspect of my life. I would like to thank Dr. Brian T. Pentland for his willingness to devote his time and wisdom, particularly for sharing his expertise in qualitative research with me. His enthusiasm and understanding have added an enjoyable dimension to my dissertation research. I am grateful to Dr. Regina McNally for her sincerity and endless support. She has not only provided thorough and valuable comments on every draft, but also genuine advice for my job interviews.

I would also like to extend my thanks to Dr. Tamer S. Cavusgil for giving me the opportunity to be a part of the intellectual community at Michigan State University, and

for making possible to reach my long-awaited dream. I would like to thank to Dr. Robert Nason, the department chair, for his continuing assistance throughout the years. I would also like to extend my gratitude to Dr. Attila Yaprak, from Wayne State University. During our interactive work, I have benefited extensively from his writing skills and academic integrity. Thanks to Dr. Shawnee K. Vickery for her friendship and quality education. In addition, I would like to thank to Kathy Mullins, Laurie Fitch, Beverly Wilkins, Michelle Hopkins, Sherry Danner, Kathy Waldie, Tiffany Norwood, Marilyn Brookes, Renee Dixon, Patty Geller, and Cheryl Lundeen for their continuous help; and to the more senior doctoral students for sharing their experiences with me along the way. Also, I would like to thank to Dr. Remzi Karaman, for encouraging me to pursue an academic career. I would also like to thank the managers who participated in this study for their time and valuable inputs.

I wish to acknowledge the generous grant from the Department of Marketing and Supply Chain Management at Michigan State University. This financial support was essential for the accomplishment of this dissertation research.

Last but not least, I wish to thank my parents, Serpil and Erdal Ozbiyik, and brother, Murat Ozbiyik for their gratis love, encouragement, and support in every stage of my life. I am most thankful to God for loving me as much to give me my husband, Reha, who helped me go through the toughest times of this endeavor. Without his love, friendship, understanding, and support, it would not have been possible to achieve this milestone.

## TABLE OF CONTENTS

LIST OF TABLES .....	X
LIST OF FIGURES .....	XI

### CHAPTER 1

INTRODUCTION .....	1
1.1    BACKGROUND.....	1
1.2    RESEARCH QUESTIONS AND CONTRIBUTIONS .....	5
1.3    METHODOLOGY .....	7

### CHAPTER 2

COLLABORATING FOR NEW PRODUCT DEVELOPMENT: SELECTING THE PARTNER WITH A MAXIMUM POTENTIAL TO CREATE VALUE .....	9
2.1    INTRODUCTION .....	9
2.2    BACKGROUND.....	12
2.3    RESEARCH APPROACH .....	18
2.4    EMERGENT THEORY OF PARTNER SELECTION.....	19
2.4.1    Phase 1: Technological Alignment .....	22
2.4.2    Phase 2: Strategic Alignment.....	26
2.4.3    Phase 3: Relational Alignment.....	29
2.5    DISCUSSION .....	32
2.5.1    Theoretical Contributions and Implications.....	32
2.5.2    Managerial Implications .....	35

### CHAPTER 3

STRATEGIC CHOICE OF COLLABORATING FOR NEW PRODUCT DEVELOPMENT .....	38
3.1    INTRODUCTION .....	38
3.2    CONTRIBUTIONS.....	41
3.3    BACKGROUND.....	42
3.4    RESEARCH APPROACH .....	44
3.5    EMERGENT THEORY OF COLLABORATION CHOICE FOR NPD.....	47
3.5.1    Phase 3: Pre-disposition .....	47
3.5.2    Phase 2: Partner Evaluation .....	52
3.5.3    Phase 1: Strategic Assessment of the Opportunity .....	58
3.6    THEORETICAL IMPLICATIONS.....	59
3.7    FUTURE DIRECTIONS FOR RESEARCH.....	65

## CHAPTER 4

### CREATING NEW PRODUCT ADVANTAGE THROUGH SUSTAINED COLLABORATION.....

	67
4.1 INTRODUCTION .....	67
4.2 THEORETICAL FRAMEWORK .....	72
4.2.1 Role of Trust .....	74
4.2.2 Commitment .....	76
4.2.3 Communication.....	78
4.2.4 Flexibility .....	80
4.2.5 Cooperation.....	81
4.2.6 New Product Advantage .....	84
4.3 RESEARCH METHODOLOGY .....	87
4.3.1 Measures .....	87
4.3.2 Sampling and Data Collection .....	89
4.3.3 Analytical Approach .....	93
4.3.3.1 Measure Validation and Hypotheses Testing .....	94
4.3.3.2 Results.....	95
4.4 DISCUSSION .....	99
4.4.1 Summary of the Results .....	99
4.4.2 Theoretical Implications .....	99
4.4.3 Managerial Implications .....	100

## CHAPTER 5

### CONCLUDING REMARKS.....

5.1 SUMMARY OF THEORETICAL IMPLICATIONS .....	104
5.2 SUMMARY OF MANAGERIAL IMPLICATIONS.....	105

### BIBLIOGRAPHY .....



## **LIST OF TABLES**

TABLE 1:	OVERVIEW OF CONTENT IN THE THREE RESEARCH STUDIES .....	2
TABLE 2:	STUDIES ON COLLABORATIVE PRODUCT DEVELOPMENT .....	15
TABLE 3:	COMPANY AND INTERVIEWEE PROFILES .....	17
TABLE 4:	EMERGENCE OF CONCEPTS FROM STORIES .....	20
TABLE 5:	TEMPORAL SEQUENCE OF EVENTS .....	21
TABLE 6:	TEMPORAL SEQUENCE OF EVENTS .....	46
TABLE 7:	CONSTRUCTS AND INDICATORS.....	90
TABLE 8:	STATISTICAL TEST FOR NON-RESPONSE BIAS .....	94
TABLE 9:	THREE-STAGE LEAST SQUARES ESTIMATION RESULTS .....	96

## **LIST OF FIGURES**

FIGURE 1: EMERGENT THEORY OF PARTNER SELECTION FOR CREATING PRODUCT ADVANTAGE THROUGH COLLABORATION .....	23
FIGURE 2: FRAMEWORK OF THE EMERGENT THEORY OF COLLABORATION DECISION FOR PRODUCT DEVELOPMENT.....	48
FIGURE 3: PROCESS THEORY OF COLLABORATION DECISION .....	49
FIGURE 4: PHASE 2: PARTNER EVALUATION .....	54
FIGURE 5: THEORETICAL FRAMEWORK.....	71
FIGURE 6: RESULTS OF THE TESTS OF THE HYPOTHESES.....	98

# **CHAPTER 1**

## **INTRODUCTION**

This dissertation investigates the role of inter-firm collaboration in new product development and creating product advantage. The relational aspects as well as technological competencies of the partners are the focal point in this investigation. This research consists of three interrelated parts. The first part examines the selection of a partner with the highest potential to create new product advantage. Second part deals with the underlying factors that influence the managers' decision for collaboration for new product development. The third part tests a model, which includes the necessary disposition and the collaboration process dimensions to facilitate sustained collaboration and create new product advantage. An overview of the content of each of these three parts is given on Table 1.

### **1.1 Background**

Rapid changes of technology and market demands in the environment have mandated increasing attention to the innovation process. Finding and utilizing the available and accessible resources have become critical for a firm to successfully deal with increased competition and changing environments (Wind and Mahajan 1997). At the same time, the product innovation process has become increasingly challenging, as innovation demands greater coordination and integration among functional areas within an organization (Olson et al. 1995; Sarin and Mahajan 2001), norms and values that facilitate organizational learning (Atuahene-Gima 1995; Gatignon and Xuereb 1997;

Hurley and Hult 1998; Slater and Narver 1995), and engaging in behavioral routines that attain and generate knowledge (Li and Calantone 1998; Sinkula et al. 1997).

**Table 1: Overview Of Content In The Three Research Studies**

Study Number	Locus in Text	Topic	Research Goal	Focus on Stage of Alliance	Method
1	Chapter 2	Collaborating for New Product Development: Selecting the Partner with a Potential to Maximize Product Advantage	Determine the factors that make a potential partner a good candidate for collaboration and value creation.	Formation	Building theory from case studies
2	Chapter 3	Strategic Choice of Collaborating for New Product Development	Uncover the underlying reasons that elicit strategic choice of collaborating for new product development.		
3	Chapter 4	Creating New Product Advantage Through Sustained Collaboration	Develop a model that captures the role of collaboration processes and firm disposition in creating new product advantage.	Operation	Three Stage Least Squares Estimation

Furthermore, turbulent external environments (McCann and Selsky 1984), shrinking product life cycles (Chen and Li 1999), exploding R&D costs (Rindfleisch and Moorman 2001), and dispersion of skills and knowledge across firms (Barney 1991; Das and Teng 2000) have made combining skills and resources inevitable for firms. Managers have realized that one way to enhance their capabilities in providing superior products and services is to gain access to complementary skills and knowledge bases beyond their own skill portfolios (Mohr and Spekman 1994). Organizations have been compelled to search for resources that complement their internal competences and know-how related to new product innovation activities through horizontal and vertical alliances (Rindfleisch and Moorman 2001).

There are various reasons why, for new product development, collaboration has become attractive. These are: 1) Collaboration allows for cross-disciplinary integration, which may be the foundation for really new products (Chesbrough 2003); 2) Non-equity based collaborations do not require a total focus change for the company, but rather provide a unification of skill portfolios and an opportunity for the firm to utilize its existing competence (Das and Teng 2000); and 3) Non-contractual arrangements call for mid-level management control and therefore provide needed flexibility, for example spontaneous decision making, for new product development (Doz and Hamel 1998).

Yet those very same reasons that make the strategic alliances attractive may also be the roots of adversities, such as first, coordination challenges due to cultural and procedural diversities (Parkhe 1991) and competitive positions of the partners (Sivadas and Dwyer 2000); and second, value creation and extraction challenges due to non-redundant knowledge base within the alliance and tacitness of the exchanged information

(Madhavan and Grover 1998; Simonin 1999). As a result, the performance of collaborative new product development is based not only on the foundation and nurturing of relational proficiencies, but also on the superiority of functional activities that facilitate integration of complementary know-how.

The impact that organizational complementarities, compatibilities, and inter-firm knowledge transfer might have on achieving and sustaining superior performance as alliances unfold has inspired a flurry of research in the organizational behavior (Das and Teng 2000; Khanna 1998; Parkhe 1993), strategy (Doz 1996a; Inkpen 2000; Mohr and Spekman 1994; Mowery et al. 1996) and marketing literatures (Bucklin and Sengupta 1993; Iyer 2002; Lambe et al. 2001). In a similar vein, the role of ownership and access to knowledge and complementary resources (Grant 1996; Madhavan and Grover 1998), learning and adaptability (Han et al. 1998; Hurley and Hult 1998; Slater and Narver 1995), and ability to create value by integrating and applying these resources (Sinkula et al. 1997) also have received considerable attention in the marketing literature. Yet only a small number of studies focus on aspects of inter-firm collaboration for new product development (Rindfleisch and Moorman 2001; Sivadas and Dwyer 2000), and none examine the role that inter-firm collaboration may play in creating or enhancing new product advantage. The purpose of this study is to fill this void. This work builds on the contributions of previous studies that have focused on the relational aspects of new product alliances (Dyer and Singh 1998) and on the impact that inter-firm knowledge transfer might have on alliance performance (Gnyawali and Grant 1997; Parkhe 1991), and new product success (Chen and Li 1999; Sinkula et al. 1997).

## **1.2 Research Questions and Contributions**

Specifically, the following research questions will be addressed in this dissertation:

(1) which criteria of partner selection yield stable and productive co-development alliances; (2) what are the factors that elicit managerial choice of collaboration for new product development; and (3) what are the underlying factors that facilitate sustained collaboration and lead to new product advantage at the operation stage. Each of these research questions will be addressed in a separate essay. This approach grants the researcher the flexibility of employing disparate samples and methodological techniques for each study. Thereby it allows for independent studies and a focus on each research question individually. Consequently, the dissertation consists of three research studies (see Table 1). The first research study deals with the strategic foundation of co-development alliances in terms of selecting the partner with a potential to maximize new product advantage. This research study will be presented in Chapter 2. The second study addresses the underlying factors that affect the managerial choice of collaboration for new product development. This study will be presented in Chapter 3. The third study deals with the role of collaboration processes and firm disposition on facilitating new product advantage. This study will be presented in Chapter 4.

This dissertation is significant for, at least, three reasons. First, the assessment of co-development alliances, in all of the three parts, is based on relational aspects of inter-firm collaboration as well as technological know-how transfer, while the existing research concentrates on either the former or the latter. Sivadas and Dwyer (2000), for example, focus on the governance mechanisms and cooperative skills of the organization and ignore the process of transfer and integration disparate pools of know-how. Others

(Chen and Li 1999; Powell 1992; Tyler and Steensma 1998) center their attention on transfer of tacit know-how related with new product development, but lack the relational aspects that may play a role in ensuring this transfer. This research creates a link between the social and relational exchange theories of strategic alliances (Das and Teng 2000) and alliance learning theories (Hamel 1991; Inkpen 1996; Inkpen 1998; Inkpen 2000; Iyer 2002; Khanna 1998; Parkhe 1991) to address both of these aspects.

Second, in line with conceptualizations of Kanter (1994) and Doz and Hamel (1998), this dissertation assesses multiple stages of strategic alliances rather than the mere focus on formation or management. The rationale of the first two studies of this dissertation is to identify the best foundation for a new product alliance that maximizes the relational and technological synergy creation. The rationale of the third part is to determine the best practices that lead to sustained collaboration during the life of an alliance. In particular, this dissertation will identify partnerships that will lead to the creation of successful new products by identifying technically and organizationally compatible partners, and uncover the factors that facilitate the integration and transformation of the complementary pools of know-how into product value.

Third, although marketing scholars agree that the nature of inter-firm relations may be substantially different in horizontally aligned firms (Achrol 1997), the majority of the inter-organizational literature examines vertical alliances (Rindfleisch and Moorman 2001). This research is primarily concerned with inter-firm collaborations through which firms seek to leverage their technical competencies into profitable new products. When companies collaborate for new product development they do so with different types of organizations, such as their competitors, suppliers, customers, or universities and research



centers (Saez et al. 2002). It is possible that competition and cooperation coexist in co-development partnerships (Rindfleisch and Moorman 2001). This adds a novel dimension to the characteristics of co-development partnerships.

### **1.3 Methodology**

Because the goal of this research is to establish a theory of inter-firm collaboration for new product development, I adopt a theory development orientation for the first two parts of this dissertation research. I use the “theory building from case studies” approach for this purpose (Eisenhardt 1989). This method is appropriate for my research because the research subject of my dissertation is in its early stages in the sense that it sheds light on an area, co-development alliances, which has not been studied widely. The research subject also calls for a fresh perspective to complement the evolving nature of inter-partner arrangements for new product development; that is, evolving from a cost-based (transaction cost) approach to value creation (system change, resource-based) approach (Das and Teng 2000). For testing the proposed model in the third study, I will employ a three stage least squares technique and mail surveys for data collection.

I use the literatures on inter-organizational relationships, strategic alliances and new product development as a starting point for examining the co-development alliances. Concepts in these literatures have motivated my approach and the initial propositions about the three research questions. For the first two studies, I conducted a series of interviews with managers involved in co-development alliances. The purpose of these interviews was twofold. First, they provided input from managers, which enriched the theory based on the literature. Managers’ input was used to guide the theory development

process itself. Second, they provided guidance for the relevance and face validity of the framework, and confirmed whether the literature-based assumptions were in line with managerial experience.

In the subsequent chapters (Chapter 2, Chapter 3, and Chapter 4), the three research studies will be presented. The last chapter, Chapter 5 is devoted to concluding remarks for all of the three research studies.

## **CHAPTER 2**

### **COLLABORATING FOR NEW PRODUCT DEVELOPMENT: SELECTING THE PARTNER WITH A MAXIMUM POTENTIAL TO CREATE VALUE**

#### **2.1 Introduction**

Product innovation has become not only the lifeblood of organizations, but also increasingly more challenging, as innovation demands greater coordination, cooperation, and integration among functional areas within an organization (Olson et al. 1995; Sarin and Mahajan 2001). In the early twenty first century, the challenge of creating new products has become more than building cross-functional processes and structures (Perks 2000). Managers confront paradoxes as internal industrial research has become less effective and the outputs of significant long-term research investments are not of any use to them (Chesbrough 2003). This situation is caused by a confluence of at least six forces in the market place. These are turbulent external environments (McCann and Selsky 1984), increased global competition (Blackwell and Eilon 1991), shrinking product life cycles (Chen and Li 1999), increased complexity of technology needed to innovate and exploding R&D costs (Rindfleisch and Moorman 2001), growing mobility of highly experienced and skilled people (Chesbrough 2003), and dispersion of skills and knowledge across firms (Barney 1991; Das and Teng 2000). These forces drive managers to employ a different ‘model’ to stay competitive in the innovation race. Chesbrough (2003) refers to this as a shift from a “closed innovation paradigm” to an “open innovation paradigm” (pg. 20). In this new model advocated by Chesbrough, product success stems from building the best business model by using the right mix of internal

and external resources. Companies do not have to originate research in order to benefit from it, since they can also benefit from other companies' resources as well as benefit from other companies' usage of their own resources. This way companies are able to utilize the brains of millions outside in the industry, who will develop things that create demand for their own products (Deck and Strom 2002). Yet the challenge of boosting the productivity of research and development shifts from simply building cross-functional processes and structures to building cross-enterprise processes (Deck and Strom 2002) and innovative ways of managing these processes (Jassawalla and Sashittal 1998). Companies are compelled to leverage their internal strengths with the core competencies of development partners to enhance and/or sustain their capabilities in providing superior products and services to their customers (Mohr and Spekman 1994).

The purpose of the current research is to look at this 'new generation' product development practices, which are called *co-development alliances* (a term consistent with several scholars and numerous professionals). Specifically, the aim is to develop a theory of partner selection for achieving desirable outcomes from co-development alliances. Co-development alliances are non-equity based collaborative relationships enjoined by two or more firms, in order to integrate and transform into value disparate pools of know-how related to the new product or service development (adapted from Link and Bauer 1989). In co-development partnerships, each party contributes a significant portion of the end solution. These partnerships do not include relationships involving a purchase of components requiring minor inter-organizational interaction. Adapting the definition of cross-functional collaboration of Jassawalla and Sashittal (1998), inter-firm collaboration is defined as a type of cross-organizational linkage, which in addition to high levels of

integration, is characterized by participants who achieve high levels of transparency, mindfulness and synergies from their interactions.

A wealth of benefits may accrue from inter-firm collaboration for product development (Littler et al. 1995). First, inter-firm collaboration may provide access to new skills and/or technologies that are otherwise unavailable to the firm (Mohr and Spekman 1994). Second, collaboration allows for cross-disciplinary integration, which may be the foundation for really new products (Chesbrough 2003). Third, inter-firm collaboration for product development may constitute the means for creating or exploiting new markets (Littler et al. 1995). Fourth, inter-firm collaboration may create opportunity for the utilization of technologies that have not yet found application in the market place (Chesbrough 2003). Fifth, inter-firm collaboration may lead to shared R&D costs and risks (Perks 2000). And finally, inter-firm collaboration for product development may increase the speed to market (Bronder and Pritzl 1992; Deck and Strom 2002).

Undoubtedly, the complexities of NPD processes are intensified when organizational boundaries are crossed (Perks 2000). In addition to the widely acknowledged risks of the product development process itself, collaborative product development entails additional risks and detriments (Littler et al. 1995). First, in accordance with the assertions from a voluminous stream of research (Achrol 1997; Achrol and Kotler 1999; Kanter 1994), in co-development alliances managers need to overcome many obstacles and operate through different organizational configurations, as in any inter-organizational arrangement. Differences in organizational cultures, and by extension in mindsets, expectations and behavior among the partners, can make building

relational capital and managing co-development alliances extremely costly (Hanson and Lackman 1998; Tse et al. 1994). Second, knowledge exchanged in a collaborative new product development arrangement may be proprietary, and in a situation of high competitive overlap, there is the risk of knowledge spillover (Yan et al. 2000).

In the following sections, the motivations for the current research question will be described and the method employed to address the issues will be explained.

## **2.2 Background**

Three motivations underlie the current research question. First, as Sivadas and Dwyer (2000) highlighted, collaborative product development requires a continuous flow of information between partners, to ensure the best possible integration. It also requires a level of flexibility be granted to those involved with the product development task. New product alliances can be a clash between the logic of alliances and the logic of new product development (Bidault and Cummings 1994). Constant information flow, which may be challenging to achieve even across the functional entities within the borders of a firm, may become unattainable across firm borders (Perks 2000). Partners may become protective about their resources, especially when their competitive advantage relies on these resources (Hamel 1991). In that case, partners will strive to restrict knowledge (Yan et al. 2000) and also become excessively controlling over the new product development project. In fact such a high potential for conflict and cooperation produces the very setting for innovation (Perks 2000). This peculiarity of co-development alliances introduces interesting aspects that call for investigation.

Second, a study by Hagedoorn (2002) on 40 years of data on R&D partnerships reveals a pattern of growth in the number of R&D collaborations since 1960. While collaboration has become the “next generation” for product development practices, there has been relatively little academic research on collaborative new product development. In a review of this literature for this dissertation, only about a dozen studies from scholarly journals were identified. Five of these are case studies (Appleyard 2003; Deck and Strom 2002; Hummel et al. 2000; Kreiner and Schultz 1993; Perks 2000), one is a field survey (Littler et al. 1995), two are causal models (Rindfleisch and Moorman 2001; Sivadas and Dwyer 2000), three are regression models (Athaide et al. 2003; Chen and Li 1999; Saez et al. 2002), and the last one is a trend analysis (Hagedoorn 2002). Summaries of these articles are given on Table 2.

Third, in a survey done by Deck and Strom (2002) with companies who are involved in co-development projects, the number one concern revealed was a “poor foundation for collaboration.” This concern is echoed by a number of scholars in the strategy (Mohr and Spekman 1994), management (Hitt et al. 2000) and marketing literatures (Bucklin and Sengupta 1993). Glaister (1996), for instance stated the sustainability and viability of an alliance is, to a great extent, determined by the partner chosen. Similarly, Dev et al. (1996) pointed out that while some of the alliance failures may be attributed to changes in business conditions, a number of alliance failures are triggered by inappropriate partner selection. Although two studies in the co-development literature recognized the importance of partner selection for achieving desirable outcomes (Athaide et al. 2003; Saez et al. 2002), none have addressed this issue extensively. High risks co-exist with the high benefits in co-development alliances (Littler et al. 1995).

Reducing the potential risks while making the most of the benefits, such as maximizing the value gained through collaborative NPD, may be a function of partner choice. Choosing the right partner may also reduce or abolish the clash between the logic of alliances and the logic of new product development, and may unlock venues for value creation through co-development.

In accordance with the purpose of developing a theory of partner selection for co-development in this research, first a series of interviews was conducted with managers from the field. A summary of company and interviewee profiles is given on Table 3. Then narrative analyses were performed to develop a process theory of partner selection for co-development. In the following section, the method that founded the emergent theory is explained.



**Table 2: Studies on Collaborative Product Development**

<b>Relevant Study</b>	<b>Focus</b>	<b>Major Findings</b>	<b>Method</b>
Sivadas and Dwyer 2000, Journal of Marketing	Management	Cooperative competency (a combination of trust, communication, and collaboration) has a significant impact on the NPD success. Complementarity of partner competencies has significant effect on NPD success only in one of the industries studied.	Structural Equation Modeling
Rindfleisch and Moorman 2001, Journal of Marketing	Information processing	Participants of horizontal alliances possess both higher levels of knowledge redundancy and lower levels of relational embeddedness compared with vertical alliances.	Structural Equation Modeling
Athaide et al. 2003, Journal of Marketing Theory and Practice	Relationship management	Sellers consider both the buyer's ability and motivation before engaging in product co-development. Idiosyncratic investments are another factor affecting their decision. Co-development relationships lead to seller satisfaction when the buyer is knowledgeable.	OLS Regression
Kreiner and Schultz (1993), Organization Studies	Organizational Networks	Successful collaboration emerges from ordinary interaction within personalized networks. Excitement, commitment and other sentiments are important for establishment and survival of the collaborations than are calculations of benefits and costs. Collaborative ties attract other partners. Sharing of information, research plans and visions are an integral part of co-development relationships.	Case Studies
Little et al. 1995, Journal of Product Innovation Management	Field characteristics and responses	A list of factors in two categories ( <i>inputs</i> category, such as choice of partner; and <i>collaboration management</i> category, such as building trust and communication) contributing to collaborative product development success.	Descriptive statistics and mean comparisons
Appleyard 2003, Journal of Product Innovation Management	Knowledge accumulation	Buyers may prefer generally applicable modifications to customized ones; generally applicable modifications may lead to greater knowledge accumulation at the supplier.	Building mathematical model using a case

**Table 2 (cont'd)**

Chen and Li 1999, Advances in Competitiveness Research	Learning	Content learning in technological fields increases the number of new product lines; content learning in manufacturing and marketing areas has no impact on the number of new product lines. Process learning (gaining knowledge from the management process of alliance activities) has positive impact on the number of new product lines.	Probit Regression Analysis
Perks 2000, Industrial Marketing Management	Information exchange	Complementarity of resource inputs and outputs and the state of competitiveness can influence the approach towards integrating marketing information in the collaborative new product development process.	Case Study
Hagedoorn 2002, Research Policy	Trends	There is a clear pattern of growth in R&D partnerships since 1960. Companies seem to increasingly prefer contractual partnerships to joint ventures. This preference is amplified in several sectors, top three being pharmaceuticals, information technology, and aerospace & defense industries.	Descriptive statistics
Deck and Strom 2002, Research Technology Management	Strategy	A general co-development model has three levels: a strategy for development chain design, process and governance structures that define how the partners work together, and information technology that supports collaborative development.	Case Study
Saez et al. 2002, R&D Management	Empirical	Among external sources of ideas for innovation, customers are most valued and research centers are the last on the list, despite the fact that when it comes to co-development, research centers are most likely to be chosen.	Logistic Regression
Hummel et al. 2000, Journal of Multicriteria Decision Analysis	Group decision making	The support of Team Expert Choice, a group decision support system, appears to have enhanced the decision-making processes and outcomes of new product evaluation. The evaluation resulted in valuable guidelines for improving the development and diffusion of the product.	Case Study

**Table 3: Company and Interviewee Profiles**

<b>Case</b>	<b>Company<sup>1</sup></b>	<b>Business Description</b>	<b>Interviewee's Position</b>	<b>Sales Volume (2003)</b>	<b>Number of Employees</b>
1	A	Executive Training	Assistant Director	\$3.1M	9
	B	Consulting	Executive VP, Business Development	\$18.5	53
2	C	Film Products And Adhesives	Market Development Manager	69M	191
	D	Imaging And Printing	Product Marketing Manager	\$73,061M	142,000
3	E	Automotive Products And Services	Manager, Fuel Cell Systems Engineering	\$164,196M	327,531
	F	Fuel Cell Technologies	N/A <sup>2</sup>	\$119.6M	1,300
4	G	Digital Printing	VP, Software Development	€ 75M	300
	H	Software Development	Chief Technical Officer	€ 3.5M	26

<sup>1</sup> Company and interviewee names are suppressed due to confidentiality.

<sup>2</sup> No manager from Company E could be reached for an interview.

### **2.3 Research Approach**

Consistent with the exploratory nature of this research, a theory development from case studies approach is employed. This approach allowed study of co-development alliances in natural settings. Moreover, in-depth case research presented the opportunity to engage in theory building in an area in which there has been relatively little prior research and theory (Eisenhardt 1989). Theory building from case study research starts ideally as close as possible to no theory under consideration and no hypotheses to test; i.e., in this approach the constructs, their definitions, and measurements emerge from the process itself, rather than being specified at the outset (Eisenhardt 1989). In accordance with Eisenhardt's approach, the research problem was formulated and the existent literatures on new product alliances and inter-firm collaboration were reviewed to specify some of the potentially important constructs and shape the initial design of the research, but consideration of specific relationships between variables was avoided as much as possible.

In this theory building approach, no single technique is available to collapse multiple indicators into single constructs. For that purpose, the method of narrative analysis was employed. Pentland (1999) argues that narratives are "naturally suited for the development of process theories and explanations" (p. 717). Following Abbott's (1990) suggestion, a process theory of partner selection for co-development was created by first classifying sequential patterns, then looking for antecedents and consequences of these patterns across different cases. Unlike a typical dataset, narratives contain a wealth of information on the causal chain of events (Abbot 1990). In fact the empowering character of narrative research is that it allows for examining more than just sequential

patterns; i.e. it allows examining characters, narrative voice, and evaluative context (Pentland 1999). Thus it enables evolution from simple descriptions to explanations.

An in-depth study of each case was performed by using structural analysis of the stories told by managers. First, the primary sequences in the narratives were isolated following the analytical framework advocated by Labov and Waletzky (1967). Each narrative was organized according to the temporal sequence by assigning a displacement set to each clause in the narrative by adding subscripts to the clauses: a left subscript indicated the number of antecedent narrative simultaneous with the given clause, and a right subscript indicated the number of following clauses simultaneous with the given clause (Labov and Waletzky 1967). Then the free clauses were moved to the beginning of the narrative, and the restricted clauses were moved “to a point as early as possible in the narrative without changing the temporal sequence of the original semantic interpretation” (Labov and Waletzky 1967). Last, sequential categories were formed inductively and commonalities and divergences among cases (and explanations thereof) were identified in the other ingredients of the narrative. Table 4 presents the emergence of the categories from the stories, and Table 5 demonstrates the temporal sequence of these categories in each of the stories told by the managers. In the following section, the emergent process theory for partner selection resulting from this analysis is presented.

## **2.4 Emergent Theory of Partner Selection**

Findings suggest that inter-organizational fit is the vital factor that determines the success prospect of co-development alliances. Since partnering firms have subjective self-awareness, to assess an initial fit, they are likely to evaluate several characteristics of

**Table 4: Emergence of Concepts from Stories**

Case	Company	Technical Ability	Resource Complementarity	Overlapping Knowledge Bases	Motivation Correspondence	Goal Correspondence	Compatible Cultures	Propensity to adapt	Long-term orientation
1	<i>A</i>	X <sup>1</sup>	X		X	X	X	X	
	<i>B</i>	X	X	X		X		X	X
2	<i>D</i>	X	X	X	X	X	X	X	X
	<i>C</i>	X	X	X	X	X		X	
3	<i>E</i>	X	X	X	X	X	X	X	
4	<i>G</i>	X	X				X		
	<i>H</i>	X	X	X	X	X	X	X	

---

<sup>1</sup> An X sign demonstrates that the interviewee's one or more statements imply the corresponding concept. Example quotes for each category are presented in the corresponding sections in the text.

**Table 5: Temporal Sequence of Events**

Case/Company		Historical Sequence of Events							
1/A (interviewee1)		■, -, -, ■, -, -, -, E, D, -, -, F, -, -							
	1/A (interviewee2)	■, -, ■, ■, -, -, ■, -, -, G, -, -							
	1/B	-, -, -, ■, -, -, G, G, G, -, -, -, -, H							
2/C		-, -, ■, ■, -, -, E, G, G, -, -, F, -, -, G, G, -, -, -, -							
	2/D	■, ■, E, ■, ■, -, H D, H, ■, -, -, -, H, G, H, E, F							
3/E		■, -, ■, -, -, ■, -, -, ■, -, -, D, D, G							
4/G		■, ■, ■, ■, E, ■, ■, -, -, D, F							
4/H		■, ■, ■, C, ■, B, B, E, D, G, F, -, D, G							
Technical Ability	Resource Complementarity	Overlapping Knowledge Bases	Motivation Correspondence	Goal Correspondence	Compatible Cultures	Propensity to adapt	Long-term orientation	Others	
■	■	■	■	■	F	G	H	-	

Phase 1, Technical Alignment: ■

Phase 2, Strategic Alignment: ■ Shown in this color

Phase 3, Relational Alignment: **Shown in bold**

their partners. Figure 1 shows the framework of the partner selection process that was developed from the data consistently with Tables 4 and 5. It highlights the process that the managers followed to select partners for co-development in cases they declared to be successful. The emergent model reveals several phases leading to a selection of a partner with the potential to create value. These phases are (1) technological alignment, (2) strategic alignment, and (3) relational alignment. These are illustrated in Figure 1. In the following sections the emergence of these phases will be discussed.

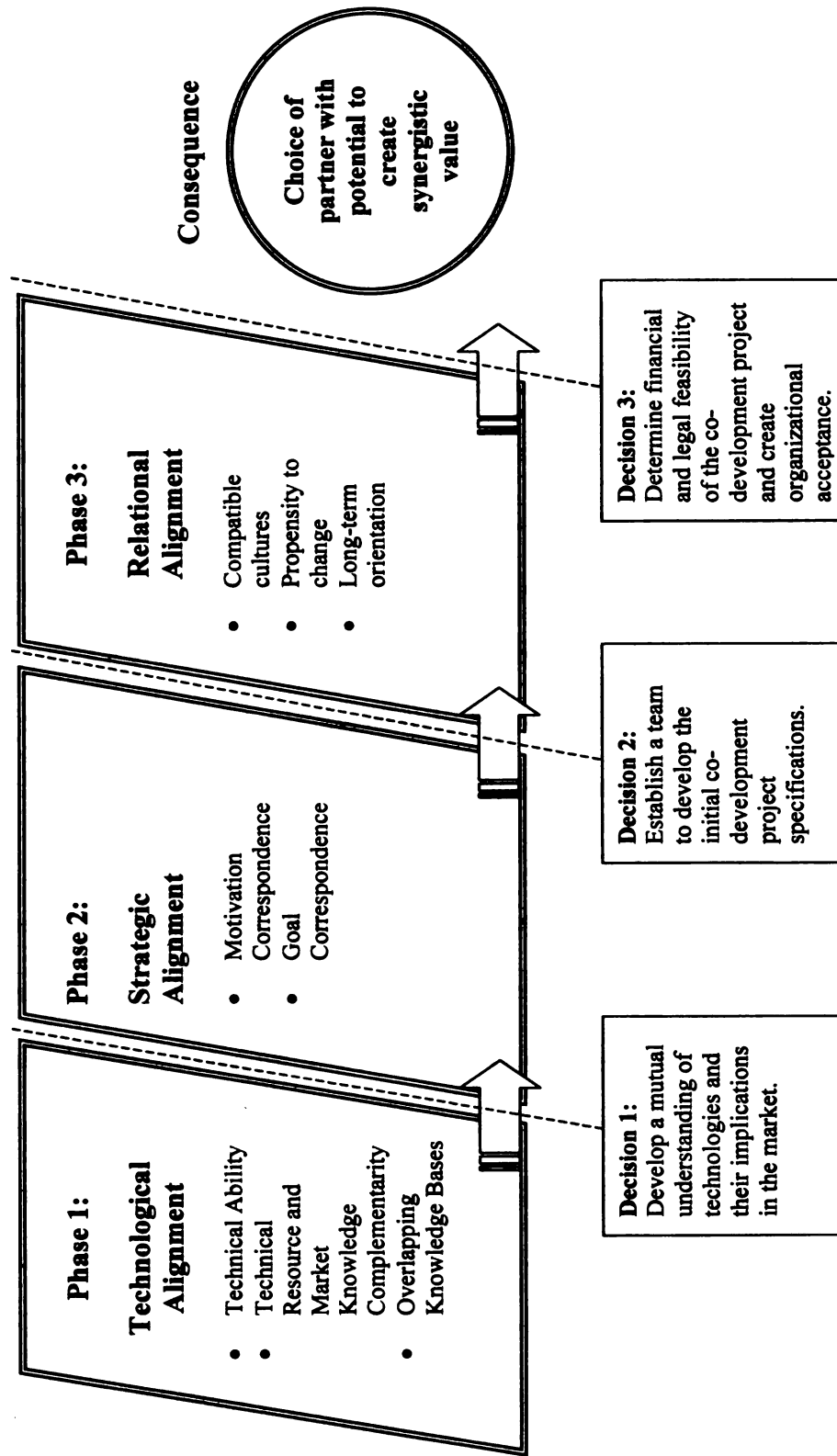
#### **2.4.1 Phase 1: Technological Alignment**

The left-most box in Figure 1 shows that when looking for a partner for collaborative product development, managers initially look for technological alignment. In fact, existence of technological alignment gives managers ideas about opportunities, thus triggering the decision for collaboration for the firms. This first phase of the partner selection process is comprised of three general categories of affirmations from the managers. These are *technical capability*, *resource complementarity*, and *overlapping knowledge bases*.

**Technical Capability.** In all of the four cases studied, each partner was stated to have either an innovative technology or expertise at a certain field. This technology or expertise attracted the attention of the other firm(s), either because it was widely publicized or simply through networking. For instance one of the respondents stated: *“The whole world came to us because we had put these really outrageous trade shows, and the product concept was so amazing, we were just truly the most exiting thing in printing. So many people said they wanted to be a part of it.”* If partners were not well



**Figure 1: Emergent Theory of Partner Selection for Creating Product Advantage Through Collaboration**



informed about the technological competences of one another, one party had to convince the other of its capability at the outset. For instance, one other manager declared: *"We put together a proposal to them for what we could offer them in terms of supply chain education. And we really pitched it to them on a couple fronts. One was our faculties' willingness get to know their business and customize what we offer. Second, our depth of knowledge in the supply chain area."* At the technological alignment phase firms recognized the potential partner's unique competencies, which can be leveraged into their new product development related activities. This finding seems to be consistent with the resource-based view of strategic alliances. According to the resource-based view, firms search for strategic alliance partners that have unique technological resources (Barney 1991) that they can leverage (Hitt et al. 2000). In fact, in the resource based view of strategic alliances, such a need is argued to be the primary reason for creating a strategic alliance (Das and Teng 1999) and for the selection of specific alliance partners (Hitt et al. 2000).

**Resource Complementarity.** The second general category of affirmations from the managers is *technical resource and market knowledge complementarity*. In all of the cases analyzed, the potential partners possessed technical resources that were distinct, yet complementing one another for the opportunity foreseen. Partners would be able to exploit and/or create these opportunities only by integrating their complementary skills and resources. One of the managers stated: *"So, when we were to make a decision, company A was complementary and able to round the edges for us. Complementary skills, complementary market knowledge, so we were able to augment our decision with their strengths."* In all cases, not only were the firms adept at certain technologies, but

they also had a thorough understanding of the needs of dissimilar sets of customers. Through collaboration partnering, firms were either able to create new market segments for their mutual product (mutual market expansion), or as one partner gained access to a new market, the other had the opportunity to become a value-added supplier in its own market. More specifically, their market knowledge as well as technological knowledge complemented one another. Supportive of these findings, a group of researchers argue that strategic alliances are more likely to succeed when partners possess complementary assets (Hill and Hellriegel 1994; Luo 1999). Dyer and Singh (1998), for example, suggested that generating rents from core competencies might require a firm to use those in conjunction with complementary resources from another firm. Similarly, Das and Teng (2000) argued that partners' resources might provide greater competitive advantage when they are used in combination. Moreover, new product researchers argued that significant innovations are likely to emerge from a combination of complementary skills (Glaister 1996).

**Overlapping Knowledge Base.** In this phase, a third category also emerged from the affirmations of the managers. This category is described by *overlapping knowledge bases* among partners. In all the stories analyzed, managers mentioned having somewhat similar knowledge bases, which allowed them to see the value in the potential partners' competencies. For instance, one manager said that before they decided to partner with another company to have access to state of the art technology, his company had already *"been working on some government contracts to evaluate a certain technology for transportation at the research level type of effort."* Various reasons were stated for these knowledge overlaps, such as same educational background, previous work done on the

same subject, or simply working with similar technologies in the same industry. Regardless of the reasons, overlapping knowledge bases provided the necessary grounds for the firms to (1) realize the potential of the technology owned by the other, (2) discover the complementarities of their competencies, and (3) communicate these inter-organizationally.

In accordance with this finding, a group of researchers (Geringer 1988; Hitt et al. 2000; Kogut 2000) argued that while skill discrepancies have been recognized as motivators for collaboration and facilitators for knowledge transfer (Dyer and Singh 1998), such transfer is not guaranteed unless prior knowledge and a set of learning skills specific to the context exist; i.e. absorptive capacity exists (Cohen and Levinthal 1990). That is, some level of similarity within the knowledge domain is necessary for understanding of the intricacies of the new knowledge and its applicability. Yet, Hitt et al. (2000) mentioned that if a partner is willing to share its expertise, it might help the other firm develop the adequate absorptive capacity by working in tandem to provide the necessary experience. Therefore, in the absence of such capacity, it is expected that the managers choose to ally with “partners who are willing to share their capabilities and, perhaps, to make special efforts to help their partners acquire these capabilities” (Hitt et al. 2000).

#### **2.4.2 Phase 2: Strategic Alignment**

The middle box in Figure 1 shows that after assuring technological alignment, managers seek strategic alignment with the potential partner. Strategy is defined as the goals of an organization and the manner in which it seeks to achieve them (Saint-Onge

1996). Two emergent categories comprised the strategic alignment phase. These are (1) motivation correspondence and (2) goal correspondence.

**Motivation Correspondence.** *Motivation correspondence* refers to the extent to which the partners' perceived ulterior motives guiding their behaviors are in correspondence with one another (Smith and Barclay 1997). In all of the cases analyzed, not only did the partners have correspondent motivations, but also they had looked for signals to assure this. From partnering firms A and B, manager A said, "*We knew that they weren't interested in having our technology. They were interested in selling more film and being a value-added supplier*", while manager B stated, "*They were trying to penetrate our traditional market. They needed a lot of help getting into and understanding that market. That was partly where we joined them.*" These partners clearly had different, yet correspondent motivations to enter the co-development partnership. Correspondence of motivations signals whether or not the partner has mutually beneficial intentions to accomplish the collaborative task, and determines the likelihood that the partner will engage in opportunistic behaviors. There may be different motivations for firms to enter alliance relationships (Doz and Hamel 1998). For instance, firms may enter alliances to internalize knowledge that is not readily available in the marketplace (Hamel 1991). Co-development partners may be competitors in the same market (Saez et al. 2002), or fear that knowledge outflow "may equip a previously non-competing partner with the necessary skills and knowledge to enter such markets" (Perks 2000). Therefore, aiming to internalize the competencies of a partner may be considered an opportunistic behavior in a co-development setting.

**Goal Correspondence.** A second category that emerged, as a part of this phase, is the *goal correspondence* of the partners. Goal correspondence is defined as the prospective partners having non-competing goals. It is found that high levels of goal correspondence enhance the consistency of expectations and assures mutual gains. Goal correspondence does not necessarily mean that partners have exactly the same goals. For instance, in case 1 (see Table 1), manager from company A said, *“Our service offering of education isn’t the whole requirement of what the customer really needs. The customer really needs to get results from the education, so there is a learning component and then there is the implementation and achievement of the results component. And we are not able to do that part, because it is outside the mission of the university. So working with a consultant enables us to offer a bigger package. So there is a good balance of two organizations seeking a common objective”*; whereas manager from company B said, *“There are a lot of consulting companies out there and we didn’t really want to go at it just kind of like everybody else. So, we were trying to figure out a way to be different.”* Although according to manager A, the two parties had common goals, in reality they had different goals, as can clearly be seen from the two managers’ statements. The goal of company B was to differentiate itself from its competitors by the mutual product offer, whereas the goal of company A was to meet needs better by providing a more comprehensive service package. The reason why manager A perceived these goals to be common is most likely because these two goals are not conflicting with one another, and can be achieved through a common business model.

### 2.4.3 Phase 3: Relational Alignment

The last box in Figure 1 shows that the last phase of partner selection process is relational alignment. Three general categories appear to constitute this phase. These are (1) compatible cultures, (2) propensity to change, and (3) long-term orientation.

**Compatible Cultures.** Culture is the collection of cognitions, expectations, mindsets, norms and values within an organization (O'Reilly et al. 1991). Culture is a determinant of how organizations make decisions. It shapes the collective behaviors of the members. Findings show when the partners have compatible cultures, i.e. share similar bases for norms, values, and expectations, conflicts are overcome relatively easily. Supportive of this finding, Parkhe (1991) argued that diversity in terms of cultural and procedural differences may be the roots of adversities in alliances and can negatively affect the quality of interactions in a partnership. To have effective communication and exchange of explicit knowledge, there has to be at least a minimum level of congruence in the norms and procedures, that is, in the 'way of doing things'. Partners should be able to "speak the same language" as pointed out by one of the respondents: *"It is sometimes very hard to discuss new products, new markets and new ideas with bigger companies. I don't know why exactly, but they don't seem to speak the same language. We have the discussion and it doesn't stick. We don't get any traction on it. It is very difficult because again we both come from different worlds. And we see some value in some of the products they have and they don't seem to see that value."* Partners with compatible cultures are more likely to understand one another and work toward common goals. Compatible cultures not only provide common grounds for communication but also serve to synchronize the expectations and behavior among the partners. Indeed, talking about a

successful co-development partnership, one manager mentioned that it feels like they have no boundaries between the two organizations because, they are “*all just kind of kindred spirits in [their] values on how [they] treat customers and each other.*”

Cultural compatibility was implicit in all narratives but one. One manager stated: “*Actually our cultures did not match up, because nothing is going to match the culture of a university. No business organization will ever match up. But, they were very upfront, very open and very consistent with what they do.*” This statement shows that in the absence of cultural fit, other attributes of the partner (such as openness and consistency) may create the necessary grounds for collaboration. Likewise, Hitt et al. (2000) argued that in the absence of overlapping procedural routines, the commitment of a partner to the alliance relationship might create a willingness to share tacit knowledge and to develop the necessary common grounds for communication and knowledge transfer.

**Propensity to Adapt.** A second emergent category in this phase is the propensity of the partner to change. *Propensity to adapt* refers to the willingness of partners to adapt as the requirements of collaboration change. In all stories, managers mentioned they were comfortable with asking their partners for changes on their share of the task, because their partners were willing to say, “*Yes, that makes a lot of sense, we should try that.*” Propensity to adapt may be considered a necessary characteristic, since it may form the basis for the needed flexibility, for both new product development (Sivadas and Dwyer 2002) and sustained collaboration (Doz and Hamel 1998). Co-development relationships may evolve in ways that are hard to predict. The manner in which value is created is not preordained. Doz and Hamel (1998) stated that in such situations, initial agreements have less to do with success than adaptability to change. Adaptability to change is clearly a



necessary characteristic for co-development partners, and managers seek signals of the potential partner's propensity to adapt.

**Long-Term Orientation.** Long-term orientation refers to a willingness to make short-term sacrifices for long-term results. In a study of buyer-seller relationships, Ganesan (1994) argued a short-term orientation is having concern only for the options and outcomes of current period, whereas long-term orientation is focusing on achieving future goals and being concerned with both current and future outcomes. Anderson and Weitz (1992) referred to such a long-term orientation as relationship commitment, and argued that such commitment results in independent channel members working together to increase mutual gains (Anderson and Weitz 1992). We found that partners with long-term orientations are picked over the others, because long-term orientation gives the partner the ability to overcome obstacles, resolve conflicts and continue under uncertainty. For instance, one manager stated: *"Everybody could see the potential of the product concepts. But again it was potential and it was very latent. Most of those people dropped off quickly. They saw the kind of work involved and how small the opportunity was in the short-term."* In all success cases studied, partners were aware of short-term sacrifices that the collaborative task may have required, and were willing to contribute without knowing the exact outcome. In fact one of the managers mentioned: *"Now we are a success story but it was from the deepest darkest hole that we came."*

## **2.5 Discussion**

### **2.5.1 Theoretical Contributions and Implications**

Although there have been an increased number of co-development alliances in industry, a review of the literature revealed a relatively limited number of studies that have addressed this issue. Based on a widely accepted notion that the foundation of an alliance is a significant determinant of its sustainability and viability (Glaister 1996), this study attempts to develop a process theory of partner selection in co-development alliances. In accordance with the theory development approach in this work, and also based on the fact there has been relatively little prior research and theory on co-development alliances, a “theory development from case studies” method has been employed. Interviews with managers with co-development experiences were performed and their stories of successful cases were recorded. Based on the assertions that inappropriate partner selection underlies a number of alliance failures (Dev et al. 1996), this study aimed to build a partner selection process theory specifically for co-development alliances. Accordingly, manager’s stories of partner selection process were analyzed using narrative analysis technique, with the purpose of ascertaining routines in their stories and grasping causal meanings from recurring sequences or from divergences.

The results are significant for at least three reasons. First, although marketing scholars agree that the nature of inter-firm relations may be substantially different in horizontally aligned firms (Achrol 1997), the majority of the inter-organizational literature examines vertical alliances (Rindfleisch and Moorman 2001). When companies collaborate for new product development they do so with different types of organizations, such as their competitors, suppliers, customers, or universities and research centers (Saez

et al. 2002). This research is primarily concerned with inter-firm collaborations through which firms seek to leverage their technical competencies into profitable new products.

Several characteristics differentiate co-development alliances from other types of partnerships. Co-development alliances are non-equity based relationships, in which each party contributes a significant portion of the end solution; i.e. these partnerships do not include relationships involving a purchase of components or simply funding of a research. In addition, co-development partnerships involve high levels of integration, and some level of competitiveness among partners (Rindfleisch and Moorman 1998). This contradiction adds a novel dimension to the characteristics of co-development partnerships. In the current study, co-development alliances were treated in isolation from other types of partnerships.

Second, the motivations for co-development alliances were found to be in line with the resource based-view of strategic alliances. The resource-based view suggests that strategic alliances are specifically created for value maximization in the firm through pooling and exploiting valuable resources with a partner (Das and Teng 2000; Doz and Hamel 1998). Valuable resources are usually scarce, imperfectly imitable and imperfectly mobile (Barney 1991), and hence accumulation of these resources is a strategic necessity for the firm. Reciprocal strengths and complementary resources pooled by the alliance partners facilitate value creation and value extraction by the firm from the alliance (Doz and Hamel 1998; Parkhe 1991). Co-development alliances make specialization and variety possible simultaneously.

Third, findings suggest that the partner selection process involves relational and strategic alignment as well as technological alignment of the partners. The emergent

model reveals a comprehensive theory including all these aspects, whereas the existent research on inter-firm relationships, except for one (Sivadas and Dwyer 2000), concentrate on either relational aspects (Morgan and Hunt 1994, Anderson and Narus 1992,) or on technological know-how transfer (Hamel 1991; Inkpen 1996; Inkpen 1998; Inkpen 2000; Iyer 2002; Khanna 1998; Parkhe 1991).

Overall, the findings suggested that partners' technical, strategic and relational fit in confluence is the vital factor that determines, the potential of co-development alliances to create value. Each emergent phase is necessary but not sufficient for insuring a selection of a partner with a potential to create value. Findings show that to maximize the potential for value creation through collaboration, a partner should be selected in a manner that not only enables transfer of tacit know-how, but also maintains the necessary relational and strategic grounds to ensure this transfer. Somewhat similar to these findings, Sarkar et al. (2001) defines an inter-organizational fit as having different resource and capability portfolios, while sharing similarities in social institutions. In addition to his findings, results of the current research suggest that strategic alignment is an important factor in ascertaining a "fit" between partners. Mockler's (2001) claim is supportive of this argument. He stated that strategic fit is a necessary but insufficient condition for multinational strategic alliances (Mockler 2001).

Two characteristics of co-development alliances make them more vulnerable to strategic misalignment than the other types of alliances. First, in co-development alliances, there is a possibility that the potential partners are rivals in other markets, or may become competitors in the future (Perks 2000; Rindfleisch and Moorman 2001). Second, the foremost reason for co-development partnering is to create synergistic value

by pooling and integrating core competencies. Thus, knowledge shared for co-development is almost certainly proprietary and may be vital for the competitive stances of the parties. There is a high risk of knowledge spillover in case of a competitive overlap (Yan et al. 2000). In these circumstances, mutual gain is only possible by assuring appropriate strategic alignment between the partners.

### **2.5.2 Managerial Implications**

By providing a better understanding of the sequence of actions/decisions associated with partner selection, this study provides managers with useful insights on what characteristics of the potential partners may underlie successful value creation through co-development. There are three partner related aspects that facilitate value creation in co-development alliances. These are technological alignment, strategic alignment, and relational alignment.

The phases depicted in the process model provide the basis for a set of normative suggestions that managers could follow to promote choice of a partner with the maximum potential to create value through co-development. This emergent model underscores the need for managers to look for technological alignment with a partner to maximize the transfer and integration of disparate pools of know-how. The model also underscores the significance of strategic and relational alignment with a potential partner to ensure this transfer, as well as the sustainability of the partnership.

Technological alignment of firms may trigger the decision for collaboration for product development. Co-development alliances are formed when the technical skills of the partners comprise the necessary complementarities for the creation of unique

capabilities, owned by neither of the parties alone. As well as partners with unique competencies, firms also search for partners that have complementary skills and resources (Johnson et al. 1996), which can be integrated with their own resource endowment to create synergy (Doz and Hamel 1998). Complementary skills provide the opportunity for integrating and transforming the unequal pools of technical know-how into product value (Doz 1996a; Sarkar et al. 2001).

One might expect that technological alignment of co-development partners would be a sufficient condition for creation of value. However, since co-development alliances are venues for integrating core competencies (and in case of a competitive overlap there is a risk for firms to pass on valuable knowledge to the partner), congruence of the motivations and the goals of partners (i.e., strategic alignment) is another necessary condition to ensure the flow of information necessary for successful product co-development. There is a possibility that a co-development alliance may fail even when partner firms have the full technological and strategic potential to create value through collaboration. According to the emergent partner selection theory, in addition to technological and strategic alignments, relational alignment of partners appears to be another necessary condition for synergistic value creation.

A relational misalignment may occur in three circumstances. Norms, values, or procedural routines of potential partners may not be congruent; that is, partners do not 'speak the same language' and/or do not share similar basis for expectations and behaviors. This would impede the understanding and flows of information among partners. Second, potential partners do not have the willingness to adapt as the requirements of the collaborative partnership change. In this situation the mutual and

innovative ways to create synergistic value may never be formed. Finally, the partner may be concerned only with short-term returns. In that case, the partner would not be willing to make the necessary contributions, which could bring long-term outcomes. In all of these situations, the prospects of a co-development alliance may be undermined. Therefore maximizing potential for creating synergistic value through co-development alliances hinges on three aspects: 1) selecting a partner with maximum potential for creating technological synergy (i.e., technological alignment with the partner); 2) selecting a partner with maximum potential to collaborate (i.e., strategic alignment with the partner); and 3) selecting the partner with a maximum potential to sustain the relationship (i.e., relational alignment with the partner).

# CHAPTER 3

## STRATEGIC CHOICE OF COLLABORATING FOR NEW PRODUCT DEVELOPMENT

### 3.1 Introduction

*Strategic alliances are considered as an alternative to internalization on one hand and market exchanges on the other. That is, for a given product or service, a firm may choose to: 1) produce its own, 2) purchase it from the market place, or 3) make it jointly with partner firms (Das and Teng 2000).*

Firms seldom have the ability to control the leading-edge technologies to create innovative products on their own (Doz 1996b). Via collaboration, firms may access unique technologies and valuable resources that are not available in-house. Valuable resources to be used in combination are usually scarce, imperfectly imitable and imperfectly mobile (Barney 1991; Barney 1996), and they are intrinsic to the processes and routines in organizations. These are usually resources that have not been extracted from practice; that is, they are implicit and non-codifiable accumulation of skills (Reed and DeFillippi 1990). They are only accessible through hands on experience and oblige firms to engage in some form of inter-firm collaboration. Inter-firm collaborations allow firms access the valuable resources, which are not available by any other means (Kotabe and Swan 1995). By forming collaborative product development partnerships, firms explicitly declare their intention to integrate and share these resources (Sampson 2002).

Co-development alliances are non-equity based collaborative relationships entered into by two or more firms, to integrate and transform disparate pools of know-how



related to the new product or service development into value (Link and Bauer 1989). In co-development partnerships each party contributes a significant portion of the end solution. These partnerships do not include relationships involving a purchase of components requiring minor inter-organizational interaction. Inter-firm collaboration is defined as a type of cross-organizational linkage, which in addition to high levels of integration, is characterized by the participants who achieve high levels of transparency, mindfulness and synergies from their interactions (Jassawalla and Sashittal 1998). The fundamental purpose of this collaboration is to increase product advantage, while generating economic (Hamel 1991) and relational rents (Dyer and Singh 1998) to the partners. The purpose of the current research is to look at these 'new generation' product development practices. Specifically, the aim is to develop a process theory of the strategic choice of collaborating for product development.

The confluence of at least four forces make collaborative new product development appealing for the firms: 1) the increasing strategic need for sustaining competitive advantage and delivering customer value necessitated by the globalization of markets and competition; 2) the urgency felt by firms operating in this uncertain environment to rapidly assemble and configure skill portfolios to sustain competitive advantage; 3) the realization by managers that organizational competence might be a function of reconfigured tangible and intangible assets as alliances evolve over time and as partners learn and invest into their relationships (Lei et al. 1997); and 4) realization on the part of managers that through partnerships, firms can enhance their capabilities in providing superior products and services to customers faster by gaining access to new technologies

or to complementary skills and knowledge bases beyond their own compilation (Mohr and Spekman 1994).

Despite the rich benefits that may accrue from collaboration for new product development (Inkpen 1996; Inkpen 1998; Inkpen 2000), sustaining competitive advantage through the assembly and configuration of skill combinations within a collaborative entity is a difficult task (Achrol and Kotler 1999; Kanter 1994). The existence of non-equity based collaborations for new product development is based on dynamism, collaboration, and mutual learning (Doz and Hamel 1998). Even though individual partners possess all the technical competence needed to perform the collaborative task, unsatisfactory inter-firm cooperation, or failing to sustain it, may obstruct the success and viability of the alliance (Dyer and Singh 1998; Iyer 2002). The complicated and evolutionary nature of non-equity based inter-firm collaborations (Doz and Hamel 1998), in general, and the high potential of conflict and cooperation in co-development alliances (Perks 2000) foster a difficult decision for managers to make. The factors that influence this strategic decision are paid little attention to in the strategy and marketing literatures (Hagedoorn 1993 is an example). The accuracy of the collaboration decision constitutes the initial stones in the path to success or failure, and therefore is an important issue that calls for investigation. The purpose in the current research is to develop the relevant concepts clarifying this issue based on the interviews with managers from the field, and the results of the narrative analysis of their stories. Specifically, the interest is to identify the factors that influence the choice of collaborating for new product development.

### **3.2 Contributions**

Findings of this study are significant for two major reasons. First, this research is primarily concerned with inter-firm collaborations through which firms seek to leverage their technical competencies into profitable new products. Several characteristics differentiate co-development alliances from the other types of partnerships. Co-development alliances are non-equity based relationships, in which each party contributes a significant portion of the end solution; i.e., these partnerships do not include relationships involving a purchase of components or simply funding of research. Also, unlike the cost minimization based partnerships, viabilities of co-development alliances are centered on the net value of the collaborative transactions (Madhok and Tallman, 1998). In fact, the potential value to be created through the collaboration is what brings and keeps the partners together in a co-development arrangement. In addition, co-development alliances differ from the other non-equity based partnerships because they involve high levels of integration, and some level of competitiveness among partners (Rindfleisch and Moorman 1998). These contradictions add a novel dimension to the characteristics of co-development partnerships and render strategic choice of co-development an ignored issue.

Second, the method employed here, theory building from case studies, grants the opportunity to study co-development alliances in their natural settings. This method also gives the researcher the opportunity to develop a comprehensive theory, when the research subject is in its early stages and there has been relatively little prior research and theory. Narrative analysis allows for examining just more than the content of interviews, such as sequential patterns, the characters, narrative voice, and evaluative context

(Pentland 1999). Thus, employing narrative analysis allowed us to investigate multiple cases, without sacrificing the in-depth investigation of each case (Pentland 1999).

In the following sections, first the motivations for the current research question will be described and then the method will be explained.

### **3.3 Background**

Co-development alliances are formed with the purpose of developing the right combination of resources to create synergistic value (Hagedoorn 1993). The right mixture entails minimum transaction specific investments, since its formulation involves predominantly the existing capabilities of the partnering firms (Sivadas and Dwyer 2000). Therefore, co-development alliances entail loose ties among partners. In fact, in co-development alliances, compulsion for the partners to stay together is driven primarily by the potential of the synergistic value to be created through the collaboration. The viabilities of co-development alliances are based on the net value of the collaborative transactions. Madhok and Tallman (1998) conceptualize such value “in terms of the ability of partners to earn rents over and above what could have been achieved in the absence of the partnership” (p. 328). They define potential economic value by potential rents minus potential costs associated with transacting through alliances. In co-development alliances, value can be created through collaboration even in the absence of cost efficiency, if the collaboration specific rents are high enough.

The primary motivation of co-development alliances is a commitment to an external problem or opportunity, rather than an internal need for resources. “The former is often a product of internal organizational planning and change; and the latter arises

from inter-organizational planning and change” (Van de Ven 1976, p. 29). Co-development alliances elaborate from collaboration-specific rents (Madhok and Tallman 1998); that is, firm specific resources are only valuable when they are used in combination with others, in the right formulation.

Furthermore, despite the fact that co-development alliances are characterized by little alliance specific investments and nontraditional contracts they entail a great deal of risks for the partnering firms. As Sivadas and Dwyer (2000) highlighted, collaborative product development requires a continuous flow of information between partners, and flexibility be granted to those involved with the product development task to ensure the best possible integration. Constant information flow, which may be challenging to achieve even across the functional entities within the borders of a firm, may become unattainable across the borders (Perks 2000). Especially, partners may become protective about their resources, when their competitive advantage relies on them (Hamel 1991). In that case, partners will strive to restrict knowledge (Yan et al. 2000) and also become excessively controlling over the new product development project. The roles of reciprocity and power symmetry intensify as firms rely on their social capital to handle market uncertainties more effectively (Chung, Singh and Lee 2000).

The aim of the current research is to identify the factors that bring about the decision to collaborate for product development. The investigation first started by searching the literature for collaborative product development studies. At the end of a review of this literature, only about a dozen studies from scholarly journals were identified. As shown on Table 2 (please refer to chapter 2), five of these are case studies (Appleyard 2003; Deck and Strom 2002; Hummel et al. 2000; Kreiner and Schultz 1993;

Perks 2000), one is a field survey (Littler et al. 1995), two are causal models (Rindfleisch and Moorman 2001; Sivadas and Dwyer 2000), three are regression models (Athaide et al. 2003; Chen and Li 1999; Saez et al. 2002), and the last one is a trend analysis (Hagedoorn 2002). Given the relatively small number of studies on co-development alliances, we employed a theory development from case studies approach for our study (Eisenhardt 1989). Interviews with managers from the field were conducted, and narrative analyses were performed on their co-development initiation stories. A summary of company and interviewee profiles is given on Table 2 (please refer to Chapter 2). In the following section the method that founded the emergent theory will be explained.

### **3.4 Research Approach**

Theory development from case studies approach allowed the study of co-development alliances in a natural setting. Moreover, in-depth case research open up the opportunity to engage in theory building in an area, in which there has been relatively little prior research and theory (Eisenhardt 1989). Theory building from case study research starts ideally as close as possible to no theory under consideration and no hypotheses to test; that is, in this approach the constructs, their definitions, and measurements emerge from the process itself, rather than being specified at the outset (Eisenhardt 1989). In accordance with Eisenhardt's approach, the research problem was formulated and the existent literatures on new product alliances and inter-firm collaboration were reviewed to specify some of the potentially important constructs and to shape the initial design of the research, but propositions concerning specific relationships between variables were avoided as much as possible.

In the theory building approach, no single technique is available to collapse multiple indicators into single constructs. For that purpose, the method of narrative analysis was employed. Unlike a typical dataset, narratives contain a wealth of information on the causal chain of events (Abbot 1990). In fact the empowering character of narrative research is that it allows for examination of more than sequential patterns, such as the characters, narrative voice, and evaluative context (Pentland 1999). Thus it enables the evolution from simple descriptions to explanations.

An in-depth study of each case was performed by using structural analysis of the stories told by managers. First, the primary sequences in the narratives were isolated following the analytical framework advocated by Labov and Waletzky (1967). Each narrative was organized according to the temporal sequence by assigning a displacement set to each clause in the narrative by adding subscripts to the clauses; with a left subscript indicating how many antecedent narrative clauses the given clause is simultaneous with, and with a right subscript indicating how many following clauses the given clause is simultaneous with (Labov and Waletzky 1967). Then the free clauses were moved to the beginning of the narrative, and the restricted clauses were moved “to a point as early as possible in the narrative without changing the temporal sequence of the original semantic interpretation” (Labov and Waletzky 1967). Last, sequential categories were formed inductively and commonalities and divergences for among cases (and explanations thereof) were sought in the other ingredients of the narrative. Table 6 presents the temporal sequence of these categories in each story. The framework for the emergent theory of collaboration choice for product development is presented in Figure 2. The following section presents this theory.

**Table 6: Temporal Sequence of Events**

Case/Company	Historical Sequence of Events		
1/A (1)	N, -, -, N, -, -, -, N, N, -, -, N, -, -, R, -		
1/A (2)	N, -, N, N, -, N, -, -, N, -, -		
1/B	-, -, -, N, N, N, N, N, N, -, -, -, -, N, R, -		
2/C	-, -, N, N, N, -, N, N, N, -, -, N, -, -, N, N, -, R, -, -		
2/D	N, N, N, N, N, N, -, N, N, N, N, -, -, -, N, N, N, N, R, N		
3/E	N, -, N, -, -, -, N, -, -, N, N, -, N, N, N		
4/G	N, N, N, N, N, N, N, N, N, N, -, N, N		
4/H	N, N, N, N, N, N, N, N, N, N, N, N, -, N, N, R, R		
Strategic Evaluation	Partner evaluation	Disposition	Others
		R	-



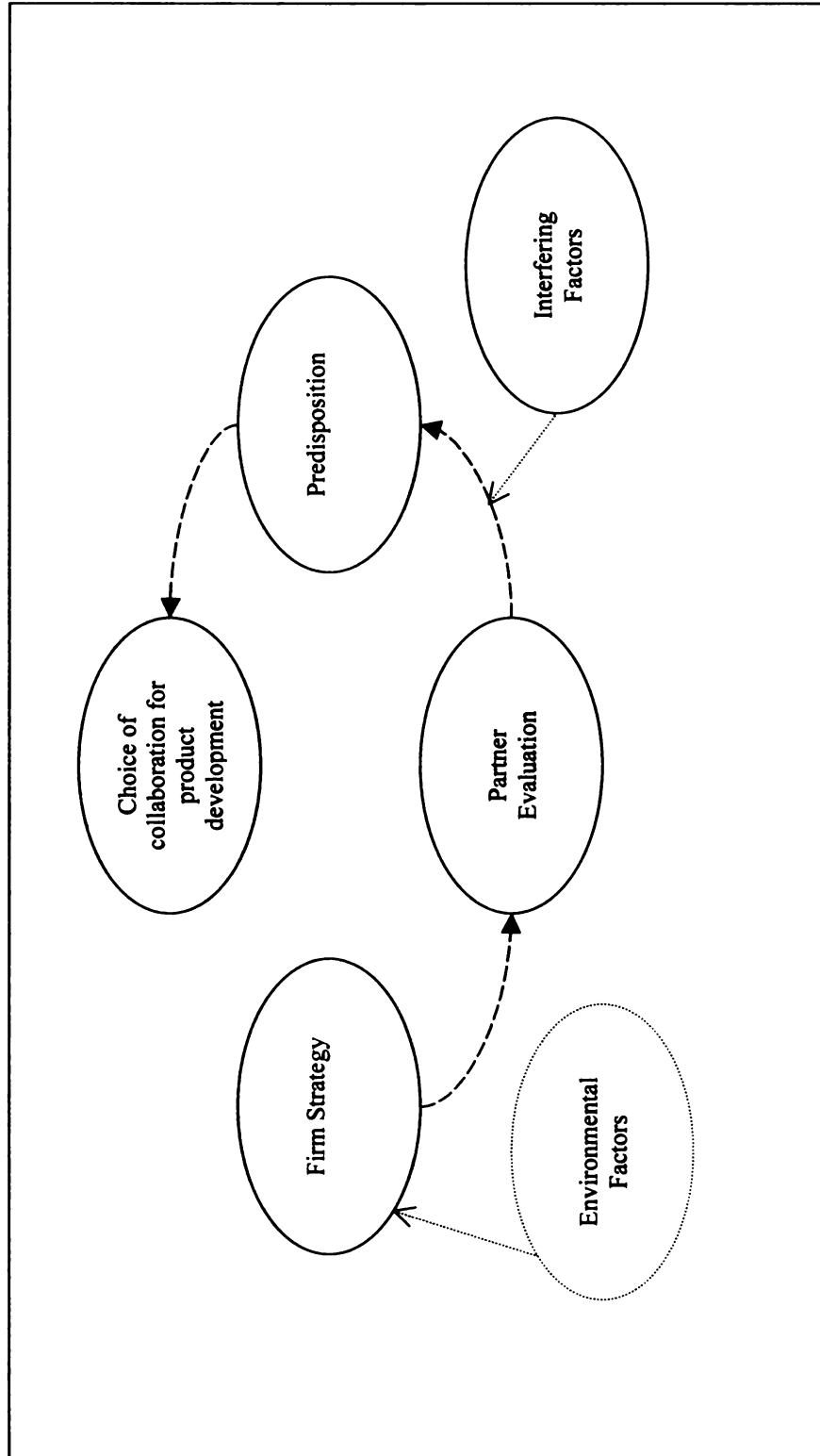
### **3.5 Emergent Theory of Collaboration Choice for NPD**

“An organization is shaped by the stream of strategic decisions its managers make over time, and how they make those decisions” (Korsgaard et al. 1995). The complex, unstable and risky nature of co-development partnerships in conjunction with its significant benefits renders a difficult decision for managers to make between collaborating and not collaborating for product development. When considering this decision, managers seem to be troubled with a broad range of factors. Results of the narrative analysis yield three phases of decision making for collaborative product development. These are strategy, evaluation, and pre-disposition. A detailed flow chart of the emergent phases is given in Figure 3. In the following sections, the emergence of each of these phases and their interrelations will be discussed. The three phases will be presented in a reverse fashion. That is, the third phase (Pre-disposition) will be presented first, since it involves the ultimate factor that leads to the collaboration decision. The phases preceding the third phase will be elaborated on subsequently.

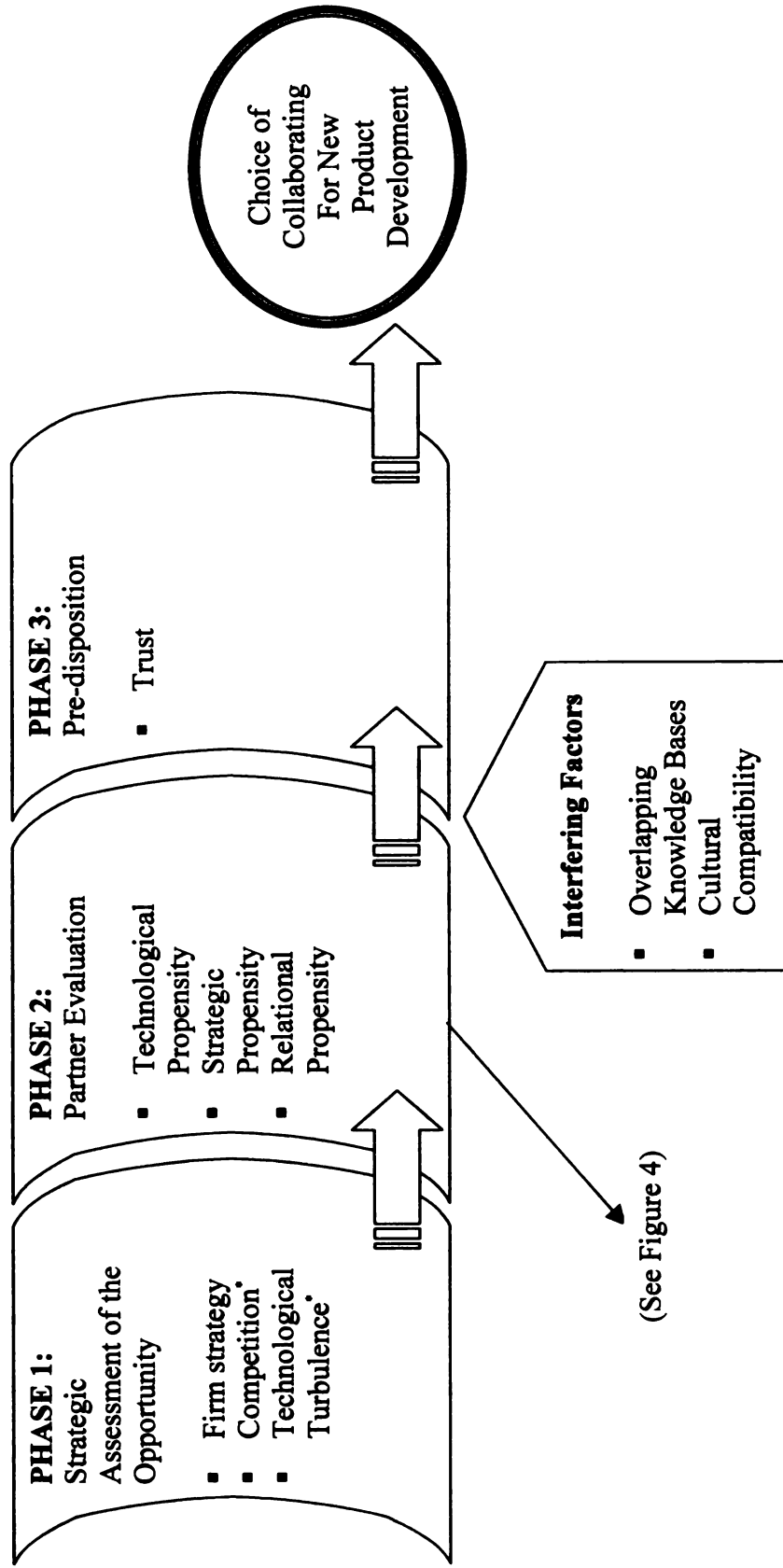
#### **3.5.1 Phase 3: Pre-disposition**

The third box in Figure 3 shows that the phase of collaboration decision process that precedes the collaboration decision is the pre-disposition towards the potential partner. The inherent evolutionary dynamics of co-development alliances call for loosely specified control and incentive systems in contracts (Ring and Van de Ven 2003). In all the co-development cases studied, the relationships relied on open-ended contracts,

**Figure 2: Framework of the Emergent Theory of Collaboration Decision for Product Development**



**Figure 3: Process Theory of Collaboration Decision**



\*These concepts are discussed in the “Future Directions for Research” section.

particularly during the early stages of the partnership. One of the managers in a co-development alliance studied stated: *“So on one hand you have to put something in the contract. On the other hand, it is all very abstract.”* Supportive of this finding, Das and Teng (2001) proposed that contracts in social-exchange based partnerships are incomplete and do not specify every detail of the relationship with the purpose of providing necessary flexibility for an ongoing and unidentified process of value creation. However, collaborative product development encompasses a high risk of sharing proprietary knowledge (Sivadas and Dwyer 2000), and renders the accurate assessment of the value of the commodity to be exchanged (Gulati 1995), as well as the ultimate value to be created, a challenge. Firms managed such partnerships despite the fact that they have minimal contractual control over the behavior of the partner, as well as the outcome of the partnership. For instance one manager stated, *“There is no formal agreement, but they’ve helped us in posturing and producing samples and doing testing. We’ve helped them in producing test products for them when they have a unique application. So, it has just been a very good working relationship and at this point it is profitable for both of us.”*

At the end of the investigation, it was found that in the absence of detailed contracts, the amount of uncertainties and the strategic significance of knowledge shared in co-development alliances oblige managers to look for other ways of building confidence in their partners for creating value: *“There is no formal [agreement]. We do have a mutual nondisclosure agreement, but apart from that we don’t have anything on paper yet. So it is all based on trust right now. That’s quite important.”* Interestingly, another manager stated that *“...trying to get closure on pages and pages of contractual*

*detail, just that very process itself, can stop the potential relationship of trust, because it is more of a negotiating relationship at that point as opposed to a working relationship.”*

Congruently, Macauley (1963) observed that detailed contracts could obstruct creating good exchange relationships, and may hinder the formation of trust among partners.

From the narrative analysis of co-development initiation stories, trust emerged as the key to building sustainable collaborations, and was influenced by the outcome of the partner evaluation. It was found that these collaborations are based on informal norms and acceptable behavior, rather than control mechanisms. One of the managers highlighted the importance of trust: *“You have to build trust simply through some time and through some personal relationships because at the end of the day it is hard to write a legal contract upfront that is going to deal with every unpredictable situation that might come up during the partnership. If we are going to have scenarios where you may not have written the contracted deal with exactly this case and if there is no trust there and one partner feels slighted, then the partnership is rapidly going to break down.”* This finding is supported by several scholars in the literature. Gulati (1995), for instance, proposed that trust is an alternative to a detailed contract, which is basically a control mechanism making behavior predictable. Similarly, Das and Teng (1998) proposed a supplementary relationship between control and trust in inter-firm relationships, and define a firm’s confidence in partner cooperation as a function of both control and trust. Since co-development alliances rule out detailed contracting, and by extension predetermined control mechanisms, firms rely on high levels of trust to have confidence in partner cooperation and ability.

### **3.5.2 Phase 2: Partner Evaluation**

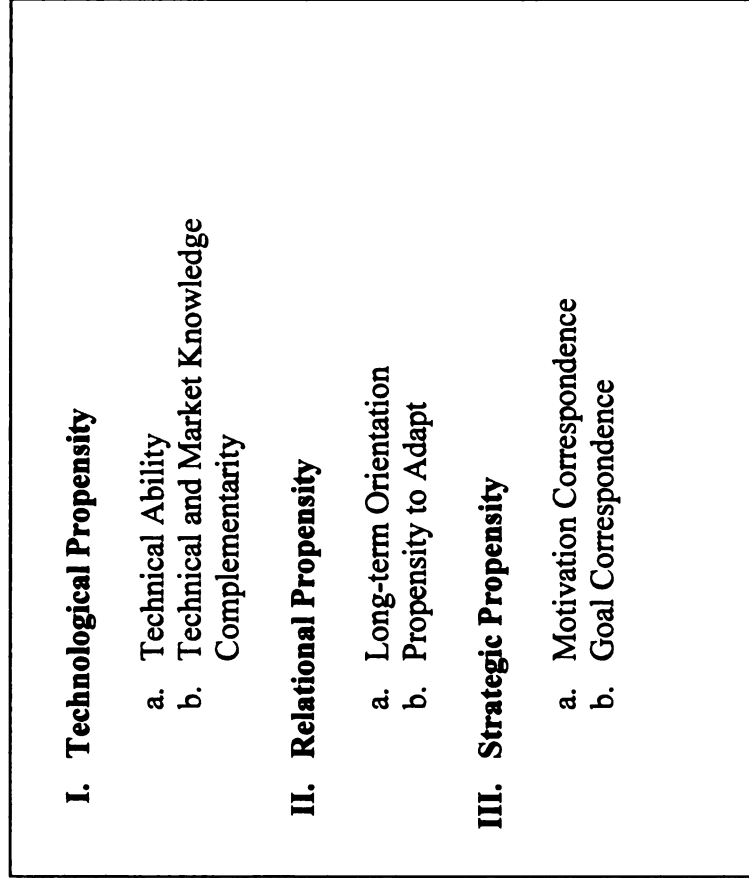
In all the cases, the partner prospect was stated as the primary driver of trust in partner's ability and cooperation. Despite the fact that trust is a necessary condition for creating and sustaining collaboration (Doz and Hamel 1998), firms do not blindly trust one another (Achrol 1997). The middle box in Figure 3 shows that previous to developing a pre-disposition towards the collaboration partnership, managers evaluate the partner prospect to determine its potential to create technological and relational synergies. In the co-development decision cases studied, to build trust, managers employed a course of evaluation techniques of potential partners, which were aimed towards maximizing the potential rents (benefits) and minimizing the potential costs (risks); i.e. ensuring highest value creation through the prospective co-development partnerships. Findings suggest that assurance for maximizing the rents hinged on partnering with a firm who has the credentials for creating technological synergy, as well as characteristics that facilitate the transfer of critical knowledge to ensure this creation. Assurance for protecting the proprietary knowledge or core competences hinged on partnering with a firm who has the proper intentions and goals, and thus would be less prone to opportunistic behavior.

At the end of the investigation it was found that the collaboration decision for product development is inseparable from the partner's prospect. That is, unless a partner with the minimum requirements for being 'trustworthy' is met, the firms do not consider collaborating for product development. The second box in Figure 3 represents the two general categories, which emerged from factors declared by managers to be used in evaluating a partner. These categories are (1) the potential of the partner to create technological synergy and (2) the potential of the partner to create relational synergy. The

sub-categories for these constructs are adopted from Chapter 2 of this dissertation and are presented in Figure 4. Accordingly, the potential of the partner to create technological synergy was to a great extent determined by the partner's technological and relational propensities. The potential of the partner to create relational synergy on the other hand was determined by the partner's strategic propensity.

**Technological and Relational Propensity.** Analyses revealed that trust based on a partner's expertise and reliability to perform the collaborative task depended on its technological propensity and relational propensity (constructs which were developed in Chapter 2) of the partner. Technological propensity leads to trust because the ultimate success of the collaboration is not merely a function of a firm's capabilities (Das and Teng, 2000), but also a function of the partner's skills and resources (Hitt et al. 2000; Sarkar et al. 2001; Saxton 1997), and mainly the value of synergistic combination of these. One of the product development consultants interviewed declared: *"You know, I've seen a few companies who look at their scorecards when they are evaluating supplies. They'll give bonus points for contributing innovation and new ideas. Not just driving down the cost on producing, whatever their current products are. You know, if you are looking at it from the smaller company's angle, there are ways to demonstrate to a larger partner that hey, I'm offering you something that my competition can't offer you because I'm going to help you innovate. I'm going to help you be more creative, not just give you a service that you can buy from five different companies."*

**Figure 4: Phase 2: Partner Evaluation<sup>1</sup>**



---

<sup>1</sup> The sub-constructs in this phase (Ia, Ib, IIa, IIb, IIIa, IIIb) were developed through narrative analysis in the previous study and presented in Chapter 2.



Relational propensity of the partner is another factor enhancing the trust of managers based on the reliability of the partner to perform the job effectively during their courses of operation. Co-development alliances need to adapt to unfolding situations (Das and Teng 2001), especially since the value to be created through the collaboration and the manner in which it will be created is not entirely known at the outset. Propensity of the partner to adapt may form the basis for the needed flexibility, both for new product development (Sivadas and Dwyer 2000) and for sustained collaboration (Doz and Hamel 1998). Similarly, long-term orientation of the partner demonstrates the willingness of the partner to make short-term sacrifices for long-term outcomes, and the ability to overcome obstacles, resolve conflicts and continue under uncertainty.

Managers mentioned they were comfortable asking their partners for changes on their share of the task, because their partners were willing to make adjustments, rather than expressing a ‘take it or leave it’ attitude. In a similar vein, Achrol (1997) stated that trust building among partners is greatly enhanced by non-evaluative, spontaneous, and suggestive interactions, rather than planned and directive interactions. One of the managers stated:

*“And this is, this I think, is one of our real competitive strengths here is our willingness and ability to customize, to change, to adapt, to be flexible. Most [companies]... what they do is they take a [program], something they offer to the public and a company comes to them and says, will you put together a program for us in this area. And what they do is they take what they have off the shelf and they say, here it is customized for you. Well they haven’t customized anything. All they’ve done is taken something off the shelf and offered it. And when the client then asks for, well we’d like*

*this changed and this changed and this changed, the typical [company] will say, no. Because they are not going to be willing to invest additional dollars, time and effort in customizing and truly meeting the needs of the corporate client by adjusting what they had offered.”*

**Potential To Create Strategic Synergy.** The second dimension of “trustworthiness” of a partner is the belief that the partner will not behave opportunistically. This belief was to a great extent determined by the partner’s strategic propensity. Three characteristics of co-development alliances create high risk, and by extension, the necessity to build confidence in a partner’s goodwill. First, in co-development alliances, there is a possibility that the potential partners are rivals in other markets, or may become competitors in the future (Perks 2000; Rindfleisch and Moorman 2001). Second, knowledge shared for co-development is almost certainly proprietary and may be vital for the competitive stances of the parties. Third, the evolutionary nature of co-development alliances require incomplete contracts among partners, and thus very little control over partner behavior. Managers look for inherent characteristics that demonstrate that the partner has intentions and motives beneficial to them when new conditions arise, conditions for which a commitment was not made in the contract. Two categories of affirmations of managers emerged for assuring strategic propensity of the partners: motivation correspondence and goal correspondence (these constructs were developed in Chapter 2). The analysis yielded that goal and motivation correspondence of a potential partner leads to the belief that the partner is less prone to behave opportunistically even when new conditions arise. In co-development alliances, unintended resource transfer may empower a partner who is competing in the same market, or equip a previously non-

competing partner with the necessary knowledge to enter such markets (Perks 2000). It was found that goal and motivation correspondence of a potential partner leads to a belief that the partner is less prone to behave opportunistically even when new conditions arise. Thus strategic propensity of the partner was found to be another contributor to the level of trust.

**Interfering Factors.** During narrative analysis, two categories of affirmations emerged as interfering factors between Phase 2 and Phase 3. These are *overlapping knowledge bases* and *cultural compatibility* of the partners (see Chapter 2 for the development of these constructs). In all the stories analyzed, managers mentioned having somewhat similar knowledge bases, which allowed them to see the value in the potential partners' competencies. Overlapping knowledge bases provided the necessary grounds for the firms to (1) realize the potential of the technology owned by the other, (2) discover the complementarities of their competencies, and (3) communicate these inter-organizationally.

Similarly, compatible cultures provided a common ground for the partnering firms to communicate their relational and strategic propensities to one another. Partners with compatible cultures are more likely to understand one another and work toward common goals. An organization's culture acts as a powerful filter on its perceptions of the business environment and how it reacts to it (Sait-Onge 1996); thus, compatible cultures not only provide common grounds for communication but may also synchronize the expectations and behavior among the partners. Compatible cultures facilitate trust because they make it possible for partners to communicate their positive strategic and relational propensities to one another. In a situation where the potential partners share common grounds for

norms, values and procedures, managers are more likely to recognize the congruency of goals and motivations, positive relational attitudes such as long-term orientation, and the propensity to adapt.

### **3.5.3 Phase 1: Strategic Assessment of the Opportunity**

The left-most box in Figure 3 shows that in the decision process for collaborative product development, the evaluation of strategic factors for the firm precedes the partner evaluation phase. Although strategy can be characterized in several ways (Porter 1980) the most relevant strategy difference influencing the strategic choice of co-development is the degree of innovation (Eisenhardt and Schoonhoven 1996). In all of co-development cases studied, either new product development and innovation were central to the firms' strategy, or the firms were looking for ways of differentiating themselves from the rest of the competition. While talking about their collaboration decision, one of the managers put it, *"We were trying to figure out a way to be different as opposed to the same. So that was a definite factor in it"*. All of the managers interviewed assigned a high importance on new product development and innovation in their strategic position.

Collaboration for product development is key to an innovative strategy for multiple reasons. First, inter-firm collaboration may provide access to new skills and/or technologies that are otherwise unavailable to the firm (Mohr and Spekman 1994). A synergistic combination of these valuable resources can equip both partners to leapfrog their competitors in the innovation race (Hagedoorn, 1993). Second, collaboration allows for cross-disciplinary integration, which may be the foundation for really new products (Chesbrough 2003). Third, the commercial viability of a technology is often not clear and technological standards may advance for political or social reasons not just superior

technology (Eisenhardt and Schoonhoven 1996). Co-development alliances can help firms gain the legitimacy of pioneering technologies by tying other firms and their resources to the technology (Eisenhardt and Schoonhoven 1996), and thereby creating technology driven demand. Inter-firm collaboration may also create opportunity for the utilization of technologies that have not yet found application in the marketplace (Chesbrough 2003). Fourth, through co-development partnerships firms may gain an additional edge by creating demand from the customers of the collaboration partner (Littler et al. 1995).

Firms who will not gain strategic advantages from collaborating are less likely to collaborate for new product development because the high uncertainty and high risk associated with co-development partnerships may exceed the benefits (Eisenhardt and Schoonhoven 1996). The resulting value in a co-development partnership is partly unknown, and also may not be reflected in immediate financial outcomes. Correspondingly, Axelrod (1984) pointed out people engage in cooperation only when the payoff of cooperation exceeds the costs of engaging in one. Only firms whose strategic positions are defined primarily by their innovativeness (that is, firms who gain strategic advantage by innovating) would be committed to a co-development partnership.

### **3.6 Theoretical Implications**

The purpose of the current research was to look at the ‘new generation’ product development practices, which are termed as *co-development alliances* in this work. Specifically, this study aimed to develop a theory of the collaboration choice for new product development. A narrative analysis of the stories told by managers yielded three

phases in the decision process of collaboration for product development. These were the (1) strategic evaluation of the opportunity, (2) partner evaluation, and (3) pre-disposition towards the partner. This study revealed facts about co-development alliances which have not been addressed in the extant alliance literatures. These will be explained in the following paragraphs.

The primary motivation for emergence of a co-development alliance is a commitment to an external problem or opportunity (see “the system change” approach of Van de Ven 1976), rather than an internal need for resources. Despite the strategic advantages that reside in collaborative product development, co-development partnering is not vital for short-term firm survival. Moreover, due to the high risk of passing on critical knowledge in a possible present or future competitive overlap, such partnerships were found to be evaded unless a partner is associated with a minimum level of trustworthiness. Since co-development alliances are evolutionary in nature, because of their non-equity bases and new product development purposes, they represent incomplete contractual arrangements, which do not provide the sufficient control mechanisms in a highly uncertain situation. The lack of one mechanism in building confidence in a partner derives the necessity for another (Das and Teng 1998). Trust is a vital element in sustaining the ongoing process of collaboration and in facilitating the transfer of tacit know-how. Thus, it is essential to maintain or enhance the level of trust throughout the life span of a co-development partnership. Achrol (1997) argues, “any kind of direct monitoring of one another’s behaviors is the antithesis of trust, defeats its very purpose, and would surely undermine it over time” (p. 66). Therefore, a detailed contract may not even be desirable or constructive for the future prospect of a co-development

relationship. Also the primary concern in co-development alliances was not avoidance of opportunism, but rather the level of value realized and created through collaboration. In fact, in a relationship dominated by protection against opportunism, firms are reluctant to make unilateral and voluntary commitments outside the terms of the contract (Parkhe 1993). This contradicts the idea of creating synergies while the value of the commodities to be exchanged as well as the ultimate value is unknown at the inception. Thus, to eliminate the need to take costly and complicated safeguards, firms tend to put emphasis on building trust by the selection of a partner who not only has the necessary technical capabilities for creating synergistic value, but also is less prone to behave opportunistically.

Furthermore, co-development partnerships are aimed at improving the long-term perspective of the product market combinations of the companies involved (Hagedoorn 1993). Therefore, exchanges in co-development alliances have to take place over time rather than at once. These exchanges are not transaction specific and can be better characterized by the “relational exchanges” of Macneil (1980). Relational contracting hinges upon the historical and relational context of the transactions (MacNeil 1980). In a social network, the history of transactions is determined by prior interactions between partners (Gulati 1995), as well as prior transactions with other partners in the industry (Saxton 1997). The relational aspect of co-development arrangements is also likely to bring willingness to cooperate and by extension, building trust among partners.

Although trust have received significant attention in the marketing, strategy, and organizational literatures, and is proposed to be a fundamental contributor to positive organizational outcomes (see, e.g., Morgan and Hunt 1994), it has usually been

conceptualized as a function of prior relationships (see, e.g., Gulati 1995) or of the partner's reputation for being fair and honest (Anderson and Weitz 1992). Yet, co-development partnerships are typically driven by the possible opportunities that the joint resources of partners may bring. Therefore the attraction for a partnership stems from firm specific expertise. For instance, the very technology that would provide the potential synergy for a firm may not be owned by a prior partner or by a well-known company in the network. In co-development alliances managers are not only concerned about opportunism issues, but also whether or not the combined resources would create synergies. Furthermore, the potential of cooperation for a firm may differ in various relationships.

This study developed an understanding of how firms develop trust when they do not acquire any prior information about the honesty and fairness of the potential partner. So how do firms build initial trust towards a potential co-development partner? Despite the necessity of high levels of trust in co-development alliances, firms do not blindly trust one another (Achrol 1997). The antecedents of initial trust were determined based on the narrative analysis. The analysis yielded parallel findings with the two dimensional conceptualization of trust: i.e., credibility and benevolence, by Ganesan (1994). The relationships between these antecedents and trust in a partner was also shown. This is similar to the goodwill trust-competence trust conceptualization of Das and Teng (2001). Trust was found to be based on (1) a partner's expertise and reliability to perform the job, analogous to the 'credibility' conceptualization of Ganesan (1994); and on (2) the partner's technical ability and the complementarity of its resources (technical and market), given the market opportunity foreseen. This is because the ultimate success of



the collaboration is not merely a function of a firm's capabilities (Das and Teng, 2000), but also a function of the partner's skills and resources (Hitt et al. 2000; Sarkar et al. 2001; Saxton 1997), and mainly the value of their synergistic combination. Co-development alliances are formed when the technical skills of the partners comprise the necessary complementarities for creation of unique capabilities, owned by neither of the parties alone. As well as partners with unique competencies, firms also search for partners that have complementary skills and resources (Johnson et al. 1996), which can be integrated with their own resource endowment to create synergy (Doz and Hamel 1998). Complementary skills provide the opportunity for integrating and transforming the disparate pools of technical know-how into product value (Doz 1996b; Sarkar et al. 2001).

Co-development alliances are often motivated by a need to reduce uncertainties, yet they also invite firms to take additional risks with their partners (Das and Teng 1998). For instance, while firms are interested in accessing their partners' valuable resources, they also attempt to protect their own idiosyncratic competencies. Unintended resource transfer may empower a partner who is competing in the same market, or equip a previously non-competing partner with the necessary knowledge to enter such markets (Perks 2000). Goal and motivation correspondences of a potential partner were found to lead to a belief that the partner is less prone to behave opportunistically even when new conditions arise; this is analogous to the 'benevolence' conceptualization of Ganesan (1994). Thus the strategic propensity of the partner was found to be another contributor to the level of trust.

Co-development partnerships entail intensified management complexities due to their cross-organizational boundaries (Littler et al. 1995). During their courses of operation, co-development alliances need to adapt to unfolding situations (Das and Teng 2001), especially since the value to be created through the collaboration and the manner in which it will be created is not entirely known at the outset. The propensity of the partner to adapt as situations evolve was found to be another factor enhancing the trust of managers based on the reliability of the partner to perform the job effectively. Co-development partnerships are characterized by low short-term and highly uncertain long-term rents. Finally, it was found that a partner is more trusted in terms of performing the collaborative job more efficiently if it exerts efforts on future goals and is willing to make sacrifices in the short-run to accomplish those.

In contrast to the existing literature (see, e.g., Morgan and Hunt 1994), the current findings suggest that initial trust is not a function of communication in co-development alliances. Communication is certainly necessary for building trust, yet what is communicated is the main factor. Overlapping knowledge bases and compatible cultures were found to be the facilitators of communication among the partners. Saint-Onge (1996) conceptualizes culture interchangeably with tacit knowledge. That is, he defines tacit knowledge as the collective mindsets of members in an organization. He points out the necessity of having some level of overlap of tacit knowledge of partners to make meaning from the exchanged knowledge, because “communication between parties will be disrupted if discontinuities in tacit knowledge exist” (p. 11). According to this view, overlapping knowledge bases and cultural compatibilities are parts of tacit knowledge:

They are necessary for effectively communicating and making meaning from the exchanged knowledge.

Parallel with the findings from the literature, it was found that firm strategy is a determinant of collaboration choice. Also firms who expect high rents versus costs (that is, firms that gain strategic advantage from innovating) were more likely to collaborate for product development. This is because co-development alliances are characterized by providing revenues for highly innovative products (Chesbrough 2003), yet they are associated with high relational and strategic risks, as well as low or no short-term, and unknown long-term returns.

### **3.7 Future Directions for Research**

Findings of the current research reveal fruitful research avenues for future research. One of these is the role that environmental factors may play in determining the firms' level of innovativeness, and thus indirectly influencing the co-development decision. Alliances are needed most in environments that are characterized by a high level of uncertainty and volatility (Das and Teng 2001a). Managing uncertainty in high-tech industries is an important motive for alliances, which offer quick access to resources on a fairly broad scale. The environmental uncertainties that impel a firm towards the co-development decision primarily stem from the technological turbulence or competitive factors in the industry.

The cost of developing an innovative product is usually substantially greater than that of a product based on a more familiar technology (Whittaker and Bower 1994). Likewise, since much of the new technology is relatively untried in the marketplace,

there is no guarantee that any particular one will yield an effective product. Getting access to a technology through collaboration entails less termination costs than internalizing that technology. Collaboration for new product development provides a window of opportunity for minimizing and sharing the R&D costs and risks (Hagedoorn 1993). Therefore, one can propose that higher technological turbulence generates higher commitment to collaboration for product development.

Competition also plays an important role in determining the commitment level to the collaborative product development. Shan (Shan 1990) for instance found that high competition was associated with alliance formation. Eisenhardt and Schooven (1996) argue that when a firm encounters many competitors, its strategic position is vulnerable. The scarcity of resources and profits renders co-development a venue for enhancing competitive advantage for firms in such competitive environments. This is because co-development makes it possible to produce more innovative products, faster and better. Therefore an increased level of competition in the industry is likely to enhance the likelihood of a firm to engage in collaborative product development.

## **CHAPTER 4**

### **CREATING NEW PRODUCT ADVANTAGE THROUGH SUSTAINED COLLABORATION**

#### **4.1 Introduction**

Innovation, which many say is a vital element of staying alive in the competitive race, has become an even more daunting task in the twenty first century as a result of several changes that took place during the last decade. These are turbulent external environments (McCann and Selsky 1984), increased global competition (Blackwell and Eilon 1991), shrinking product life cycles (Chen and Li 1999), increased complexity of the technology needed to innovate and exploding R&D costs (Rindfleisch and Moorman 2001), growing mobility of highly experienced and skilled people (Chesbrough 2003), and dispersion of skills and knowledge across firms (Barney 1991; Das and Teng 2000). These changes require firms to embrace new ways to stay competitive. Firms are forced to leverage their internal strengths with the core competencies of development partners to create innovative products faster and better (Mohr and Spekman 1994). Chesbrough (2003) refers to this as an open innovation model. In this new model advocated by Chesbrough, product success stems from building the best business model by using the right mix of internal and external resources. Companies benefit from research that was not originated in house. They benefit from the resources of other firms as well as benefiting from other firms' usage of their own resources. This way, to create demand for their products, companies are able to utilize the brains of millions outside in the (Deck and Strom 2002). Yet, in this new system, the challenge of boosting the productivity of research and development shifts from simply building cross-functional processes and

structures, to building cross-enterprise processes (Deck and Strom 2002) and developing innovative ways of managing these processes (Jassawalla and Sashittal 1998).

The purpose of the current research is to investigate these innovative ways of creating new products. While collaboration has become the “next generation” for product development practices, there has been relatively limited academic research on collaborative new product development, which is named “co-development alliances”. Co-development alliances are non-equity based collaborative relationships entered into by two or more firms, to integrate and transform into value disparate pools of know-how related to new product or service development (Link and Bauer 1989). In these partnerships, each party contributes a significant portion of the end solution (Deck and Strom 2002). The scope of this construct excludes relationships involving the purchase of components and requiring minor inter-organizational interaction. Adapting the definition of cross-functional collaboration from Jassawalla and Sashittal (1998), inter-firm collaboration is defined as a type of cross-organizational linkage, which in addition to high levels of integration, is characterized by participants who achieve high levels of transparency, mindfulness and synergies from their interactions.

Collaboration for product development offers multiple benefits to firms. For instance, inter-firm collaboration may provide access to new skills and/or technologies that are otherwise unavailable to the firm (Mohr and Spekman 1994). A synergistic combination of these valuable resources can equip both partners with the means to leapfrog their competitors in the innovation race (Hagedoorn 1993). Second, collaboration allows for cross-disciplinary integration, which may be the foundation for really new products (Chesbrough 2003). Third, the commercial viability of a technology

is often not clear and technological standards may advance for political or social reasons not just superior technology (Eisenhardt and Schoonhoven 1996). Co-development alliances can help firms gain the legitimacy of pioneering technologies by tying other firms and their resources to the technology (Eisenhardt and Schoonhoven 1996), and thereby creating technology driven demand. By these means, inter-firm collaboration may also create the opportunity for utilization of technologies that have not yet found application in the market place (Chesbrough 2003).

At the same time, collaboration for product development may intensify the widely acknowledged risks of the product development process itself. Three factors make management of co-development alliances intricate. These are (1) the complicated and evolutionary nature of non-equity based inter-firm collaborations (Doz and Hamel 1998), in general; (2) the potential of concurrent conflict and cooperation between co-development partners (Perks 2000); and (3) the increased complexity of cross-functional integration across the firm's borders (Perks 2000). The latter characterizes successful new product development (Kahn 2001). The purpose of the current research is to find the factors that lead to a better administration of these intricacies in order to create advantageous products through collaboration.

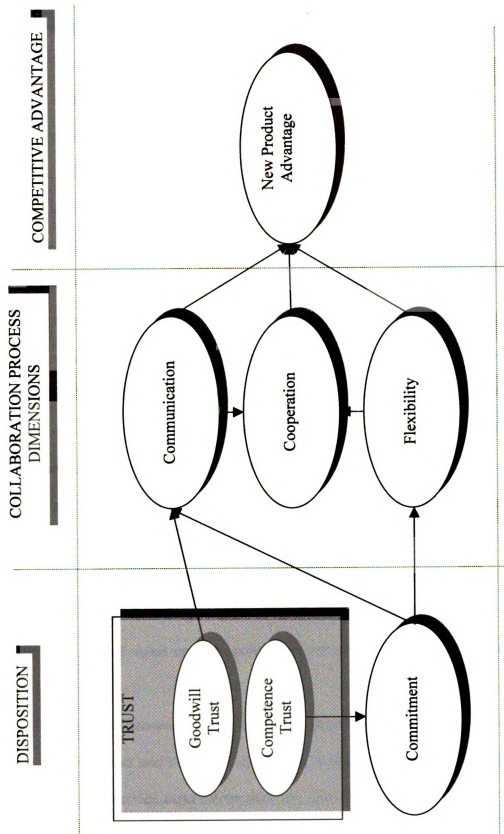
Current work builds on the contributions of previous studies that have focused on the impact that inter-functional collaboration may have on new product success (see, e.g. Jassawalla and Sashittal 1998; Kahn 1996; Souder 1988; Xie et al. 1998), on factors leading to superior products (see, e.g. Li and Calantone 1998), and on aspects of inter-firm relationships (see, e.g. Anderson and Narus 1990; Doz and Hamel 1998; Madhok and Tallman 1998). In extending these streams of research, five constructs were used to

capture the effects of inter-organizational collaboration on new product advantage: trust, commitment, communication, flexibility and cooperation. The relationships in the current model are conceptualized under the umbrella of the ‘sustained collaboration’ framework suggested by Doz and Hamel (1998). This framework argues that maximization of value creation through collaboration is dependent not only on the initial conditions, but (more importantly) on the proficiency of collaboration processes throughout the life span of the alliance. Therefore, in the current model firm dispositions to the co-development partnership are conceptualized as antecedent to collaboration process dimensions, which are believed to be necessary ingredients for achieving superior products. Here the process dimensions -flexibility, cooperation, and communication- are proposed to be primarily influenced by the firm’s disposition towards the alliance; and they are the underlying aspects of sustained collaboration. The model is summarized in Figure 5 and explained in detail in the subsequent sections.

This work is significant for at least three reasons: (1) the presentation of new product advantage as a function of collaborative activities is a new conceptualization in the literature; (2) the view of disposition leading to collaborative processes is an extension of an important alliance concept (Doz and Hamel 1998) into the collaborative product development context; and (3) the use of communication and flexibility as mediators of the trust-cooperation and commitment-cooperation associations is an extension of the existing literatures on relationship management (see, e.g. Morgan and Hunt 1994).



**Figure 5: Theoretical Framework**



In the following section, the relevant theory on collaborative product development is reviewed and the underlying rationale is presented. Subsequent sections present the data, methods of analysis, results, and a concluding discussion about the normative and practical implications of this work.

## **4.2 Theoretical Framework**

The primary motivation of co-development alliances is a commitment to an external problem or opportunity, rather than an internal need for resources. “[Internal need for resources] is often a product of internal organizational planning and change; and [a commitment to an external problem or opportunity] arises from inter-organizational planning and change” (Van De Ven 1976, p.29). Co-development alliances are motivated by collaboration-specific rents (Madhok and Tallman 1998). That is, firm specific resources are valuable in collaborations collectively. Thus, co-development requires relatively minor relationship specific investments and permits loose ties among partners. In fact, in co-development alliances the primary motivation for the partners to stick together may be the potential for synergistic value creation, rather than relationship specific investments. The following words of a product management consultant underscore the influence of value creation potential on the managerial aspects of co-development alliances:

*“I think the difference between other models and a model where the two companies are really completely distinct and their only connection is an agreement to develop this project or technology or service together, is that you don’t have the formal equity or management links that force people to work together. If things start to go sour, if either*

*partner feels like they are not getting value from the partnership, or if they feel like there is not trust on the other side or they are having difficulty working in the relationship or communicating, there is no force from the top like you would have in a joint venture that is going to say, 'No you guys have to work together, figure it out, we are locked into have, this is a done deal'. We are in bed with each other on non-equity basis, so it just puts more emphasis on making sure that the management team and the line management team really keeps those communication lines open, keeps the focus on the win-win proposition, the value for both sides. Because that's the only thing holding stuff together"* (Kevin Schwartz, PRTM).

Despite the fact that co-development alliances may involve relatively less relationship specific investments, they generate many risks for the partnering firms. Knowledge exchanged in a collaborative new product development arrangement may be proprietary; and in a situation of high competitive overlap, there is the risk of knowledge spillover (Yan et al. 2000). At the same time, collaborative product development requires a continuous flow of information among the partners (Sivadas and Dwyer 2000), as well as flexibility for those involved with the product development task, to ensure a synergistic integration of know-how. Constant information flow, which may be challenging to achieve across functional entities within a single firm, may become unattainable across firm borders (Perks 2000), especially if partners become protective about the knowledge central to their competitive advantage (Hamel 1991). This high potential for conflict, which can be a clash between the logic of new product development and the logic of alliances (Bidault and Cummings 1994), may also produce the very setting for creating innovative products (Perks 2000). Yet, to create superior

products through collaboration, firms must find ways to minimize the inherent conflicts and maximize the potential of cooperation. The following sections will elaborate on five concepts (trust, commitment, communication, flexibility and cooperation) and their interrelationships. These five may be key to abolishing the clash between the logic of alliances and logic of new product development, thus leading to better products. The theoretical framework underlying the hypotheses is presented in Figure 5.

#### **4.2.1 Role of Trust**

Co-development partnerships are based on informal norms and acceptable behavior, rather than control mechanisms because of two reasons. First, co-development partnerships are aimed at improving the long-term prospects of the product-market combinations of the companies involved (Hagedoorn 1993). Therefore, exchanges in co-development alliances have to take place over time rather than at once. These exchanges are not transaction specific and can be better characterized by the “relational exchanges” of Macneil (1980). Relational contracting hinges upon the historical and relational context of the transactions (MacNeil 1980). In a social network, the history of transactions is determined by prior interactions between partners (Gulati 1995), as well as by prior transactions with other partners in the industry (Saxton 1997). The relational aspects of co-development arrangements are also likely to encourage the willingness to cooperate and by extension, the building of trust among partners.

Second, the inherent evolutionary dynamics of co-development alliances call for loosely specified control and incentive systems in contracts (Ring and Van De Ven 1992), because during their courses of operation, co-development alliances need to adapt to unfolding situations (Das and Teng 2001a). This adaptation is especially necessary

since the value to be created through the collaboration and the manner in which it will be created is not entirely known at the outset. Das and Teng (1998) proposed that trust is an alternative to a detailed contract, which is referred to by Gulati (1995) as a control mechanism making behavior predictable. Das and Teng (1998) further introduced a supplementary relationship between control and trust in inter-firm relationships, and defined a firm's confidence in partner cooperation as a function of both control and trust.

Since the definition of co-development alliances rules out detailed contracting, and by extension pre-determined control mechanisms, firms rely on high levels of trust to have confidence in partner performance and cooperation. In fact, detailed contracts may not even be desirable or constructive for the future prospect of a co-development relationship. Achrol (1997) argues, "any kind of direct monitoring of one another's behaviors is the antithesis of trust, defeats its very purpose, and would surely undermine it over time" (p. 66). Co-development alliances are not based on the idea of avoidance of opportunism, but rather on the potential value to be realized and created through collaboration. In fact, in a relationship dominated by protection against opportunism, firms are reluctant to make unilateral and voluntary commitments outside the terms of the contract (Parkhe 1993). This contradicts the idea of creating synergies when the value of the commodities to be exchanged as well as the ultimate value is unknown at the inception. Thus, to eliminate the need to take costly and complicated safeguards, firms tend to put emphasis on building trust with a partner in their co-development alliances.

Trust is conceptualized according to the two dimensional operationalizations of Ganesan (1994) and Das and Teng (Das and Teng 2001b). The first dimension of trust is 'competence trust' (i.e., credibility, see Ganesan 1994), and it refers to "the expectation

of technically competent role performance” (Barber 1983, p.14) and reliability. The second dimension of trust is ‘goodwill trust’, and this refers to the expectation that a firm has moral obligations, responsibility (Barber 1983) and intentions (Noteboom 1996) to show concern for others’ interests, even when the initial conditions change (i.e., benevolence, see Ganesan 1994).

#### **4.2.2 Commitment**

Relationship commitment is a belief that maintaining a relationship is a preferable state, compared to not maintaining it; that is, it refers to the willingness of partners to exert effort on behalf of the relationship (Morgan and Hunt 1994). When the members of an organization share this belief, it forms a common bond among individuals resulting in group commitment. At the organizational level, these group-specific commitments are communicated with the other members or groups that comprise the organization, and organizational commitment is formed as the collection of these group-specific commitments (Reichers, 1985).

Commitment has been discussed extensively in the organizational behavior (Reichers 1985) and the marketing literatures (Sinkula et al. 1997). In organizational behavior theory, organizations are viewed as composites of coalitions and constituencies, each espousing unique sets of goals and values where commitment may diverge among competing interests. Achieving harmony among these profiles is thus a key challenge in achieving organizational commitment. Likewise, the ultimate value of high-quality decisions depends to a great extent upon the willingness of all members in an organization to cooperate in implementing those decisions (Wooldridge and Floyd 1990). For achieving positive outcomes from the relationship during its life span (that is, for

synergistic value to be created through collaborative product development), collaboration has to be supported by a convergence of opinions in an organization (Doz and Hamel 1998).

In marketing, commitment is viewed as a diverse but controllable antecedent to positive performance outcomes (Mohr and Spekman 1994; Moorman et al. 1992). Morgan and Hunt (1994), for instance, underscored the importance of the role that relationship commitment might play in achieving positive relational outcomes such as acquiescence, lower propensity to leave the relationship, and cooperation. Emden et al. (2004) propose a positive influence of organizational commitment on learning from alliance experiences. Commitment can also facilitate partner resource alignment and resolution of inter-partner conflicts, thereby directly affecting the collective strengths of the partners and the alliance's performance (Das and Teng, 2000). Commitment to alliance relationships might offer benefits of specialization and variety generation, in the sense that it provides the context in which both parties can achieve individual as well as joint goals without raising the possibility of opportunistic behavior (Mohr and Spekman 1994). More committed partners will strive to balance short-term problems with long-term goal achievement (Mohr and Spekman 1994), and thus commitment increases compliance and cooperation between alliance partners (Morgan and Hunt 1994).

Trust leads to commitment (Morgan and Hunt 1994). However, in this model for co-development alliances, only one dimension of trust (competence trust) is proposed to have an influence on the commitment to the co-development partnership. Competence trust reduces the perception of performance risk associated with a co-development partnership (Das and Teng 2001). Thus the more a partner is believed to have the

expertise to perform the collaborative task, the more a firm will be committed to a co-development partnership with that partner. Ganesan (1994) observed that in buyer-seller relationships, partners are trained to “focus on objective evidence of reliability rather than motives of the other partners” (p. 12). This focus may be enhanced in a co-development partnership, where the fundamental value drivers are the integration of firm-specific capabilities.

Although goodwill trust reduces the perception of relational risk associated with a co-development partnership (Das and Teng 2001), a significant influence of goodwill trust on the commitment to the relationship is not anticipated. Commitment entails long-term orientation and short-term sacrifices. Thus, it will only be granted to those partnerships that are characterized by high levels of competence trust; that is, partnerships that have a high potential to create synergistic value. Therefore,

*H1: Competence trust has a positive impact on commitment to a co-development partnership.*

#### **4.2.3 Communication**

As opposed to integration, collaboration is described as a more complex, higher intensity linkage (Jassawalla and Sashittal 1998). Collaboration is an unstructured, involved process, which is characterized by continuous relationships, shared visions, along with an emphasis on mutual gains (Xie et al. 1998) and the presence of informal structures to manage relationships (Kahn 1996). Informal and voluntary sharing of information, and by extension, the superiority of the information exchanged, has an important impact on the synergistic value to be created through the collaboration. Therefore, Anderson and Narus (1990)’s definition of inter-organizational



communication is adapted, and communication is defined as the formal as well as informal and voluntary sharing of critical and timely information between partners.

The primary motivations for collaborative product development are the anticipation of excess value relative to that possible without collaboration, and the expectation that direct and indirect relational experiences will facilitate the formation of future ties (Chung et al. 2000; Das and Teng 2000). Since the information shared in a co-development alliance may be vital for the competitive positions of the respective partners, firms are prone to restricting this critical knowledge from each other (Sivadas and Dwyer 2000). The fear that proprietary knowledge outflow may equip a partner with the necessary skills and knowledge to become a competitor may hamper the sharing of critical knowledge among partners (Perks 2000). For timely, adequate, and critical information to be exchanged, a partner has to be trusted in terms of having the proper intentions in entering the co-development alliance; that is, having intentions and motives beneficial to the firm even when new conditions arise, conditions that were not pre-specified in the agreement. Thus,

*H2: Goodwill trust has a positive impact on communication.*

The systems change approach of inter-firm relationships (Van de Ven 1976) suggests that the rationale for alliance formation is the value creation potential of firm specific expertise that are pooled. In the tension between competition and cooperation within co-development alliances, relational capital will serve to both enhance cooperative behavior and mitigate competitive conflicts (Anand and Khanna 2000). Thus, the higher the perceived level of synergies to be created through collaboration, the more partners will be able to balance the tradeoff between competition and cooperation within the co-

development partnership. Souder (1988) observed: when the receiver was perceived as not having enough knowledge of significant value to utilize the incoming information or to provide contribution to the new product development, there was an intentional reduction of communication among functional units within an organization. Likewise, lack of belief in the value creation potential of a partnership may limit the amount and quality of information exchanged among partners. In addition, efficient communication is a function of the nature and extent of the resources deployed in communication, the passion with which the firm deploys these resources and its positive approach to the collaborative experience; all of these underscore a commitment on behalf of the collaborative relationship. Hence, commitment is an important ingredient in achieving the timely, adequate and effective exchange of critical knowledge.

*H3: Commitment to the co-development partnership has a positive impact on communication.*

#### **4.2.4 Flexibility**

Flexibility is the extent to which parties are prepared and able to reassess and adjust their relationships as the intended objectives of the partnership shift. How best to manage the interface between partners and to govern their relationship is something to be discovered rather than determined at the inception (Doz and Hamel 1998). Collaborative product development is characterized by the joint determination of product development activity and the management of performance through a process of flexible negotiations. Heide (1994) observes that “individual goals are reached in a bilateral system through joint accomplishments, and a concern for the long-term benefit of the system serves as a restraint on individual tendencies” (p. 74). Collective incentives to maintain the

relationship lead to the flexible behaviors necessary to meet changing requirements (Bello and Gilliland 1997). Homan (1958) suggests that participants will continue to interact with each other only if they perceive that the exchange relationship is an attractive alternative. When two parties face various unforeseen events, they will modify their resources to match each other's needs only in the presence of this perception. Potential mutual benefits and willingness to make short-term sacrifices for achieving long-term gains encourage partners to adjust as the necessities of the relationship change. In addition, the synergy that can be created through collaboration may not be redeployed to other partnerships. This idiosyncrasy creates a symmetric dependence condition, which functions as an incentive to maintain the relationship (Bello and Gilliland 1997), as well as leading to bilateral governance in the form of flexible adjustment processes (Heide 1994). Therefore,

*H4: Commitment to the co-development relationship has a positive impact on flexibility.*

#### **4.2.5 Cooperation**

Cooperation is the process by which organizations interact, form psychological relationships, and work together to achieve collective rather than individual gains (Anderson and Narus 1990). Cooperation in co-development alliances is informal in the sense that it involves flexible arrangements in which the contributions of the parties are determined by behavioral norms rather than contractual obligations (Smith and Barclay 1997). Kahn (1996) characterizes the company's internal environment as one of cooperation (as opposed to competition), since the goals are similar across departments, and penalties for dealing with other departments do not exist. Yet, the dynamics of inter-

firm collaboration calls for the contrary: competition and cooperation coexist in co-development partnerships (Rindfleisch and Moorman 2001). Hence, despite the fact that cooperation is vital for sustaining the ongoing process of collaboration, it may be difficult for co-development partners to move toward a high level of cooperation (Doz and Hamel 1998). In particular, this may be due to the unfeasibility of anticipating the ultimate consequences of collaboration and the resulting strategic and long-term benefits (as opposed to financial and short-term benefits).

Axelrod (1984) points out that cooperation arises when parties perceive that they will be in contact for a long time. Co-development partners have a tendency to cooperate because there is a possibility that they may have future relations with one another. Likewise, they may be concerned with their reputations in their social network. That is, the choices they make today may not only determine the outcome of the current partnership, but may also influence the choices of their future partners in the network. Yet, the main condition of cooperation is the recognition that the payoff of cooperation will exceed that of not engaging in one (Axelrod 1984); that is, two firms will engage in collaborative product development activities when the pooled resources can create excess value relative to their value before the pooling (synergy) (Das and Teng, 2000; Chung, Singh and Lee, 2000). Communication reveals the magnitude of mutual gains to the partners, and enhances cooperation by making both the value of the partner-specific capabilities overt to the partners, and the possible ways of synergy creation through integration. The knowledge intensive nature of collaborative exchange also motivates partners to commit human resources to learning the specialized procedures associated with new product development (Bello and Gilliland 1997). In a distributor-manufacturer

partnership investigation, Anderson and Narus (1990) found that this type of intensified communication also leads to greater cooperation. In addition, cooperation is dependent on the expectation of the other party's behavior (Axelrod 1984). Co-development partners are in 'the game' for mutual gains; that is, they realize that the value to be created through collaboration goes beyond the value they can create on their own (Madhok and Tallman 1998). Although co-development partners' motivation to come together implies their willingness to cooperate, communication creates foresight for partner motivation and thus leads to greater cooperation. Thus,

*H5: Communication has a positive influence on cooperation.*

Heide (1994) notes that goals, which can be reached through a joint business model, serve as a restraint on individual tendencies. Joint accomplishment through collaborative product development is guaranteed only if the partners are open to one another's requests to modify a prior agreement; that is, if they are willing to work out a new deal rather than hold each other to the original terms (Doz and Hamel 1998). Social exchange theory of alliances underscores the important role of this expected reciprocity among partners (Das and Teng 2001). The theory of social exchange assumes that inter firm processes evolve over time as the actors mutually and sequentially demonstrate their trustworthiness (Hallen et al. 1991). "They can demonstrate their trustworthiness by committing themselves to the exchange relationship, and one important way of showing commitment is adapting to the other" (p. 31). In co-development partnerships, which are characterized by higher levels of partners' flexibility, similar or complementary coordinated actions will be taken by firms to achieve mutual outcomes with reciprocation over time. Thus,

*H6: Flexibility has a positive influence on cooperation.*

#### **4.2.6 New Product Advantage**

A firm's competitive advantage manifests itself in its ability to differentiate its products from alternatives on the most important attributes (Day and Wensley 1988), such as quality, reliability, newness, and uniqueness (Cooper 1992). Cooper (1992) refers to this as 'differential advantage'. Struggling to stay competitive in markets which are characterized by turbulent external environments, shrinking product life cycles, increased complexity of the technology to innovate, and dispersion of skills and resources across firms, organizations are compelled to engage in product innovations that demand greater attention to the external market and external technological resources (Day and Wensley 1988). In this race, organizations that take advantage of leveraging their resources and opportunities with development partners are likely to be more adept and have a greater chance at creating more innovative products faster and better (Chesbrough 2003). Reciprocal strengths and complementary resources pooled by the co-development partners may facilitate product value creation through collaboration. Inter-firm diversity in terms of differences in skills and knowledge bases among the partners provide opportunities for the aligning firms to integrate and transform disparate pools of tacit know-how into greater product value (Hagedoorn 1993).

Just as the proficiency of new product development activities has an impact on the product's success (Cooper and Kleinschmidt 1987), the proficiency of collaboration processes are expected to have a similar influence on the product's relative advantage. That is, through efficient collaboration firms may be able to create products that are superior to existing products. Partnering with a firm whose resources provide a potential for synergistic value may have the potential for but does not guarantee the creation of

product value. The proficiency of collaboration processes, and by extension the ability to sustain the process of ongoing collaboration, is the key for the creation of product advantage (Doz and Hamel 1998).

Cross-functional harmony is proposed to have a significant effect on long-term innovation performance of an organization (Xie et al. 1998). Furthermore, Souder (1988) found that disharmony among the functional entities was primarily driven by the lack of communication. Communication is primary for value creation in the sense that it minimizes the 'bad conflict' and facilitates the use of 'good conflict' in a co-development partnership in the following sense. First, communication decreases the uncertainties related to the collaborative product development processes and leads to the right formulation for creating synergistic value. Second, communication facilitates inter-organizational learning and integration of firm-specific know-how, and leads to an understanding of the value of collective competencies.

Xie et al. (1998) propose that there has to be some level of inter-functional conflict among units for innovative product development because innovation requires the combination of different points of view and different information sources to produce new knowledge. In fact, co-development alliances are characterized by rich venues to put disparate pools of know-how together. Yet, while inter-functional diversity in the form of differences in skills enhances the innovativeness of the product, it can cause difficulties in integration (Xie et al. 1998). Parkhe (1991) characterizes this conflict as diversity in terms of differences in mindsets, procedures and behavior among the partners. This form of conflict may negatively affect the realization, transfer and integration of diverse points of views and competences among partners.

Sivadas and Dwyer (2000) underscores that in the absence of familiarity with each other's procedures, parties may lack the mechanisms to connect the firm specific insights related to the new product development processes, "to develop new products that harness the collective wisdom of all involved" (p. 33). Furthermore, the absence of an understanding of the other unit's technological competence may conceal the potential synergies that may be created through collaboration. Communication may minimize inter-firm diversities in norms and procedures. Also, by communicating firm-specific competencies, partners enhance their understanding of the value of the commodities being exchanged, as well as the synergies and mutual gains that the collaboration may bring. Therefore,

*H7: Communication has a positive impact on new product advantage.*

The high unpredictability in collaborative innovation processes calls for greater teamwork among the partners. The heterogeneities among partners in terms of competencies, as well as norms and behaviors, lead to greater interdependence among partners to create value through integration of firm-specific know-how (Sivadas and Dwyer 2000). The only way to create superior products through collaboration is by joint effort, since neither of the parties have the ability to create equivalent value on their own (Madhok and Tallman 1998). "Once trust is established, ... joint efforts will lead to outcomes that exceed what a firm would achieve if it acted solely in its own best interests" (Anderson and Narus 1990, p. 45). New product advantage is enhanced by cooperative activities undertaken by the partners. Therefore,

*H8: Cooperation has a positive impact on new product advantage.*



Doz and Hamel (1998) refer to the ability of firms to keep up with the changes in the collaborative task as the ‘adaptability to change’. Hallen (1991) proposed that just as the partners “may have to make adaptations to bring about initial fit between their needs and capabilities, adaptation also may be necessary in the ongoing relationship as the exchanging parties are exposed to changing business conditions” (p.30). As the partners engage in co-development alliances and the initial conditions allow them to start to create value, they also start to monitor the alliance for efficiency (Doz 1996). The product value to be created through the alliance is largely unknown and the ways in which it will be created emerge as parties exchange and integrate their areas of expertise. Thus, the requirements of the collaborative task are prone to change continuously over the course of the collaborative development process, and flexibility of the partners plays an important role in maintaining the value creation process. Adaptations by the two parties in a business relationship are related positively to each other (Hallen 1991): flexibility of one partner may encourage the other partner to be flexible to adjust as the intended objectives of the partnership shift. The ultimate product value depends on the proficiency of each partner to adjust the initial conditions of their agreements as the requirements of the collaboration change. Therefore,

*H9: Flexibility has a positive impact on new product advantage.*

## **4.3 Research Methodology**

### **4.3.1 Measures**

To adequately measure the constructs, a comprehensive review of the literature was performed. From this review, valid multiple-scale items were borrowed and adapted. In

those instances where no previously developed scales existed, measures were developed using the framework proposed by Churchill (1979). The measurement approach for each theoretical construct in the model is described briefly below.

New product advantage is defined as the extent to which a new product has superior attributes compared with competitors' products (Cooper 1992). The scale for new product advantage was adopted from Li and Calantone (1998). All of the new product advantage dimensions are measured from the perspective of the managers. The specific components of this construct are newness, productivity, reliability, uniqueness, ease of use, functionality, and compatibility.

Flexibility is defined as the extent to which a firm is willing to adapt in response to changing circumstances during the course of the co-development partnership (adapted from Heide 1994). The scale for this construct was adapted from Bello and Gilliland (1997) and Heide (1994).

Cooperation is the extent to which co-development partners take similar or complementary coordinated actions to achieve collective gains (adapted from Anderson and Narus 1990). Since the existing scales for this construct were context specific, a new scale was developed for the measurement of this construct.

Communication is defined as the formal as well as informal and voluntary sharing of critical and timely information between partners (adapted from Anderson and Narus 1990). The scale for this construct was adopted from the information-sharing dimension of Mohr and Spekman (1994)'s communication scale.

Organizational commitment was viewed as the extent to which the organization places value on an alliance relationship to warrant maximum efforts in maintaining it

(Morgan and Hunt 1994). The scale for organizational commitment was adapted from Morgan and Hunt's relationship commitment, and Gundlach et al.'s (1995) attitudinal dimension of commitment.

The two dimensional conceptualization of trust by Ganesan (1994) was adopted. Accordingly, goodwill trust is the extent to which the firm believes that the co-development partner has intentions and motives beneficial to the firm when new conditions arise. Competence trust is defined as the extent to which the firm believes that the co-development partner has the required expertise and reliability to perform the collaborative task. Scales for both of these constructs were adapted from Ganesan (1994).

For each perceptual measure, a seven-point Likert scale was employed, typically anchored by 1=Strongly disagree and 7=Strongly agree. The measures for each construct are noted on Table 7.

#### **4.3.2 Sampling and Data Collection**

The sampling frame for this study is U.S. firms that have recently participated in co-development partnerships. To put together a mailing list for this study SDC Platinum's alliances and joint ventures database was used. Alliances with announcement dates between January 1, 1999 and June 6, 2003, from a wide array of high-tech industries, including biotechnology (medical lasers, rehab equipment, other medical equipment), computer equipment, electronics, communications, and others (robotics, lasers, propulsion, satellites, advanced materials, etc.) were examined.

During this time period, 724 partnerships were announced within the selected industries. Since the database did not include a flag for co-development partnership, other flags (e.g., marketing agreement flag, joint venture flag, etc.) were used to omit those

**Table 7: Constructs and Indicators**

<b>Competence Trust (<math>\alpha = .9318</math>)</b>	
Ctrust1:	Promises made by our partner are reliable.
Ctrust2:	If problems arise they are honest about the problems.
Ctrust3:	Our partner does not make false claims.
Ctrust4:	Our partner has the ability to keep the promises it makes.
<b>Goodwill Trust (<math>\alpha = .8665</math>)</b>	
Grust1:	Our partner's representative is like a friend.
Grust2:	When we share our problems with our partner we know that they will respond with understanding.
Grust3:	We feel our partner considers how its decisions and actions will affect our business.
<b>Commitment (<math>\alpha = .8388</math>)</b>	
Cmtmt1:	We emphasize the commitment to improvements that benefit the relationship as a whole.
Cmtmt2:	The relationship with this partner is something that we are very committed to.
Cmtmt3:	We work hard to maintain this relationship.
<b>Communication (<math>\alpha = .6633</math>)</b>	
Comm1:	We share proprietary information with our partner.
Comm2:	We inform our partner in advance of our changing needs.
Comm3:	We do not volunteer much information regarding our business to the partner (reverse scale).
<b>Cooperation (<math>\alpha = .9032</math>)</b>	
Coop1:	Our relationship with this partner can be characterized by high level of cooperation.
Coop2:	There is a lot of teamwork between our partner and us.
Coop3:	We carry on the collaborative project through committed teamwork.

**Table 7 (Cont'd)**

<b>Flexibility (<math>\alpha = .6049</math>)</b>	
Flex1:	We are open to their request to modify a prior agreement.
Flex2:	We expect to be able to make adjustments in the ongoing relationship to cope with changing circumstances.
<b>New Product Advantage (<math>\alpha = .8189</math>)</b>	
Npadv1:	In terms of newness, i.e., the extent to which a product is new to the market.
Npadv2:	In terms of productivity, i.e., the product increases the customer's work efficiency.
Npadv3:	In terms of reliability, i.e., extent to which a product is free of errors.
Npadv4:	In terms of uniqueness, i.e., the extent to which a product has unique features.
Npadv5:	In terms of ease of use, i.e., the extent to which a product is easy to Learn and/or use.
Npadv6:	In terms of functionality, i.e., the extent to which a product meets customer's functional needs.
Npadv7:	In terms of compatibility, i.e., the extent to which a product is similar with the existing products.

recorded partnerships, which did not fit the definition of co-development alliances. The next stage of the sampling procedure involved validating the co-development partnership and finding the name of a key informant. Targeted key informants included vice presidents of R&D, vice presidents of strategic alliances or business development, or chief technology officers.

Before mailing questionnaires, pre-contact of each key informant by telephone was attempted to (1) validate the existence of a co-development project within that firm, (2) assess informant's ability to serve as a key informant by asking if he or she was knowledgeable about the co-development project in question, (3) obtain cooperation, and (4) verify the informant's mailing address. 71 of these contacts stated that their companies were not associated with a domestic co-development partnership. The phone process further eliminated 151 firms in which a knowledgeable executive could not be reached or identified. Therefore, the final population of the sampling frame consisted of 431 firms. These managers were asked for their permission to send them a cover letter accompanied by a research summary sheet explaining the objectives and deliverables of the study and requested their participation. In case they were not willing to participate personally, these managers were asked to provide the names and contact details of one other manager who could be subsequently contacted. This manager was requested to be knowledgeable about the company's co-development-related procedures and activities. Participating firms were also promised an executive summary of the findings of the study.

Of these 431 firms, 108 agreed to participate. The most common reasons for declining were company policies forbidding participation in surveys and lack of time.

The survey instrument was either emailed or mailed to those managers (depending on their preference) who agreed to participate. The first round of follow-up was performed through e-mail reminders, which followed the completion of the first e-mailing by 1.5 weeks. A second stream of follow-ups was completed through telephone calls.

The surveys for 4 firms were returned as undeliverable, and another 32 replied that they were willing to participate but they are not allowed to share any information regarding the partnership under question. Of the 104 firms that received the survey, a total of 35 usable surveys were returned, for a 33.6% response rate.

As a validity check, respondents were asked to provide information regarding their position and the number of years they had worked for their firm. All respondents were vice presidents of their firms and had worked for their firm an average of 10.63 years.

#### **4.3.3 Analytical Approach**

A multi-step approach was adopted for data analysis. First the potential non-response bias was evaluated by comparing early and late respondents in terms of their annual sales and numbers of employees. Then a test of the measurement model was performed by subjecting the measures to a series of exploratory factor analyses. In light of these factor analyses, the items for each construct were selected. The average scores for each construct were calculated. These were then used to test the hypotheses.

To assess non-response bias, responses were divided into two groups based on the date on which they were received. The two groups of early and late responders were then compared based on their sales volume and numbers of employees (Armstrong and Overton 1977). Here, a t-test was conducted for testing the null hypothesis, which stated

that early and late respondents were equal in terms of their number of employees and sales volume. No statistically significant difference was detected between these groups at .05 level. Results of this test are given on Table 8.

**Table 8: Statistical Test for Non-Response Bias**

Variable of Comparison	T-Test For Equality Of Means of Early and Late Respondents		
	t	Df	Sig (2-tailed)
Number of Employees	1.231	23	.231
Sales Volume (in million \$)	1.254	31	.219

#### **4.3.3.1 Measure Validation and Hypotheses Testing**

An exploratory factor analysis (EFA) was run on the data to analyze all measures for validity and reliability. The initial measurement model consisted of 22 previously selected manifest indicators of five constructs. Factor loadings were evaluated and indicators were discarded if they did not load on the relevant factors or if they exhibited cross loadings. A total of 4 indicators were dropped from further analysis at this step (because they cross-loaded on other factors), and therefore the measurement model resulted in eighteen indicators: 3 for goodwill trust, 4 for competence trust, 3 for commitment, 3 for communication, 2 for flexibility, and 3 for cooperation.

Reliabilities of the remaining indicators were assessed through their Cronbach's alpha scores. Reliabilities for all the measures were above the recommended limit of .6 (Cronbach 1951). The measures and reliabilities are displayed in Table 7. The average



scores for each construct are calculated using the remaining measures. A three stage least squares (3SLS) method was employed to test the systems of equations in the model.

#### **4.3.3.2 Results**

The model displayed a system weighted R-square of 0.368. The results of the 3SLS are given on Table 9. All of the hypothesized paths were found to be significant at the  $p < 0.10$  level, except for the path between cooperation and new product advantage and the path between communication and new product advantage. The influence of the firm's competence trust on its commitment to the co-development partnership was significant, as had been hypothesized in H1 ( $\beta_{H1} = .238$ ). The positive influence of goodwill trust on communication (H2) was also supported by the findings ( $\beta_{H2} = .348$ ). The results further supported the third and fourth hypotheses, which posited a positive influence of commitment on communication and flexibility, respectively ( $\beta_{H3} = .440$ ,  $\beta_{H4} = .316$ ). The positive influences of communication ( $\beta_{H5} = .368$ ) and flexibility ( $\beta_{H6} = .359$ ) on cooperation also found support by the results. Although each collaboration process dimension was expected to lead to an enhanced level of new product advantage, a positive influence of only flexibility ( $\beta_{H9} = .408$ ) on new product advantage was found. The findings were non-significant for the influence of communication and cooperation on new product advantage ( $\beta_{H7} = -0.01$ ,  $\beta_{H8} = .181$ ). Although a direct path between competence trust and flexibility had been not hypothesized initially, while testing for a mediating effect of commitment between these two constructs, a significant positive influence of competence trust on flexibility was discovered ( $\beta = .348$ ). These findings are presented in Figure 6.

**Table 9: Three-Stage Least Squares Estimation Results**

System Weighted MSE = 0.9797  
Degrees of freedom = 153  
System Weighted R-Square = 0.3651

<b><i>Dependent Variable: New Product Advantage</i></b>					
Variable	df	Parameter Standard Estimate	Error	t-value	Significance
Intercept	1	2.034	1.055	1.93	0.063
COOP	1	0.181	0.178	1.02	0.317
COMM	1	-0.016	0.153	-0.11	0.915
FLEX	1	0.408	0.175	2.33	0.026

<b><i>Dependent Variable: Communication</i></b>					
Variable	df	Parameter Standard Estimate	Error	t-value	Significance
Intercept	1	0.86884	1.267	0.69	0.498
GTRUST	1	0.34814	0.171	2.03	0.051
CTRUST	1	-0.0019	0.187	-0.01	0.992
CMTMT	1	0.43996	0.212	2.07	0.047

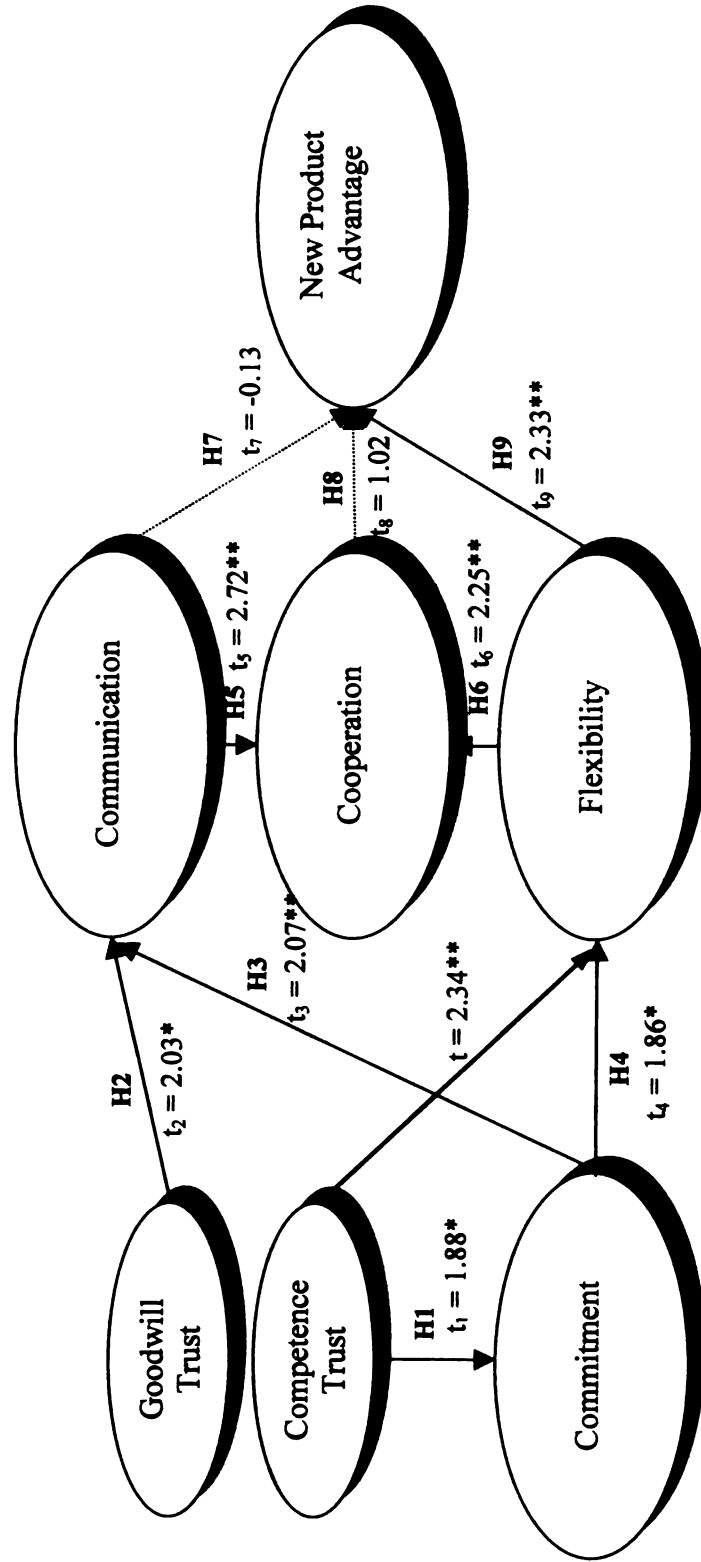
<b><i>Dependent Variable: Cooperation</i></b>					
Variable	df	Parameter Standard Estimate	Error	t-value	Significance
Intercept	1	1.806	0.904	2	0.055
COMM	1	0.368	0.135	2.72	0.011
FLEX	1	0.359	0.159	2.25	0.032

**Table 9 (cont'd)**

<b><i>Dependent Variable: Flexibility</i></b>					
Variable	df	Parameter Standard Estimate	Error	t-value	Significance
Intercept	1	1.029	1.026	1	0.323
CMTMT	1	0.315	0.169	1.86	0.072
CTRUST	1	0.348	0.149	2.34	0.026
GTRUST	1	0.118	0.136	0.87	0.391

<b><i>Dependent Variable: Commitment</i></b>					
Variable	df	Parameter Standard Estimate	Error	t-value	Significance
Intercept	1	4.50741	0.72392	6.23	<.0001
CTRUST	1	0.23779	0.12629	1.88	0.0688

**Figure 6: Results of the Tests Of The Hypotheses**



**\*\*** Significant at  $p < 0.05$ .

**\*** Significant at  $p < 0.10$ .

Dashed line indicates unsupported hypothesis

## **4.4 Discussion**

### **4.4.1 Summary of the Results**

The research suggests that proper disposition towards the co-development partnership is necessary because it leads to greater levels of communication, flexibility and cooperation. Flexibility is the key to creating superior products through collaboration. The results show that communication mediates the relationship between goodwill trust and cooperation. Although this finding seems contradictory with the conceptualizations of Anderson and Narus (1990) and Morgan and Hunt (1994), who found support for a relationship in the opposite direction, the reader must keep in mind that the current conceptualization of communication is unidirectional and it represents the communication of the focal firm with its partner.

Both dimensions of trust -competence trust and goodwill trust- eventually lead indirectly to cooperation. For cooperative collaboration, the partner has to be relied on both in terms of technical competence and for having good intentions. The results showed that the level of cooperation was enhanced with the existence of flexibility and communication. Only one of the collaboration dimensions was found to have a significant influence on new product advantage: flexibility.

### **4.4.2 Theoretical Implications**

Several extensions to the relationship management literature (Morgan and Hunt 1994) were attained in this research. These were (1) the two dimensions of the conceptualization of trust (adopted from Ganesan 1994) and their consideration with commitment, (2) the mediating role of communication between trust and cooperation, and (3) the mediating role of flexibility between commitment and cooperation.

Communication serves as a tool for expressing both the technological capabilities and good intentions to the partner and thus leads to higher levels of cooperation. A firm's flexibility in adjusting to its partner's needs and requests also facilitates cooperative behavior. Flexibility signals a concern on behalf of the firm for the long-run benefit of the collaboration and the sharing of a collective incentive to maintain the relationship. Flexibility has been found to have positive relational outcomes in export partnerships (Bello and Gilliland 1997). Similar to those findings, the current results show that willingness to adjust to the unfolding situations positively affects the superiority of the new product in co-development partnerships. Flexibility is found to be greatly influenced by the level of expectation of technical competence and the reliability of the partner. Willingness to exert effort on behalf of maintaining the relationship also manifests itself in a flexible mindset.

Although cooperation has been recognized as a key factor leading to positive relational outcomes (Anderson and Narus 1990, Morgan and Hunt 1994) in the marketing literature, the results failed to support the association between cooperation and new product advantage. Yet, one potential avenue for future research may be to investigate the influence of collaboration dimensions on creating innovative products. For instance, higher levels of cooperation may lead to more innovative products but not necessarily to other dimensions of product advantage (functionality, productivity, ease of use, reliability and compatibility).

#### **4.4.3 Managerial Implications**

Alliance situations are characterized by both strong inertial and adaptive forces (Doz 1996). A strong foundation for a co-development alliance constitutes the

fundamental basis for creating value through collaboration. Yet, the biggest challenge that calls for management attention in co-development alliances is sustaining the ongoing process of collaboration (Doz and Hamel 1998). This is because creating value in a new product alliance is not merely dependent on the best possible combination of resources, but also on transformation of this integrated know-how into value (Sarkar et al. 2001).

Trust and commitment are vital elements facilitating the transfer of tacit know-how and adaptation to the changing circumstances of the relationship. Yet, this finding should not be interpreted as meaning that co-development partners should be trusted and firm should be committed to the partnership regardless of the circumstances. Rather, the results imply that a firm should select a co-development partner on whom it could rely for technological competence as well as having good intentions, because in partnerships that are characterized with high levels of trust and commitment, more communication occurred and firms were willing to adapt as the requirements of the relationships changed. The high level of expectation of technically competent role performance and reliability on behalf of the co-development partner implies an enhanced level of commitment of the firm to the relationship. This commitment manifests itself in an open mindset for modifications to cope with changing circumstances. The high levels of commitment coupled with the expectation that a partner will not behave opportunistically even when the initial conditions change, implies that a firm will not hesitate to share critical information with that partner. This sharing is voluntary, which means that it is not forced by or limited to pre-specified agreements. Firms communicate voluntarily because they expect mutual gains from the collaboration.

The results show a positive influence of flexibility and communication on cooperation. This implies that the existence of teamwork among partners to achieve collective rather than individual gains is dependent on voluntary and timely sharing of critical information as well as on the willingness of the firm to adjust to changing circumstances. Although positive associations between all the collaboration process dimensions and new product advantage were hypothesized, only an influence of flexibility on new product advantage was supported. To cope with the many sources of new ideas and directions in which the product concept as well as the terms of the relationship may advance, a flexible approach to these changing circumstances is needed for creation of advantageous products.

Collaborative product development may reveal windows of opportunities for creating more innovative products, faster and better (Hagedoorn and Dysters 2002). Yet a downfall of co-development managers should avoid is technological myopia, that is, being blinded by the remarkable possibilities that the integration of resources could bring. Integration of resources may create a highly innovative product, which may not necessarily solve the customer problem. In that case, further collaborative work may be needed to improve the product in terms of functionality, ease of use, productivity and reliability. Current findings serve as a reminder for managers not to be lost in the vast opportunities that the collective capabilities bring, without keeping customer needs in mind. This will be elaborated on more in the following section.



## **CHAPTER 5**

### **CONCLUDING REMARKS**

The underlying motivation of this dissertation research was to discover and explain the role of inter-firm collaborations in creating new product advantages. The relational aspects as well as technological competencies of the partners were the focal point in this investigation. This study assessed multiple stages of collaborative product development (co-development) alliances. The first two parts aimed to identify the best foundation for a co-development alliance, i.e., one that maximizes the potential to create relational and technological synergies. Inter-organizational technical, strategic and relational alignments were found to be the bases for partner selection. The characteristics of the prospective partner as well as the innovativeness of firm strategy and disposition towards the partner were found to play important roles in the strategic decision of collaborating for new product development. The rationale of the third part was to determine the best practices that lead to sustained collaboration and product advantage during the operation stage of co-development partnerships. The disposition of the firm towards the co-development partner was found to have a significant role in facilitating the collaboration processes. Flexibility was found to be the key to enhancing product advantage.

The research questions in each of the studies were motivated by a synthesis of the relevant literature. The constructs and hypotheses for the first two studies were determined at the end of interviews with managers in the field. Although the hypotheses for the third study were developed based on the existing inter-organizational relationships

and new product development literatures, the interviews with managers provided a great deal of input for this study in terms of linking the concepts to the practice.

As a whole, this dissertation research sheds light on the process of establishing and sustaining collaborations to create new product advantages. In the following paragraphs the theoretical and managerial implications of all three research studies together will be discussed.

### **5.1 Summary of Theoretical Implications**

Kanter (1994) pointed out the role of a strong foundation for the success of an alliance relationship. Doz and Hamel (1998), on the other hand, emphasized the importance of a sustained collaboration in addition to a strong foundation, for creating value. In light of these two conceptual works, it is expected that a strong foundation with a potential to create synergy, as well as the processes undertaken to sustain the ongoing process of collaboration were necessary for creating superior products through collaboration. The gains from a partnership are to a great extent dependent on the partner's competence as well as its behavior. The emergent theory of partner selection developed in Chapter 2, revealed three stages of the selection process. These are technological, strategic and relational alignment stages. It was found that the emergent theory of collaboration choice in Chapter 3 was indivisible from the partner characteristics. This process theory consisted of three phases including strategic evaluation, partner evaluation and predisposition. In both of these studies, the confluence of the stages was supported by no single theory, but rather a consolidation of several theories, such as the new product development, resource-based view of strategic alliances, inter-organizational learning and relationship management literatures.

Chapter 4 was concerned with testing a model including factors leading to a sustained collaboration and new product advantage. The concepts in this model and their interrelations introduced valuable insights to the (very limited) co-development literature as well as the existing new product development, relationship management and alliance literatures. This research investigated factors that lead to superior products in a co-development partnership. Creating superior products through collaborative activities is a relatively new concept in the product development literature. Furthermore, the proficiency of collaboration processes as antecedents to new product advantage is a new concept in the product development literature.

## **5.2 Summary of Managerial Implications**

This dissertation research provides a comprehensive set of guidelines for managers who are currently involved in collaborative product development projects or are considering to be involved in one in the future. The three research studies that comprise this dissertation cover the foundation stage as well as the operation stage of co-development alliances. The first research study (Chapter 2) presents a process model of partner selection, based on successful cases from the field. This process model depicts the way in which a partner should be selected to ensure synergistic value creation and its sustainability. The second research paper (Chapter 3) reveals the phases that should be fulfilled in order for collaboration to be an acceptable and promising form of product development method. Furthermore, the third research paper (Chapter 3), reveals the main components for achieving greater levels of cooperation and superior products.

The main contribution of this study to managerial knowledge is the key role of trust in all stages of co-development partnerships. During the initiation stages, trust is build based primarily on inertial factors, such as the technical competence as well as the strategic stance of the partner. The level of trust has an important role on the collaboration processes during the operation stage. The partner has to be trusted in terms of having good intentions and technical competence in order for communication and to take place and for the firm to be able to adjust to unfolding situations, both of which lead to greater levels of communication.

An appropriate foundation is fundamental for ensuring the integration of know-how to create product value. A poor foundation is bound to lead to impaired collaboration processes, and to dissolution or poor product advantage. Therefore, managers have to take all stages seriously, including partner selection, decision for collaboration, and management, in order to gain benefits from co-development.

## **BIBLIOGRAPHY**

Abbot, Andrew (1990). A Primer on Sequence Method. *Organization Science* 1 (1): 375-92.

Achrol, Ravi S. (1997). Changes in the Theory of Interorganizational Relations in Marketing: Toward a Network Paradigm. *Journal of the Academy of the Marketing Science* 25 (1): 56-71.

Achrol, Ravi S. and Philip Kotler (1999). Marketing in the Network Economy. *Journal of Marketing* 63: 146-63.

Anderson, Erin and Barton Weitz (1992). The Use of Pledges to Build and Sustain Commitment in Distribution Channels. *Journal of Marketing Research* 29 (1): 18-34.

Anderson, James C. and James A. Narus (1990). A Model of Distributor Firm and Manufacturer Firm Working P. *Journal of Marketing* 54 (1): 42-58.

Appleyard, Melissa M. (2003). The Influence of Knowledge Accumulation on Buyer-Supplier Codevelopment Projects. *The Journal of Product Innovation Management* 20 (5): 356.

Armstrong, J. Scott and Terry S. Overton (1977). Estimating Nonresponse Bias in Mail Surveys. *Journal of Marketing Research* 14 (3): 396-402.

Athaide, Gerard A., Rodney L Stump, and Ashwin W Joshi (2003). Understanding New Product Co-Development Relationships in Technology-Based Industrial Markets. *Journal of Marketing Theory and Practice* 11 (3): 46-59.

Atuahene-Gima, Kwaku (1995). An Exploratory Analysis of the Impact of Market Orientation on New Product Performance: A Contingency Approach. *The Journal of Product Innovation Management* 12 (4): 275-93.

Barber, Bernard (1983). *Logic and Limits of Trust*. New Brunswick, NJ: Rutgers University Press.

Barney, Jay B. (1991). Firm Resources and Sustained Competitive Advantage. *Journal Of Management* 17 (1): 99-120.

Barney, Jay B. (1996). The Resource-Based Theory of the Firm. *Organization Science* 7 (5): 469-70.

Bello, Daniel C. and David I. Gilliland (1997). The Effect of Output Controls, Process Controls, and Flexibility on Export Channel Performance. *Journal of Marketing* 61 (1): 22-38.

Bidault, Francis and Thomas Cummings (1994). Innovating through Alliances: Expectations and Limitations. *R & D Management* 24 (1): 33-45.

Blackwell, Basil and Samuel Eilon (1991). *Global Challenge of Innovation*. Oxford: Butterworth-Heinemann.

Bronder, Christoph and Rudolf Pritzl (1992). Developing Strategic Alliances: A Conceptual Framework for Successful Co-Operation. *European Management Journal* 10 (4): 412-22.

Bucklin, Louis P. and Sanjit Sengupta (1993). Organizing Successful Co-Marketing Alliances. *Journal of Marketing* 57 (2): 32-46.

Chen, Roger and Mingfang Li (1999). Strategic Alliances and New Product Development: An Empirical Study of the U.S. Semiconductor Start-up Firms. *Advances in Competitiveness Research* 7 (1): 35-61.

Chesbrough, Henry William (2003). *Open Innovation: The New Imperative for Creating and Profiting from Technology*. Boston: Harvard Business School Press.

Chung, Seungwha, Harbir Singh, and Kyungmook Lee (2000). Complementarity, Status Similarity and Social Capital as Drivers of Alliance Formation. *Strategic Management Journal* 21 (1): 1-22.

Cohen, Wesley M. and Daniel A. Levinthal (1990). Absorptive Capacity: A New Perspective on Learning and Innovation. *Administrative Science Quarterly* 35 (1): 128-52.

Cooper, Robert G. (1992). The Newprod System: The Industry Experience. *The Journal of Product Innovation Management* 9 (2): 113-27.

Cooper, Robert G. and Elko J. Kleinschmidt (1987). New Products: What Separates Winners from Losers? *The Journal of Product Innovation Management* 4 (3): 169-84.

Cronbach, L. J. (1951). Coefficient Alpha and the Internal Structure of Tests. *Psychometrika* 16: 287-334.

Das, T. K and Bing-Sheng Teng (1999). Managing Risks in Strategic Alliances. *Academy of Management Executive* 13 (4): 50-62.

Das, T. K. and Bing Sheng Teng (2000). A Resource Based Theory of Strategic Alliances. *Journal of Management* 26 (1): 31-61.

Das, T. K. and Bing-Sheng Teng (1998). Between Trust and Control: Developing Confidence in Partner Cooperation in Alliances. *The Academy of Management Review* 23 (3): 491-512.

Das, T. K. and Bing-Sheng Teng (2001a), "A Social Exchange Theory of Strategic Alliances," in Cooperative Strategies and Alliances. Lausanne, Switzerland.

Das, T. K. and Bing-Sheng Teng (2001b). Trust, Control, and Risk in Strategic Alliances: An Integrated Framework. *Organization Studies* 22 (2): 251-83.

Day, George S. and Robin Wensley (1988). Assessing Advantage: A Framework for Diagnosing Competitive Superiority. *Journal Of Marketing* 52 (2): 1-20.

Deck, Mark and Mark Strom (2002). Model of Co-Development Emerges. *Research Technology Management* 45 (3): 47-54.

Dev, Chekitan S., Saul Klein, and Reed A. Fisher (1996). A Market-Based Approach for Partner Selection in Marketing Alliances. *Journal of Travel Research* 35 (1): 11-17.

Doz, Yves L. (1996a). The Evolution of Cooperation in Strategic Alliances: Initial Conditions or Learning Processes? *Strategic Management Journal* 17 (55-78).

Doz, Yves L. (1996b). The Evolution of Cooperation in Strategic Alliances: Initial Conditions or Learning Processes? *Strategic Management Journal* 17 (Summer): 55-78.

Doz, Yves L. and Gary Hamel (1998). *Alliance Advantage: Creating Value through Partnering*. Boston, MA: Harvard Business School Press.

Dyer, Jeffrey H. and Harbir Singh (1998). The Relational View: Cooperative Strategy and Sources of Interorganizational Competitive Advantage. *The Academy of Management Review* 23 (4): 660-79.

Eisenhardt, Kathleen M. (1989). Building Theories from Case Study Research. *The Academy Of Management Review* 14 (4): 532-51.

Eisenhardt, Kathleen M. and Claudia Bird Schoonhoven (1996). Resource-Based View of Strategic Alliance Formation: Strategic and Social Effects in Entrepreneurial Firms. *Organization Science* 7 (2): 136-50.

Emden, Zeynep, Attila Yaprak, and S. Tamer Cavusgil (2004). Learning from Experience in International Alliances: Antecedents and Firm Performance Implications. *Journal of Business Research* in press, available at [www.sciencedirect.com](http://www.sciencedirect.com).

Gatignon, Hubert and Jean-Marc Xuereb (1997). Strategic Orientation of the Firm New Product Performance. *Journal of Marketing Research* 34 (1): 77-90.

- Geringer, J. Michael (1988). Partner Selection Criteria for Developed Country Joint Ventures. *Business Quarterly* 53 (1): 55-62.
- Glaister, Keith W. (1996). Uk-Western European Strategic Alliances: Motives and Selection Criteria. *Jurnal of Euromarketing* 5 (4): 5-35.
- Gnyawali, Devi R. and John H. Grant (1997). Enhancing Corporate Venture Performance through Organizational Learning. *International Journal of Organizational Analysis* 5 (1): 74-98.
- Grant, Robert M. (1996). Toward a Knowledge-Based Theory of the Firm. *Strategic Management Journal* 17: 109-22.
- Gulati, Ranjay (1995). Does Familiarity Breed Trust? The Implications of Repeated Ties for Contractual Choice in Alliances. *Academy of Management Journal* 38 (1): 85-112.
- Gundlach, Gregory T., Ravi S. Achrol, and John T. Mentzer (1995). The Structure of Commitment in Exchange. *Journal of Marketing* 59 (1): 78-92.
- Hagedoorn, John (2002). Inter-Firm R&D Partnerships: An Overview of Major Trends and Patterns since 1960. *Research Policy* 31 (4): 477.
- Hagedoorn, John (1993). Understanding the Rationale of Strategic Technology Partnering: Interorganizational Modes of Cooperation and Sectoral Differences. *Strategic Management Journal* 14 (5): 371-85.
- Hagedoorn, John and Geert Dysters (2002). External Sources of Innovative Capabilities: The Preference for Strategic Alliances or Mergers and Acquisitions. *The Journal of Management Studies* 39 (2): 167.
- Hamel, Gary (1991). Competition for Competence and Inter-Partner Learning within International Strategic Alliances. *Strategic Management Journal* 12: 83-103.
- Han, Jin K. , Namwoon Kim, and Rajendra K. Srivastava (1998). Market Orientation and Organizational Performance: Is Innovation a Missing Link? *Journal of Marketing* 62 (4): 30-45.
- Hanson, Dave and Conway Lackman (1998). Managing through Cultural Differences. *Competitiveness Review* 8 (2): 46-54.
- Heide, Jan B. (1994). Interorganizational Governance in Marketing Channels. *Journal of Marketing* 58 (1): 71-85.
- Hill, Robert C. and Don Hellriegel (1994). Critical Contingencies in Joint Venture Management: Some Lessons from Managers. *Organization Science* 5 (4): 594-607.



- Hitt, Michael A M. Tina Dacin, Edward Levitas, Jean-Luc Arregle, and Anca Borza (2000). Partner Selection in Emerging and Developed Market Contexts: Resource-Based and Organizational Learning Perspectives. *Academy of Management Journal* 43 (3): 449-67.
- Hummel, J.M., W. Van Rossum, G.J. Verkerke, and G. Rakhorst (2000). The Effects of Team Expert Choice on Group Decision-Making in Collaborative New Product Development: A Pilot Study. *Journal of Multicriteria Decision Analysis* 9 (1-3): 90-98.
- Hurley, Robert F. and G. Tomas M. Hult (1998). Innovation, Market Orientation, and Organizational Learning: An Integration and Empirical Examination. *Journal of Marketing* 62 (3): 42-54.
- Inkpen, Andrew C. (1996). Creating Knowledge through Collaboration. *California Management Review* 39 (1): 123-40.
- Inkpen, Andrew C. (1998). Learning and Knowledge Acquisition through International Strategic Alliances. *The Academy of Management Executive* 12 (4): 69-80.
- Inkpen, Andrew C. (2000). Learning through Joint Ventures: A Framework of Knowledge Acquisition. *The Journal of Management Studies* 37 (7): 1019-43.
- Iyer, Karthik (2002). Learning in Strategic Alliances: An Evolutionary Perspective. *Academy of Marketing Science Review [Online]* 10.
- Jassawalla, Avan R. and Hemant C. Sashittal (1998). An Examination of Collaboration in High-Technology New Product Development Processes. *The Journal of Product Innovation Management* 15 (3): 237-55.
- Johnson, Jean L., John B. Cullen, Tomoaki Sakano, and Hideyuki Takenouchi (1996). Setting the Stage for Trust and Strategic Integration in Japanese-U.S. Cooperative Alliances. *Journal of International Business Studies* 27 (5): 981-1004.
- Kahn, Kenneth B. (1996). Interdepartmental Integration: A Definition with Implications for Product Development Performance. *The Journal of Product Innovation Management* 13 (2): 137-50.
- Kahn, Kenneth B. (2001). Market Orientation, Interdepartmental Integration, and Product Development Performance. *The Journal of Product Innovation Management* 18 (5): 314.
- Kanter, Rosabeth Moss (1994). Collaborative Advantage: The Art of Alliances. *Harvard Business Review* 72 (4): 96-108.
- Khanna, Tarun (1998). The Scope of Alliances. *Organization Science* 9 (3): 340-55.

Kogut, Bruce (2000). The Network as Knowledge: Generative Rules and the Emergence of Structure. *Strategic Management Journal* 21 (3): 405-25.

Korsgaard, M. Audrey, David M. Schweiger, and Harry J. Sapienza (1995). Building Commitment, Attachment, and Trust in Strategic Decision-Making Teams: The Role of Procedural Justice. *Academy of Management Journal* 38 (1): 60-84.

Kotabe, Masaaki and K. Scott Swan (1995). The Role of Strategic Alliances in High-Technology New Product Development. *Strategic Management Journal* 16 (8): 621-36.

Kreiner, Kristian and Majken Schultz (1993). Informal Collaboration in R & D. The Formation of Networks across Organizations. *Organization Studies* 14 (2): 189-209.

Labov, William and Jashua Waletzky (1967), "Narrative Analysis: Oral Versions of Personal Experience," in *Essays on the Verbal and Visual Arts*. Seattle: University of Washington Press, p. 12-44.

Lambe, C. Jay, C. Michael Wittman, and Robert E. Spekman (2001). Social Exchange Theory and Research on Business-to-Business Relational Exchange. *Journal of Business-to-Business Marketing* 8 (3): 1-36.

Lei, David, John W Slocum Jr., and Robert A Pitts (1997). Building Cooperative Advantage: Managing Strategic Alliances to Promote Organizational Learning. *Journal of World Business* 32 (3): 203-23.

Li, Tiger and Roger J. Calantone (1998). The Impact of Market Knowledge Competence on New Product Advantage: Conceptualization and Empirical Examination. *Journal of Marketing* 62 (4): 13-29.

Link, Albert N. and Laura L. Bauer (1989). *Cooperative Research in U.S. Manufacturing: Assessing Policy Initiatives and Corporate Strategies*: Rowman & Littlefield.

Littler, Dale, Fiona Leverick, and Margaret Bruce (1995). Factors Affecting the Process of Collaborative Product Development: A Study of Uk Manufacturers of Information and Communications Technology Products. *The Journal of Product Innovation Management* 12 (1): 16-33.

Luo, Yadong (1999). The Structure-Performance Relationship in a Transitional Economy: An Empirical Study of Multinational Alliances in China. *Journal of Business Research* 46 (1): 15-31.

MacNeil, Ian R. (1980). *The New Social Contract: An Inquiry into Modern Contractual Relations*. New Haven, CT: Yale Univ Press.

Madhavan, Ravindranath and Rajiv Grover (1998). From Embedded Knowledge to Embodied Knowledge: New Product Development as Knowledge Management. *Journal of Marketing* 62 (4): 1-12.

Madhok, Anoop and Stephen B. Tallman (1998). Resources, Transactions and Rents: Managing Value through Interfirm Collaborative Relationships. *Organization Science* 9 (3): 326-39.

McCann, Joseph E. and John Selsky (1984). Hyperturbulence and the Emergence of Type 5 Environments. *The Academy of Management Review* 9 (3): 460-70.

Mockler, R.J. (2001). Making Decisions on Enterprise-Wide Strategic Alignment in Multinational Alliances. *Management Decision* 39 (2): 90.

Mohr, Jakki and Robert Spekman (1994). Characteristics of Partnership Success: Partnership Attributes, Communication Behavior, and Conflict Resolution Techniques. *Strategic Management Journal* 15 (2): 135-52.

Moorman, Christine, Gerald Zaltman, and Rohit Deshpande (1992). Relationships between Providers and Users of Market Research: The Dynamics of Trust within and between Organizations. *Journal of Marketing Research* 29 (3): 314-28.

Morgan, Robert M. and Shelby D. Hunt (1994). The Commitment-Trust Theory of Relationship Marketing. *Journal of Marketing* 58 (3): 20-38.

Mowery, David C., Joanne E. Oxley, and Brian S. Silverman (1996). Strategic Alliances and Interfirm Knowledge Transfer. *Strategic Management Journal* 17: 77-91.

Noteboom, Bart (1996). Trust, Opportunism and Governance: A Process and Control Model. *Organization Studies* 17 (6): 985-1010.

Olson, Eric M., Orville C. Jr. Walker, and Robert W. Ruekert (1995). Organizing for Effective New Product Development: The Moderating Role of Product Innovativeness. *Journal of Marketing* 59 (1).

O'Reilly, Charles A. III, Chatman Jennifer, and Caldwell David F. (1991). People and Organizational Culture: A Profile Comparison Approach to Assessing Person-Organization Fit. *Academy of Management Journal* 34 (3): 487-516.

Parkhe, Arvind (1991). Interfirm Diversity, Organizational Learning, and Longevity. *Journal of International Business Studies* 22 (4): 579-602.

Parkhe, Arvind (1993). Partner Nationality and the Structure-Performance Relationship in Strategic Alliances. *Organization Science* 4 (2): 301-24.

- Pentland, Brian T. (1999). Building Process Theory with Narrative: From Description to Explanation. *The Academy of Management Review* 24 (4): 711-25.
- Perks, Helen (2000). Marketing Information Exchange Mechanisms in Collaborative New Product Development. *Industrial Marketing Management* 29 (2): 179-89.
- Porter, Michael E. (1980). *Competitive Strategy: Techniques for Analyzing Industries and Competitors*. New York: The Free Press.
- Powell, Thomas C. (1992). Organizational Alignment as Competitive Advantage. *Strategic Management Journal* 13 (2): 119-34.
- Reed, Richard and Robert J. DeFillippi (1990). Casual Ambiguity, Barriers to Imitation, and Sustainable Competitive Advantage. *The Academy of Management Review* 15 (1): 88-101.
- Reichers, Arnon E. (1985). A Review and Reconceptualization of Organizational Commitment. *Academy of Management Review* 10 (3): 465-76.
- Rindfleisch, Aric and Christine Moorman (2001). The Acquisition and Utilization of Information in New Product Alliances: A Strength-of-Ties Perspective. *Journal of Marketing* 65 (2): 1-18.
- Ring, Peter Smith and Andrew H. Van De Ven (1992). Structuring Cooperative Relationships between Organizations. *Strategic Management Journal* 13 (7): 483-98.
- Saez, Cristina Bayona, Teresa Garica Marco, and Emilio Huerta Arribas (2002). Collaboration in R&D with Universities and Research Centres: An Empirical Study of Spanial Firms. *R & D Management* 32 (4): 321-42.
- Saint-Onge, Hubert (1996). Tacit Knowledge: The Key to the Strategic Alignment of Intellectual Capital. *Strategy & Leadership* 24 (2): 10-14.
- Sampson, Rachelle C. (2002), "Experience, Learning & Collaborative Returns in R&D Alliances.," in Working Paper Series. available at: <http://pages.stern.nyu.edu/~rsampson/abstract.htm#choice>.
- Sarin, Shikhar and Vijay Mahajan (2001). The Effect of Reward Structures on the Performance of Cross-Functional Product Development Teams. *Journal of Marketing* 65 (2): 35-53.
- Sarkar, M. B., Raj Echambadi, S. Tamer Cavusgil, and Preet S. Aulakh (2001). The Influence of Complementarity, Compatibility, and Relationship Capital on Alliance Performance. *Journal of the Academy of the Marketing Science* 29 (4): 358-73.

Saxton, Todd (1997). The Effects of Partner and Relationship Characteristics on Alliance Outcomes. *Academy of Management Journal* 40 (2): 443-60.

Shan, Weijian (1990). An Empirical Analysis of Organizational Strategies by Entrepreneurial High-Technology Firms. *Strategic Management Journal* 11 (2): 129-39.

Simonin, Bernard L (1999). Transfer of Marketing Know-How in International Strategic Alliances: An Empirical Investigation of the Role and Antecedents of Knowledge Ambiguity. *Journal of International Business Studies* 30 (3): 463-90.

Sinkula, James M, William E Baker, and Thomas Noordewier (1997). A Framework for Market-Based Organizational Learning: Linking Values, Knowledge, and Behavior. *Journal of the Academy of Marketing Science* 25 (4): 305-18.

Sivadas, Eugene and F. Robert Dwyer (2000). An Examination of Organizational Factors Influencing New Product Success in Internal and Alliance-Based Processes. *Journal of Marketing* 64 (1): 31-49.

Slater, Stanley F. and John C. Narver (1995). Market Orientation and the Learning Organization. *Journal of Marketing* 59 (3): 63-74.

Smith, Brock and Donald W. Barclay (1997). The Effects of Organizational Differences and Trust on the Effectiveness of Selling Partner Relationships. *Journal of Marketing* 61 (1): 3-21.

Souder, William E. (1988). Managing Relations between R&D and Marketing in New Product Development Projects. *The Journal of Product Innovation Management* 5 (1): 6-19.

Tse, David K., June Francis, and Jan Walls (1994). Cultural Differences in Conducting Intra- and Inter-Cultural Negotiations: A Sino-Canadian Comparison. *Journal of International Business Studies* 25 (3): 537-55.

Tyler, Beverly B. and H. Kevin Steensma (1998). The Effects of Executives' Experiences and Perceptions on Their Assessment of Potential Technological Alliances. *Strategic Management Journal* 19 (10): 939-65.

Van De Ven, Andrew H. (1976). On the Nature, Formation, and Maintenance of Relations among Organizations. *The Academy of Management Review* 1 (4): 24-36.

Whittaker, Erica and D. Jane Bower (1994). A Shift to External Alliances for Product Development in the Pharmaceutical Industry. *R & D Management* 24 (3): 249-61.

Wind, Jerry and Vijay Mahajan (1997). Issues and Opportunities in New Product Development: An Introduction to the Special Issue. *Journal of Marketing Research* 34 (1): 1-12.

Wooldridge, Bill and Steven W. Floyd (1990). The Strategy Process, Middle Management Involvement, and Organizational Performance. *Strategic Management Journal* 11 (3): 231-41.

Xie, Jinhong, X. Michael Song, and Anne Stringfellow (1998). Interfunctional Conflict, Conflict Resolution Styles, and New Product Success: A Four-Culture Comparison. *Management Science* 44 (12): 192-20.

Yan, Aimin, Yadong Luo, and John Child (2000). *International Joint Ventures: Theory and Practice*. Boston: M.E.Sharpe.



MICHIGAN STATE UNIVERSITY LIBRARIES



3 1293 02504 3419