THE ATTITUDES OF PURCHASING MANAGERS WORKING AT THE LEADING MANUFACTURING ENTERPRISES IN TURKEY TOWARDS SUPPLY CHAIN COLLABORATION: A PROPOSED MODEL BASED ON INTER-ORGANIZATIONAL TRUST, INFORMATION SHARING AND COMMITMENT

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The Attitudes of Purchasing Managers Working at the Leading Manufacturing Enterprises in Turkey towards Supply Chain Collaboration: A Proposed Model Based on Inter-Organizational Trust, Information Sharing and Commitment

ABSTRACT

Collaborative supply chains have been receiving attention of the academic researchers, especially, for the last decade. The challenging conditions of the prevailing global competition has raised the necessity of designing collaborative supply chains in order to be able to sense and respond to the changes in the task and general environment. This dissertation focuses on the relationships among the members of supply chains, with special emphasis on the role of inter-organizational concepts, such as trust, information sharing and commitment. This study is an attempt to depict a path towards the creation of collaborative supply chains through explaining the proposed causal relationships between these variables based on the attitudes of the managers working at the leading industrial enterprises of Turkey.

A model is developed and related hypotheses are constructed based on the relevant academic literature and then tested through measuring attitudes of purchasing and supply chain executives of the leading manufacturing enterprises in Turkey announced annually by Istanbul Chamber of Industry. The survey that has been run within this study employs an interval scale questionnaire applied, both, on-line and face-to-face on the respondents. The research findings provide useful implications to be considered on the way to establish a collaborative supply chain. The study is a first attempt to reveal the attitudes of business professional towards the nature inter-organizational in the context of the proposed model in the dissertation.

KEYWORDS: supply chains, collaboration, trust, information sharing, commitment, value creation, purchasing managers, attitude measurement, manufacturing enterprises, Turkey.

ÖZET

Türkiye'nin Önde Gelen Sanayi Kuruluşlarında Çalışan Satınalma Yönetcilerinin Tedarik Zincirinde İşbirliğine Yönelik Tutumları : Örgütler Arası Güven, Bilgi Paylaşımı ve İlişkiye Bağlılık Tabanlı İlişkiler Üzerine Bir Model Önerisi

Tedarik zincirinde işbirliği kavramının irdelenmesine yönelik olarak özellikle son on yılda birçok akademik araştırma yürütüldü. Yürütülen çalışmalar küresel rekabetin baskıları altında içinde bulunduğu çevredeki değişimleri önceden tahmin ve tespit edebilen yenilikçi bir tedarik anlayışının geliştirilmesinin gerekliliğini ortaya koymaktadır. Bu doktora tezi, güven, bilgi paylaşımı ve ilişkiye bağlılık gibi kavramları kullanarak tedarik zincirinde işbirliğine giden süreçte örgütler arası ilişkilerin rolünü, Türkiye'nin önde gelen sanayi kuruluşlarında çalışan satınalma yöneticilerinin konuya yönelik tutumlarını bir model çerçevesinde irdelemek yoluyla ortaya çıkarmayı amaçlamaktadır.

Bu amaca yönelik olarak geçerli akademik literatürden hareketle tasarlanan model, İstanbul Sanayi Odası tarafından her yıl açıklanan Türkiye'nin önde gelen sanayi kuruluşlarında çalışan satınalma yöneticileri üzerine uygulandı. Beşli aralığa sahip Likert ölçeği uygulanarak yürütülen araştırmanın sonunda elde edilen verilerin faktör analizi ile regresyon yöntemleri kullanılarak çözümlenmesi sonucunda, tedarik zincirinde işbirliğine giden süreçte hakim algıların neler olduğu ve önerilen model kapsamında bunların işbirliği sürecini nasıl etkileyebileceğine dair bilimsel geçerliliği olan faydalı bulgulara ulaşıldı. Bu doktora çalışması önerilen model bağlamında bu yönde yürütülmüş ilk araştırma olma özelliğini taşımaktadır.

ANAHTAR SÖZCÜKLER: tedarik zinciri, işbirliği, örgütler arası satınalma ilişkileri, satınalma müdürleri, güven, bilgi paylaşımı, ilişkiye bağlılık, tutum çözümlemeleri

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There are many people who put considerable effort and made contributions to build up this dissertation. First and foremost, I would like to thank Prof. Dr. Murat Ferman of Işık University, my dissertation advisor, for giving the continuous motivation that I always needed to overcome the obstacles I encountered on the way to bring about this dissertation. I also thank the members of my dissertation committee, Prof. Dr. Toker Dereli of Işık University and Prof. Dr. Sedef Akgüngör of Dokuz Eylül University, who significantly contributed to the development of this study and provided constructive critiques starting from the early stages.

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To My Wife Gülru.

Grateful For Her Love and Tenderness…

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CHAPTER 1

INTRODUCTION

1.1. The Context and the Aim of the Dissertation

The global way of doing business, which is undergoing a transformation from industrial to the information age, poses perils for both business and society, through alternating success stories with news of product and project failures (Österle, *et.al.*, 2001). Drastic changes occurred in the business environment during the last two decades and forced the organizations to cope with the challenging task of responding to unpredictable and shifting customer demands. An unprecedented number and variety of products, faster product development and increasingly flexible manufacturing systems are the characteristics of today's intensive global competition (Yan and Woo, 2003).

Efficient coordination of strategic initiatives, such as quality improvement, customer service, and new product development have both become essential with emergence of main competitive requirements for speed and quality. (Lewicki, *et.al.*, 1998). Organizations constantly seek for new ways of developing value-added processes in order to become innovative, high-quality, low-cost producers possessing the capability to deliver value on time, with reduced cycle times and greater responsiveness than ever before (Çetindamar, *et.al.*, 2005). The feeling of uncertainty has never been as great as it is now, which highlights the fact that supply chain capability is as important to a company's overall strategy as overall product strategy (Lummus and Vokurka, 1999).

The aim of this dissertation is to present a comprehensive insight into the new paradigm of value generation process and its components, namely *inter-organizational trust*, *information sharing* and *commitment*, by utilizing a proposed theoretical model based on supply chain collaboration (SCC) perspective.

The reason for studying inter-organizational collaboration within the framework of supply chain management is due to the increasing academic emphasis on the supply chains as the major channels for delivering enhanced customer value. The relevant literature suggests that the overall performance of the companies will hinge on the responsiveness of the entire supply chain system. This is a consequence of the increasing need for agile organizations with better ability to sense-and-respond to rapidly changing and heavily globalized markets.

The former conditions of markets somehow allowed individual businesses to act as autonomous entities (Sanchez and Nagi, 2001). However, under the circumstances of current global business environment, companies do face a more intense competition and therefore are forced to seek for new revenue opportunities as well as increasing organizational efficiencies. The phenomenon encourages the replacement of the adversarial relationships of traditional supply chain which is based on the premise of attaining lower prices as the dominant performance criterion, with the contemporary approach of collaboration.

Today, more than ever, businesses depend on strategic relations with their customers and suppliers to create value systems that will provide a competitive edge in the market (Handfield and Nichols, 2002), which explains the reason why the companies increasingly see themselves as part of a supply chain that has to compete against other supply chains (Jack, *et.al.*, 2002, McClellan, 2003). Since supply chain management (SCM) is growing in importance due to increased competition in markets, the acceptance of a wider focus for evaluating dynamics of organizational change and its full impact on company fortunes seem to be necessary (Akintoy, *et.al.*, 2000).

The competitive advantage perspective created by supply chain management includes the creation of efficiencies in the supply chain that is oriented towards providing better customer value than competitors (Martin and Grbac, 2003). In basic terms, customer value is created through two mechanisms; reducing costs and increasing customer responsiveness. In order to accomplish these two highly

challenging tasks, there is a strong need for creating an effective SCM system, which can improve a firm's performance through several means including, building strong supplier relationships that enhance a firm's ability to respond to its customer more effectively (Martin and Grbac, 2003).

Collaboration appears as the key factor to achieve sustainability of competitive advantage through creating value for customers. Collaborative relationships, which are conceded as the most sophisticated form of supply chain partnering, enable trading partners to work together for a better understanding of future demand and to put plans in place satisfy it profitably (Boyson, *et.al.*, 2004). Creating inter-organizational collaboration between members of a supply chain helps both parties to eliminate cost items via diminishing the cost of interaction and inventories and enables the supply chain become more proactive, rather than reactive. The widely heralded connection between market orientation and supplier relationships shed light on how supplier relationship add value to a company through improved profitability and enhanced ability to respond to changing customer preferences (Martin and Grbac, 2003).

Supply chain collaboration (SCC) can be defined as two or more independent firms jointly working to align their supply chain processes as to create value to end consumers and stakeholders with greater success than acting alone (Simatupang, *et.al,.* 2004). Reports from real world practice show that supply chain collaboration brings benefits for all participating members (Ireland and Bruce, 2000). The collaborative business model requires a new form of supply chain system with the "primary goal of exceeding consumers' expectations and acting as entities beyond their own organizational boundaries" (Seifert, 2003). Collaborative SCM goes beyond exchanging and integrating information between suppliers and their customers, and involves tactical joint decision making among the partners in the areas of collaborative planning, forecasting, distribution and product design (Kumar, 2001).

Supply chain collaboration, unlike adversarial working relationships within and beyond the organizations, suggests that efficiency and innovation can no longer be solely an internal management function (Akintoy, *et.al.*, 2000). The result of collaborative SCM is not only the reduction of waste in the supply chain, but increased responsiveness, customer satisfaction, and competitiveness among all members of the partnership (McLaren, *et.al.*, 2002). SCC is more than a change in scope rather it is a change in attitude, that is to say, being away from adversarial attitude of conflict and becoming oriented towards mutual support and coordination among members of the supply chain system (Wilding and Humphries, 2006).

1.2. Research Objectives and Design

The proposed model in the dissertation is designed to explore the factors that are capable of defining the variables in the hypotheses constructed and determine the relationship between the extracted factors and the ways they interact with each other. The research attempts to obtain tangible conclusions that will help in understand how the links between the variables are formed.

The research is conducted with the help of a summated rating questionnaire (Likert Scale), consisting 55 items. This research tool is designed to enable the researcher to measure the attitude of supply chain managers of the leading manufacturing enterprises of Turkey, regarding the related propositions posed by the model.

The theoretical grounds for the causal relationships have been set after a through a comprehensive review of the relevant literature on organizational theory, marketing theory, knowledge management and SCM. As the recent studies emphasize the importance of '*trust*' concept and regards it as 'glue that binds the system', this very concept is selected as the major ground for the entire research. Each variable and the anticipated causal relationships between these variables are placed within a theoretical frame and supported by existing literature as well as being examined in the field survey. For the field study/research, the sample is selected as the leading

hundred manufacturing enterprises of Turkey (as of year 2005), announced annually by Istanbul Chamber of Industry (ISO)[1].

The research questions that are posed in this dissertation are as follows:

> i) Is trust perceived to be pre-requisite to create an inter-organizational environment of information sharing and commitment among the members of a supply chain?
>
> ii) Does the degree of information sharing determine the perceived degree of collaboration?
>
> iii) Does the degree of commitment determine the perceived degree of collaboration?

The first research question is analyzed through testing two hypotheses (H_1 and H_2) based on the concept of *'trust',* which is widely accepted as the fundamental building block on the way to cultivate collaboration within the framework of the proposed model, based on the relevant literature.

The second research question is analyzed through testing H_3 based on *'information sharing',* which is accepted as the essential component in order to communicate demand information to chain members so that they can make product, component, and material available at the proper points in the supply chain when they are need (Ireland and Crum, 2005). Any time members of a supply chain fail to share information, each business enterprise along the chain must estimate (or forecast) what product will be needed, in what quantity, and when. This would cause the risk of uncertainty, which current companies should avoid more than ever.

[1] İstanbul Sanayi Odası

The third research question will be analyzed through testing H_4 based on *'commitment'* to establish and maintain mutual relationships. The concept of commitment suggests that supply chain members are expected to allocate resources and invest in relation specific assets in order to pave the way to collaboration.

CHAPTER 2

THEORY AND CONCEPTS

2.1 Theoretical Framework

This chapter is designed to provide a general academic point of view to display retrospective and prospective arguments on inter-organizational collaboration within the context of supply chain management concept.

2.1.1. The Evolution of Purchasing Notion

It will be appropriate to start delineating the early stages of purchasing as an organizational function and provide an evolutionary perspective on supply chain management. The general appearance of purchasing function, following the three decades after World War II, was characterized by the traditional view of adversarial contingencies between buyers and suppliers. During early 1960s and mid-1970s, firms had vertical organization structures[2] and optimization of activities was focused on functions (Chandra and Kumar, 2000). Firms appeared to be far from recognizing the true impact of purchasing function, as buyers were charged with three major tasks, which were (i) buy at a low price, (ii) ensure timely delivery and (iii) guarantee an agreed upon level of quality (Davis and Spekman, 2004).

Purchasing, had been perceived as a cost reduction function (Fung, 1999) and there was a special emphasis on avoiding to become dependent on a single supplier (Davis and Spekman, 2004). Gadde and Persson (2004) depicts the purchasing environment of that time as follows:

[2] Early supply chain integration efforts, usually involving full ownership, were often called "vertical integration" (Stonebreaker and Afifi, 2001).

> "The high priority task of organizational buyers was to select the best offer in each situation and achieve the lowest price, on the basis of assumption that there was no difference in the value of offerings of various suppliers and the cost of dealing with those suppliers, irrespective of which vendor was used, were supposed to be identical."

The way the purchasing relationships were built between the buyers and the suppliers, allowed the buyers to easily dissolve the relationship if the suppliers had failed to meet their obligations or if the resource was no longer needed, which was referred to as "arm's length" relationships and were characterized by little or no investment in assets, minimal information exchange (Hoyt and Huq, 2000), inexpensive to operate, impose little interdependence and make it possible for the buying companies to switch between various alternative suppliers when better conditions were offered elsewhere (Gadde and Persson, 2004). Under the environmental conditions of the so-called "early stage" of the evolution of purchasing function, organizations were run by rigid management systems which employed relatively untrained and large intermediary staffs in order to warrant necessary information flow and the control of processes (Stonebreaker and Afifi, 2004).

As late as 1969, logistics, the predecessor of supply chain concept, was still in infancy as a modern management approach (Liu and Kumar, 2003). Development of this management function did not take place until the late 1970s, when the higher commodity prices, an economy of shortages (Davis and Spekman, 2004) and the pressures of competition caused by surging oil prices imposed the firms to adopt a careful management of purchasing inputs (Fung, 1999). This led the firms to face the fact that purchasing was more than a clerical or administrative function, but a strategic one.

Although the role of purchasing function started to gain the strategic insight by early 1980s, especially with the beach-head studies by Kraljic (1982), Hakansson (1982) and Spekman (1988), "the transactions between buyers and sellers still tended to rely on arm's-length agreements, based on market price up to early 1990s" (Hoyt and

Huq, 2000). That was also the time when drawbacks of vertical integration had become clearer; as such type of integration was proposed to limit competition and increase risk and diseconomies of scale (Ellram, 1991)[3]. Focusing solely on the basic functioning of purchasing was turned out to be deceiving, as purchasing might "accomplish to receive a favorable purchase price variance through negotiations, but the cost of producing the finished product might surge due to inefficiencies in the plant, which raised a necessity to look across the entire supply chain to gauge the impact of decisions made by every single business unit" (Lummus and Vokurka, 1999).

The transaction-oriented purchasing approach, made it difficult to utilize the specific capabilities of the various suppliers under the conditions of overall business re-orientation of that time, researchers began to stress the need for building long-term relationships between buyers and suppliers, based on the empirical evidence suggesting that close long-term relationships between customers and suppliers have a beneficial impact on performance (Giannakis and Croom, 2004)[4].

Starting from mid-1990s, corporations all over the world have started to experience increasing local and global competition and strategic alliances have taken their places on business agendas. Just-in-time (JIT) processes changed the focus of manufacturing systems "from low cost to high quality, from management instruction to employee and visibly controlled processes, and from adversarial to partner focused supplier relations" (Stonebreaker and Afifi, 2004). Synchronous manufacturing and agile manufacturing have become prevailing paradigms under the circumstances of the noticeable shift from mass production to customized products (Chandra and Kumar, 2000). During the same period of time, it is possible to observe the attention given by academics to strategic purchasing and SCM being described from a theoretical standpoint to clarify how it differed from traditional approaches to managing the flow of materials and the associated flow of information (Ellram and Cooper, 1990).

[3] as cited in Wilding and Humphries (2006).
[4] as cited in Wilding and Humphries (2006).

A transitional presentation of purchasing dynamics is presented below in Figure 1.

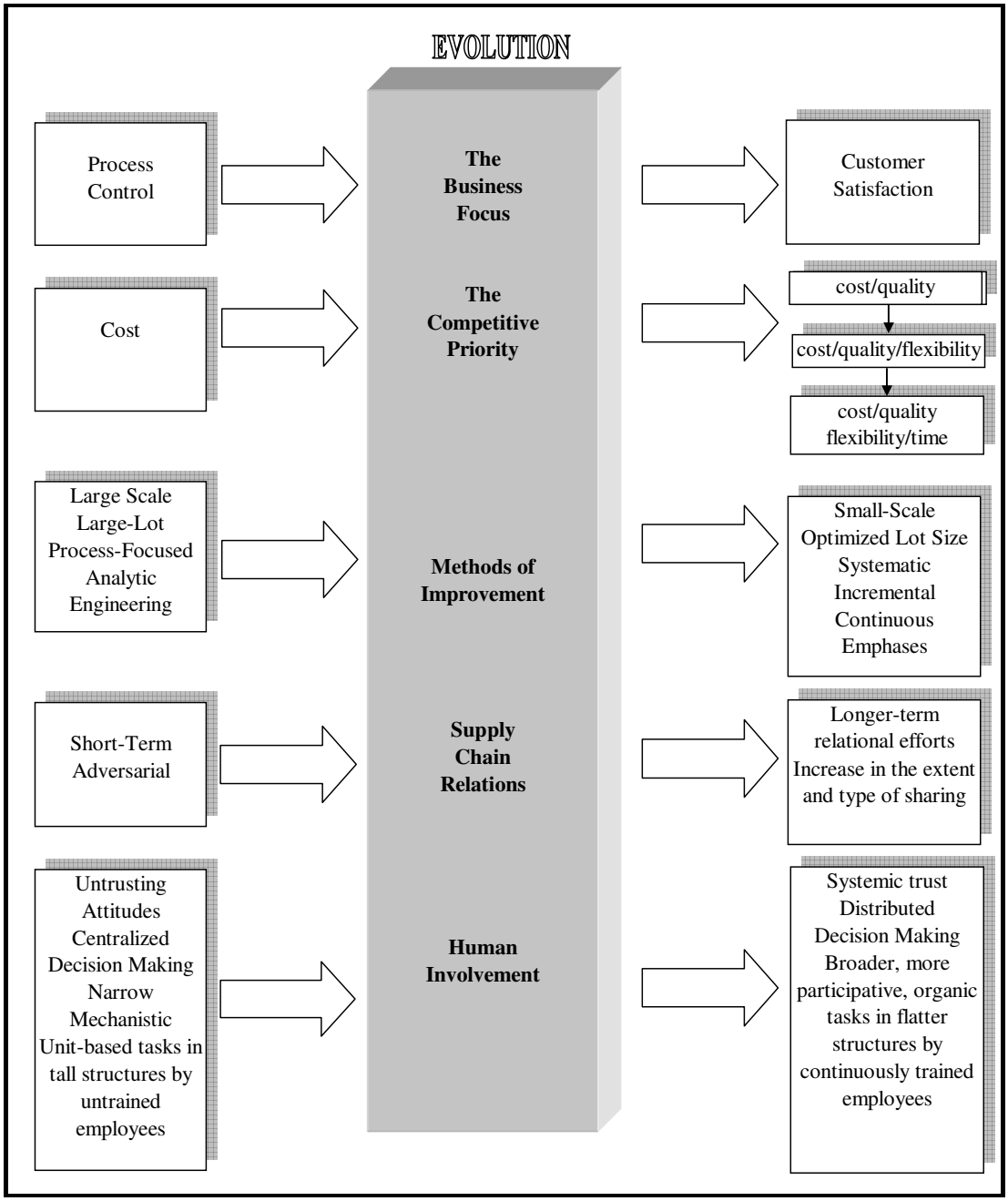


Figure 1. An Evolutionary Approach to the Concept of Purchasing (adapted by author based on Stonebreaker and Afifi, 2004)

Purchasing has been recognized as a core component of SCM and the theoretical construct of strategic purchasing was conceptualized by its proactive manner and strategically managed supplier relationships (Chen and Paulraj, 2004). Within the theoretical framework regarding economic transactions, it was argued that the markets would favor actors whose behavioral repertories are biased toward cooperation rather than opportunism, with a special emphasis on asset specificity and trust (Hill, 1990). Since the profit is best achieved, not through cost reductions alone, but through the provision of competitive products or services that give total customer satisfaction (Fung, 1999), inclusion of external interactivity and adoption of flexible manufacturing systems have both become inevitable. When the constant change of customers' buying habits is taken into consideration, the importance of attaining external and internal efficiency is an undisputable concept in adapting to the new paradigm. Concentrating on the development of collaborative advantage, rather than on competitive advantage, (Figure 2) highlights the fact that the business world is composed of a network of interdependent relationships, developed and fostered through strategic collaboration with the goal of deriving mutual benefits (Chen and Paulraj, 2004).

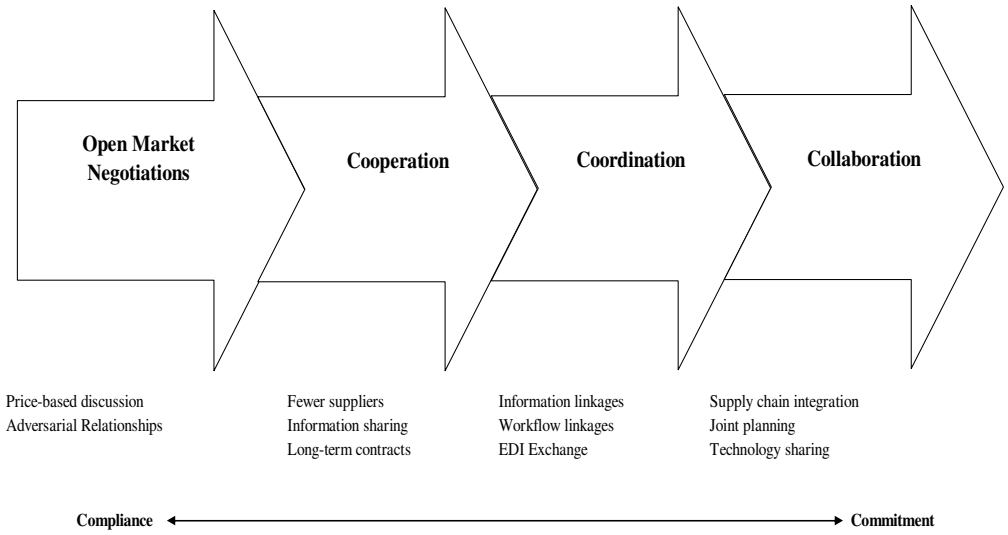


Figure 2. The Key Transition from Open-Market Negotiations to Collaboration (Davis and Spekman, 2004).

This paradigm is fostered by the creation of customer value as an undisputable core component of enhanced long-run firm performance and is achieved within the supply chain domain through reducing costs and increasing responsiveness to customers' needs (Martin and Grbac, 2003). This challenging task is harder to accomplish under the conditions of today's global markets and requires a shift from contractual thinking to alliance like thinking (Table 1).

Designing and maintaining an efficient and effective supply chain, which is possible through gaining and internalizing the notion of customer focus (Chen and Paulraj, 2004), is a matter of becoming a proactive and an adaptive enterprise with an ability to respond to shifting market needs along with the anticipated competitor actions in a direction that will enable the firm possess a long-run competitive advantage (Figure 3). A typical poorly performing supply chain is a warranty of failure as it pushes the product through to the customer, have low overall reliability and maintain high inventory levels to achieve fulfillment rates (Chandra and Kumar, 2000).

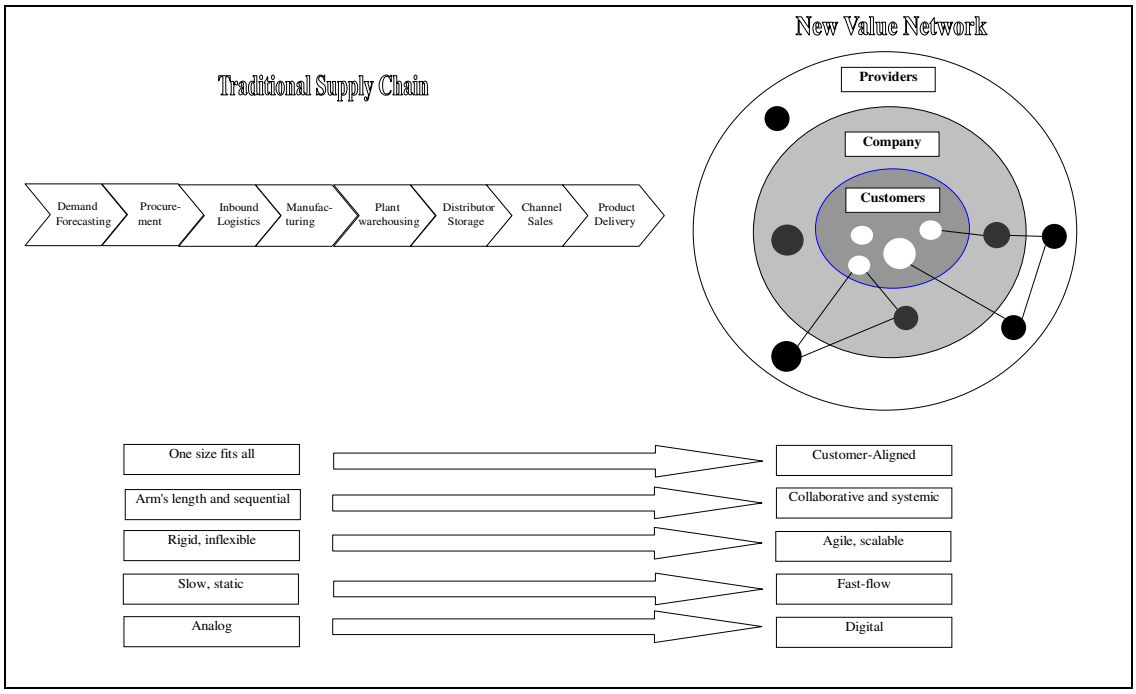


Figure 3. The Shifting Paradigm from Traditional Supply Chains to New Value Networks (Banfield, 1999)

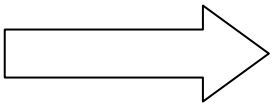
From Contractual Thinking		To Alliance-Like Thinking
Risk Mitigation		Value creation
Overzealous protection and fear		Facilitation and collaboration
Narrow and rigid interpretation		Expansive, flexible, adaptive
Emphasis on legal correctness		Balance legal logic with common sense

Table 1. Understanding the Differences in Contractual Thinking and Alliance-Like Thinking (Davis and Spekman, 2004)

The utilization of customer relationship management applications imposes the firms to be customer-aligned, removing the so-called "one size fits all" implementations. Firms are forced to respond to new offerings customized to the specific needs of different segments of the market with similar and highly personalized offerings. The proliferation of product variety for multiple countries, customer segments and distribution outlets, along with the heightened expectations of customer and shortening product life-cycles (Dong and Chen, 2005), pose challenging issues for the supply chain managers in forecasting, inventory management and production planning (Lee, 2000, Simchi-Levi, *et.al*., 2003)

Collaborative and systemic design of supply chains, both upstream and downstream, on the grounds of agile and scalable manufacturing understanding has turned out to be inevitable for firms to achieve sustainable growth, rather than a futuristic business philosophy. The evolution from direct supply chain to an extended supply chain can be distinguished through observing the partners involved. The direct supply chain consisted of 'a supplier' and 'a customer', whereas the extended supply chain encompasses suppliers' suppliers and customers' customers (Bagchi, *et.al.*, 2007).

The global way of doing business has stressed great deal of necessity on coordinating processes across many sites, reduction in the number of suppliers, formation of organizational and process flexibility (Lummus and Vokurka, 1999) and taking strategic initiatives that foster superior relationships (Chen and Paulraj, 2004), in order to cope with the ever – increasing pressures of mass customization.

2.1.2. Inter-organizational Collaboration: Theories of Organizations Visited

As it has been mentioned in Chapter 1, this dissertation aims to deal with the inter-organizational collaboration phenomenon in the context of supply chain management, which is still characterized as embryonic by various scholars in spite of the tremendous amount of attention it has received for the last two decades. Prior to application of this phenomenon to supply chains, a review of relevant theories of organization is anticipated to provide a better understanding of its roots and components.

2.1.2.1. Transaction Cost Theory (TCT)

During 1980s, Williamson's (Oliver E.Williamson) TCT had served as a widely acknowledged theory offering a plausible explanation of how organizations deal with the risk of transacting business across their boundaries (Williamson, 1979, Jones, *et al.*, 1997[5]). The theory has a significant contribution to the study of inter-organizational exchange because it enables researchers to elaborate on the nature and degree of risks in transactions, as well as the grounds it has provided on which governance mechanisms are built in order to minimize those risks. Pena and Arroyabe (2002) explain TCT (sometimes known as Transaction Cost Economics) briefly as follows:

[5] as cited in Hoyt and Huq (2000).

> "The theory of transaction costs, in short, suggests that both the human factor (economic agents, that is) and the actual nature of transactions – with respect to the goods transferred and environments in which they are performed – is determined by cost. With the aim of minimizing the latter in different circumstances, control of exchanges is postulated by means of developing agreements between the agents intervening in the transactions. These materialize into contracts (in Williamson's terminology) or contractual structures, minimum cost being the guiding criterion towards the different types of contract".

Basically, there are three dimensions that characterize transactions. These three critical dimensions are uncertainty, the frequency with which transactions recur and the degree to which durable transaction-specific investments are incurred (Williams, 2000). Gjalt and Nooteboom (2000) stress the two behavioral assumptions of Williamson, which consist the foundation of transaction cost economics because "both, independently but especially in conjunction, create transaction costs"; opportunism and bounded rationality.

Under the assumption of bounded rationality it is suggested that the economic actors have limited rationality. It refers to the "limited cognitive abilities of human agents to select the optimal solution to any given organizational problem" (Williams, 2000). This limited ability stems from the incomplete information about market conditions which inhibits the company to make predictions about the future and derive relevant implications, which lead people and organizations to make mistakes (Gjalt and Nooteboom, 2000).

Another basic assumption of TCT appears as "opportunism". It suggests that "some economic agents will cheat; use deceptive practices, or take advantage of undisclosed information when information asymmetries exist" (Williams, 2000). Human agents, as Williamson knows them, "will not keep their promises and they defect from the letter and the spirit of an agreement when it suits their purposes" (Gjalt and Nooteboom, 2000).

According to this theory, “organizations exist because of their superior abilities to attenuate human opportunism through the exercise of hierarchical controls that are not accessible to the markets” (Ghoshal and Moran, 1996). TCT assumes that “in absence of some form of governance mechanism, agreements between organizations will always be subject to risks from opportunistic behavior” (Hoyt and Huq, 2000). Williamson argues that “rational firms will not make dedicated investments unless the resulting transaction-specific assets can be safeguarded” (Gjalt and Nooteboom, 2000).

Although, for about three decades, the theory provided grounds for researchers who studied on how to explain governance mechanisms in supply chains, when the current situation of the markets where institutional environments and exchange practices are more advanced, the appropriateness of TCT appears to be losing its explanatory power (Ghoshal and Moran, 1996). One of the assumptions of the theory is that “firms are located in a static environment of stable technology, stable consumer preferences and stable arenas of competition” (Gjalt and Nooteboom, 2000), which seriously contradicts with the current global competitive environment of responsiveness, mass-customization and continuous innovation.

Wilding and Humphries (2006) propose contemporary concepts of collaboration as they challenge adversarial dimensions offered by Williamson, indicate; “TCT is not a dynamic theory and it ignores the relational aspects of cooperation such as trust which evolve over time and change the nature of the transactions themselves”. Madhok and Tallman (1998) argue that “opportunism to the detriment of a partner could certainly occur and would also lead to failure, but this need not be assumed when an alliance fails.” The increasing emphasis on inter-organizational trust and collaboration in the context of supply chains has weakened the major arguments of TCT. Especially, the one suggesting that relation specific asset investment makes them become locked-in because of increasing switching costs, which makes the investing firm more dependent (Gjalt and Nooteboom, 2000).

2.1.2.2. Resource-Based View (RBV)

RBV (also known as Resource Based Theory), is built on the grounds of earlier works of industrial economists and received considerable attention in the strategy literature since the mid-1980s. RBV aims to explain the basis of competitive advantage of a firm through highlighting the importance of possessing strategic assets (bundle of resource) that are rare, valuable, costly to imitate and have barriers to appropriability (Wernerfelt, 1984, Fahy and Smithee, 1999, Barney, 2001), in order to be able to achieve and sustain advantages. Within the RBV framework, Barney (2001) suggests that, a firm can only be said to have a sustainable competitive advantage if it has the capability of pursuing value creation strategy. Besides, the firm should ensure that this strategy is not simultaneously being implemented by any current potential competitors and when other firms are unable to duplicate the benefits of this strategy. Prior to his paper published in 2001, it was asserted by Barney (1999) that "transforming a short-run competitive advantage into a sustained competitive advantage requires that these resources are heterogeneous in nature and not perfectly mobile".

The important dimensions of the RBV can be delineated as "the role of managers in the development and deployment of resources and the relationship between resources and the scope of the firm" (Fahy and Smithee, 1999). RBV focuses more on acquisitions, though it provides a rationale for partnerships through suggesting the combination of existing firm-specific and leverage external resources, which can also be named as complementary resources (Ziegler, 2004). It also "provides a conceptually grounded framework for assessing strengths and weaknesses and enables strengths or weaknesses to be examined in terms of the criteria for establishing sustainable competitive advantage" (Fahy and Simthee, 1999).

2.1.2.3. Knowledge-Based View (KBV)

The increasing role of knowledge as a main source of competitive edge and value creation is accepted as the kernel of the prevailing "new economy". KBV approach is heavily affected from RBV; it can be even claimed that it has actually been derived from RBV. This view (KBV) suggests that "the control and protection of tacit knowledge, that is most difficult to imitate and relatively immobile, constitutes the basis for a sustainable competitive advantage" (Desmond, 2002). As Eisenhardt and Santos (2002)[6] state:

> "Given the current theoretical perspectives on knowledge, knowledge is not yet a theory of strategy (a theory that links independent variables to a specific conception of firm performance) that goes beyond the insights provided by the resource-based view and the related dynamic capabilities approach[7]. That is, once knowledge is conceptualized as a resource, the thinking (KBV) becomes a resource-based view of the firm."

2.1.2.4. Social Exchange Theory (SET)

SET, stemming from the academic roots of social psychology and sociology, implies a "two-sided, mutually contingent, and mutually rewarding process involving transactions, or simply exchange" (Emerson, 1976). Homans (1958) delineates the insight of the theory by in his distinguished paper as follows:

> "Social behavior is an exchange of goods, material goods but also non-material ones, such as the symbols of approval or prestige. Persons that give much to others try to get much from them, and persons that get much from others are under pressure to give much to them. This process of influence tends to work out at equilibrium to a balance in the exchanges. For a person in an exchange, what he gives may be a cost to him, just as what he gets may be a reward, and his behavior changes less as the difference of the two, profit, tends to a maximum."

---

[6] as cited in Desmond (2002)

[7] Dynamic Capabilities Approach focuses on transforming and renewing of firm capabilities. Having its origin from the study of Prahalad and Hamel (1990), the approach stresses the need for external capabilities, which can be acquired from the market or utilized through acquisitions, partnerships and alliances (Ziegler, 2004).

The SET approach argues that attitudes and behaviors are "determined by the rewards of interaction minus the cost of that interaction" (Griffith, *et.al.*, 2006), that is to say "Profit = Reward Cost" (Homans, 1958). According to Lee (2001), the relationship is seen as "a dynamic process through specific sequential interactions in which two participants carry out activities with one another and exchange valuable resources". When the theoretical perspective of SET is applied on supply chain relationships, Griffith, *et.al.*, (2006) argue:

> "If a firm perceives the resource allocations equitable in its relationship, it reciprocates the supplier's policies of distributive justice by engaging in behaviors targeted to extending the relationship, thus ensuring the continued receipt of rewards.
>
> "The relationship, founded on positive attitudinal and behavioral responses, enhances the supply chains flexibility in adjusting to changing marketing conditions. Once long-term orientation and relational behaviors develop in a supply chain relationship, partners are more willing to make short-term concessions to their partner as the attitudes and behaviors provide a belief that over time the concessions will be reciprocated."

The trustworthiness between the actors is shown and evolving mutually and sequentially (Ziegler, 2004). It is possible to observe to special emphasis on issues of channel power and justice within the framework of this theory.

2.1.3. The Need for Supply Chain Collaboration (SCC)

The organizational theories mentioned above, provide a general framework to gain the insight of inter-organizational relationships on the way to constitute a specific model for SCC. There are reasons for building customer-supplier partnerships. Those can be specified as the need to reduce manufacturing costs, create the ability to deal with uncertainty, shortening product lifecycles, and create organizational flexibility (Hoyt and Huq, 2000). Supply chain technology goes further in examining how to collaborate with business partners seamlessly and synchronize inter-organizational business processes to produce greater efficiencies and realize more value (Liu and Kumar, 2003).

The issue of dealing with uncertainty appears as an issue which is challenging to tackle under the conditions of global markets. There is a great supply chain exposure to the risk of failing to respond volatile market demand. Supply chain processes are surrounded by uncertainty, which has been blamed for unusually high levels of inventory throughout the entire chain to shortages, either of which cause supply chain sub-optimum results (Kwon and Suh., 2005).

When the supply chain system fails to avoid uncertainty, it becomes diffused throughout the network and leads to inefficient processing and non-value added activities, as well as stimulating the decision maker to utilize safety buffers through creating excess capacity or inventory (Jack, *et.al.*, 2005). The need for variability and the volatile marketplace increase the need for agile supply chains with high level of maneuverability. The more a supply chain is capable of reading and responding to actual demand in the market, the more market sensitive it becomes (McEvily and Zaheer, 2005; Simatupang and Sridharan, 2005). The benefits of collaboration in this perspective are presented in Figure 4 and 5 in the following pages.

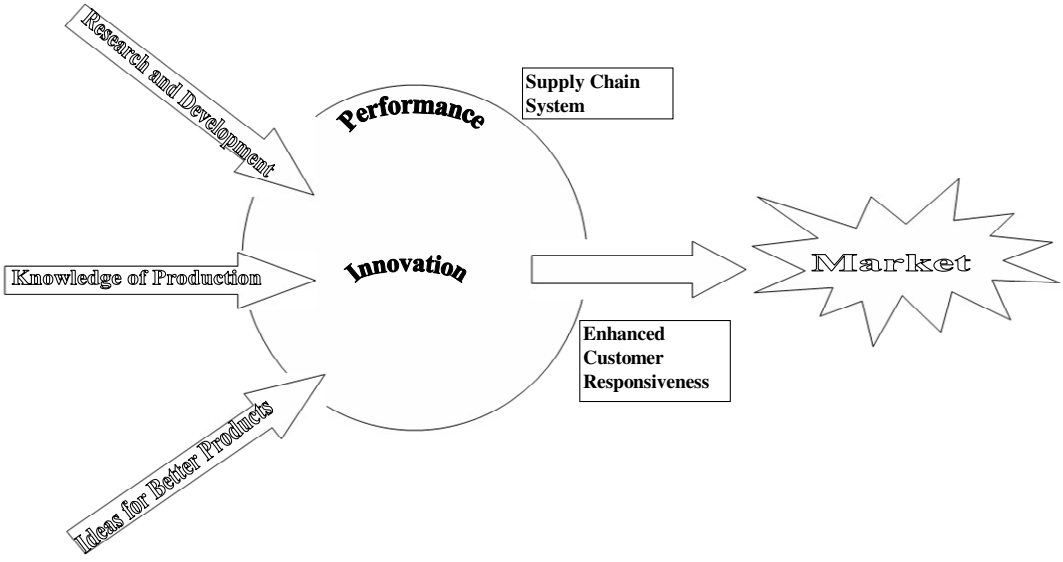


Figure 4. Benefits of Collaboration (adapted by the Author based on Corsten and Felde, 2005)

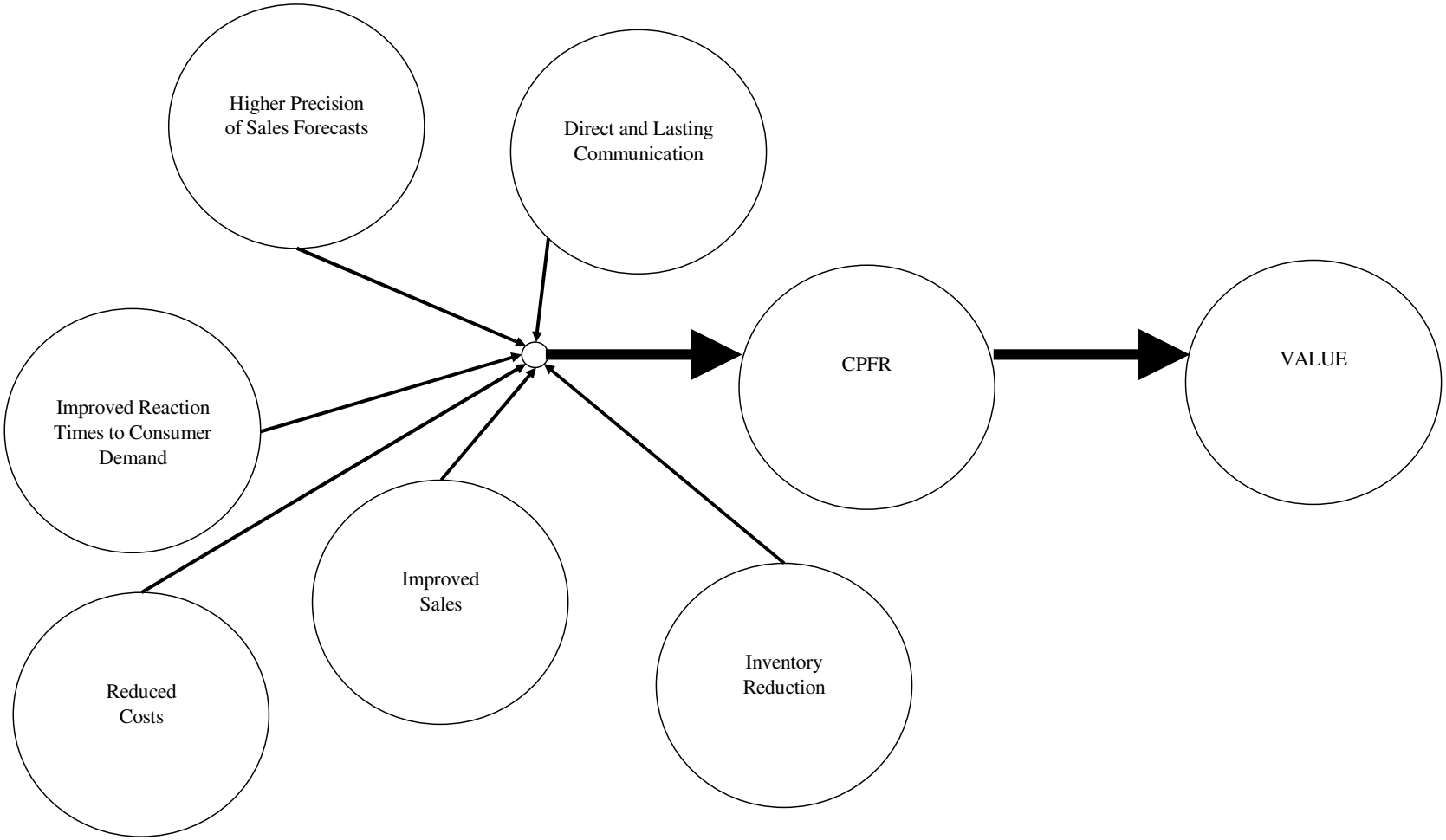


Figure 5. Creating Value Through Dynamics of Collaboration (adapted by author based on Seifert, 2003)

As suggested by Corsten and Felde (2005), "collaboration is a specific form of relational exchange, which implies creating value together". The illustration above indicates how value is created through enhanced customer responsiveness, which is a function of innovation. It is argued that supplier relationships enhance a firm's ability to respond to its customers more effectively (Martin and Grbac, 2003). Customer responsiveness has been suggested as a comprehensive management concept, under the title of 'efficient consumer response' (ECR) by Seifert (2003) and suggested as the origin of collaborative planning, forecasting and replenishment (CPFR)[8], according to which retailing and manufacturing work together to make the supply chain efficient, rational and oriented toward the needs of the consumer. ECR[9] has been defined to be "based on vertical collaboration in manufacturing and retailing with the objective of an efficient satisfaction of consumer needs" (Seifert, 2003; Sahay, 2003). Handfield and Bechtel (2002) remind us the fact that there is a new breed of customers that demand increased responsiveness and flexibility to a dynamic set of requirements (Table 2). According to their argument, "in these new supply chains buying firms are purchasing not only their suppliers' products or services, but also their suppliers' systems and capabilities, which in turn require high level of coordination".

CPFR, at this point, when implemented, performs a vital function for the supply chain system. Establishment of close ties with suppliers will enable the buyer company to receive contribution in terms of innovative activities, which will mitigate the cost of research and development. The transfer and incorporation of the valuable knowledge, possessed by the supplier, into manufacturing will increase the efficiency in fulfillment processes and reduce cycle time, as well as enabling "cost savings from improved synchronization of physical goods flows and a greater reactivity to volatile demand" (Bonet and Pache, 2005).

[8] "CPFR is an initiative among all participants in the supply chain intended to improve the relationship among them through jointly managed planning processes and shared information" (Seifert, 2003).
[9] A 1993 study by Kurt Salmon Associates projected that proper implementation of "Efficient Consumer Response" which called for greater supply chain co-ordination, could save the grocery industry an estimated $30 billion annually in USA (Kulp, *et.al.*, 2004).

Collaboration	Building trust among trading partners
	Reducing channel conflict
	Enhancing channel services
	Pricing based on market conditions and value versus standard pricing
	Responding to customer needs and demands versus the pushing of products from supply chain to customers
	Adopting standard business documents, terms and processes

Table 2. Requirements of Collaboration (Chae and Hansjoerg, 2005)

SCC enables to establish the link between supply and demand (removing the isolated forecasting and planning), design competing supply chains that deliver improved performance and exploit the advantages of closer relationships that themselves foster more opportunities for greater improvement (Barratt, 2004). Sahay (2003) confirms that incorporation of collaboration into to the supply chain system enables the partners gain a better understanding of future demand and allows them to implement more realistic programs to meet that demand. Wilding and Humphries (2006) highlight the necessity of collaboration and suggest that "bounded rationality could be averted by enabling mutual creativity through approaches such as open contracts, joint innovation, applying stretch targets, ensuring disputes are resolved quickly and fairly and finally by taking a long term view of the relationship".

The awareness of the advantages, though, should not lead us not to neglect the potential threats on the way to build supply chain collaboration. Madhok and Tallman (1998) highlight the necessity of readiness of both parties to engage in an integration process as follows:

> "Basically, cooperation has an inherent economic value which justifies the push toward alliances. Yet extracting the value from them is complicated and difficult and requires a shift in the manner by which firms structure and approach their interactions with other firms who are their partners. The shift

> in orientation that is away from opportunism and from cost to investment in future value is a fundamental one with critical implications for the manner in which inter-firm cooperative relationships are managed."

In consistence with the arguments of TCT, the perceived costs of building collaboration plays an important role on the decision to be made whether to accept or decline to initiate such an attempt. Alexander (1995) stresses the importance of how these costs are perceived and notes that "in relation to the organization's expected rewards from participation in the coordinated effort, these costs may be perceived as the risk of losing or spending scarce resources or a threat to the organization's critical values." If the firm sees a risk of "a threat of dissolving the organization's fundamental integrity or undermining its basic", such perception could be dealt with only if "the anticipated benefits of inter-organizational coordination outweigh the perceived risks for an organization", which could be argued to be consistent with the framework of SET approach.

On the other hand, in spite of the proven difficulties on the way to implement SCC (Sabbath and Fontanella, 2002), its potential to offer significantly improved performance cannot be overlooked (Ireland and Bruce, 2000). Incorporating the point of view presented by RBV, it would be appropriate to argue that firms should form collaborative relationships with their supply chain partners, in order to be able to achieve and sustain a competitive advantage. As stated by Powell, *et.al.* (1996) "a firm's value and ability as a collaborator is related to its internal assets, but at the same time, collaboration further develops and strengthens those internal competencies".

Instead of economizing on transactions costs, creating an adaptive organizational structure through formation of collaboration (Narus and Anderson, 1996) has been established as a imperative in turbulent environments. The long-established pattern of adversarial interactions between retailers and their suppliers is "rapidly giving way to collaboration (Figure 6), with both sides working together to improve effectiveness of transactions and information in the supply chain" (Hyvönen and Tuominen, 2005).

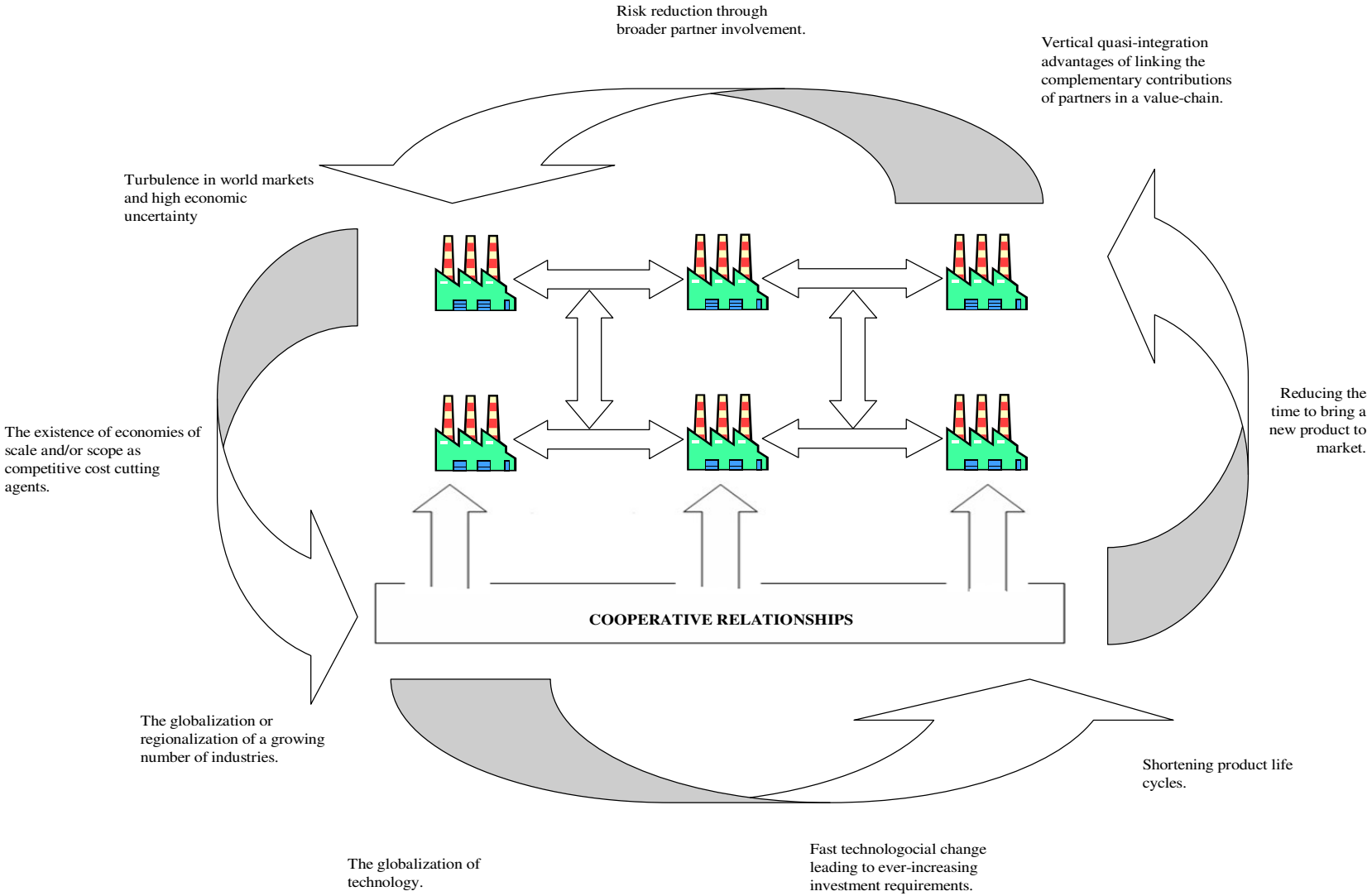


Figure 6. The Driving Competitive Motives for Collaborative Relationships (adapted and expanded by the Author based on McClellan, 2003)

There are various studies in literature on supply chain management that deal with elements of inter-organizational collaboration. The need for nurturing an internalized collaborative culture within the organizations, which consists of a number of elements such as trust, mutuality, information exchange and openness to communication, decision synchronization and incentive alignment, is underscored by relevant arguments literature (Barratt, 2004; Simatupang and Sridharan, 2005). Sahay (2003) highlights that collaboration requires the involvement of customers and suppliers in the chain; and their involvement calls for commitment and trust over an extended time period and includes the elements of sharing of information, risks and rewards. Of these factors, information exchange, trust and commitment, together serve as the building blocks of the research model (Figure 7) upon which the empirical research has been built in this dissertation.

2.2. Deciphering the Model: The Conceptual Framework

Understanding the assumptions of the conceptual framework of the research is crucial in order to be able to establish the links between the literature and variables placed in the model.

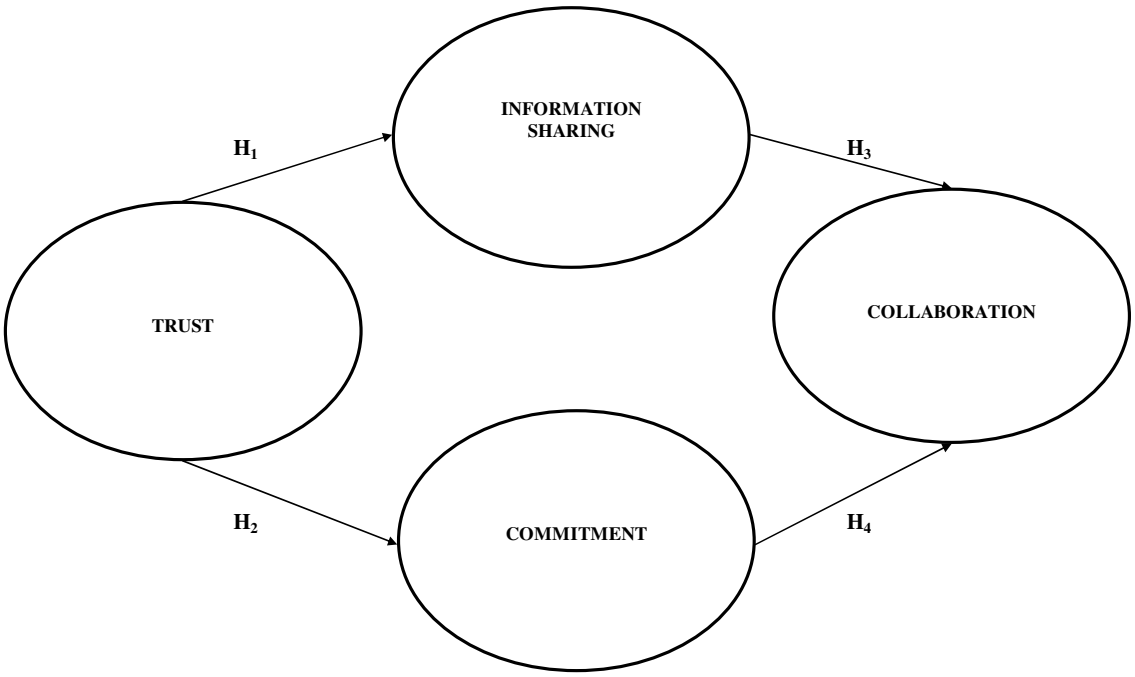


Figure 7. The Proposed Model

The proposed model in the dissertation consists of four hypotheses, which have been designed to decipher the causal relationships between the variables of the model that are argued to be the building blocks of supply chain collaboration. A thorough review of relevant literature reveals that there exist significant relationships between established variables of the model. Distinguishing from most of the studies conducted in this field, the concept 'inter-organizational trust' is accepted as a prerequisite for the entire system to be utilized.

The theoretical grounds of the model are presented in the following sections, so that the formation of the hypotheses, the conceptual framework and its underlying assumptions can be articulated in a clear fashion.

2.2.1. The *Siné-Qua-Non* of Collaborative Supply Chains: Trust

Trust is the essential intangible asset of effective alliances that keep organizations together and facilitates concerted action. It is the fundamental building block of collaboration (McClellan, 2003) and inter-organizational trust constitutes the core variable of the proposed model within the framework of this dissertation. According to this proposed model, information sharing and commitment cannot be achieved, unless it is founded. Therefore the hypotheses related to trust element are stated in the following manner (Figure 8):

H_1 : Information sharing between the members of the supply chain cannot be established unless inter-organizational trust exists.

H_2 : Commitment between members of the supply chain cannot be established unless inter-organizational trust exists.

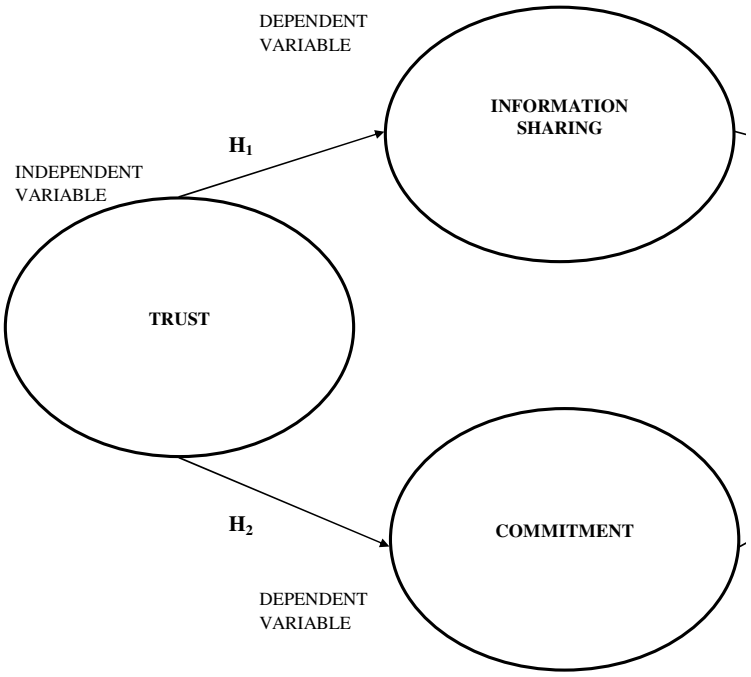


Figure 8. Proposed Links between Inter-Organizational Trust and Commitment

The concept of 'trust' is widely heralded as the binding bond of inter-organizational relationship and is argued to be highly critical element in relation to efficient institutionalization of buyer-supplier relationships (Rinehart, 2007). Recognition of the resulting strategic impact of trust and distrust relationships on overall competitiveness (Figure 9), which is mostly characterized by the prevailing uncertainty and complexity, have led researchers to focus on the efficiencies of trust and explaining its emergence (Lewicki, *et.al.*, 1998). Consequently, within the ranks of managers, trust is recognized as a major issue in building supplier relationships (Creed and Miles, 1996).

According to Powell (1990), trust functions as "a remarkably efficient lubricant to economic exchange that reduces complex realities far more quickly and economically than prediction, authority, or bargaining". Sako (1992) suggests that trust plays a critical role for the flow of open and truthful information between

buyers and suppliers, especially when "proprietary information such as sales orders and inventories or information on future business plans facilitate collaboration".

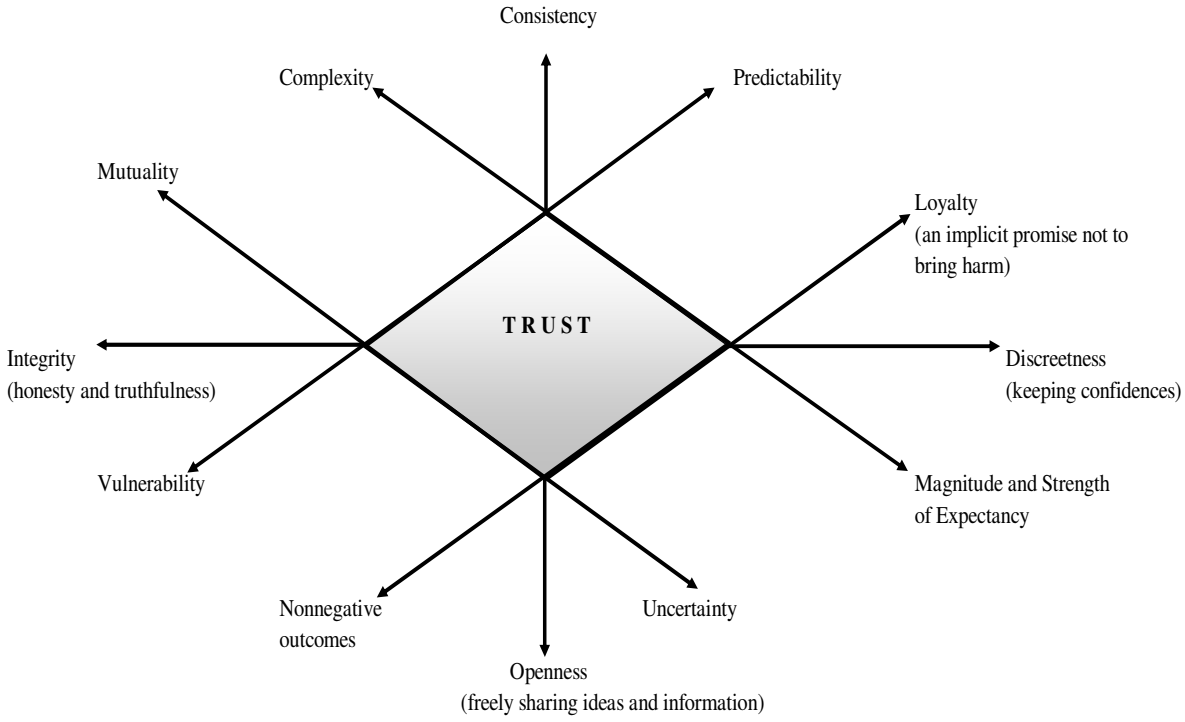


Figure 9. Prominent Characteristics of Trust (adapted and expanded by the Author based on Lewicki and Bunker, 1996, De Laat, 1997, Lewicki, *et.al.*, 1998, Bhattacharya, *et.al.*, 1998, Bigley and Pearce, 1998, Kramer, 1999 and Pena and Arroyabe, 2002, Handfield and Nichols, 2002 and Ayios, 2004)

An extensive scanning of relevant literature indicates that the biggest stumbling block to success of strategic alliance formation is the lack of trust (Kwon and Suh, 2005). Opportunism can lead to higher transactions costs (Figure 10) and can arise if information asymmetry among transacting parties exist, causing one party to take advantage of other (Welty and Becerra-Fernandez, 2001). Trust plays three interrelated roles in inter-organizational relationships: first, it may act as an obstacle to opportunistic behavior; second, it may substitute for hierarchical governance; and third, it may provide a competitive advantage (Lin, *et.al.*, 2006).

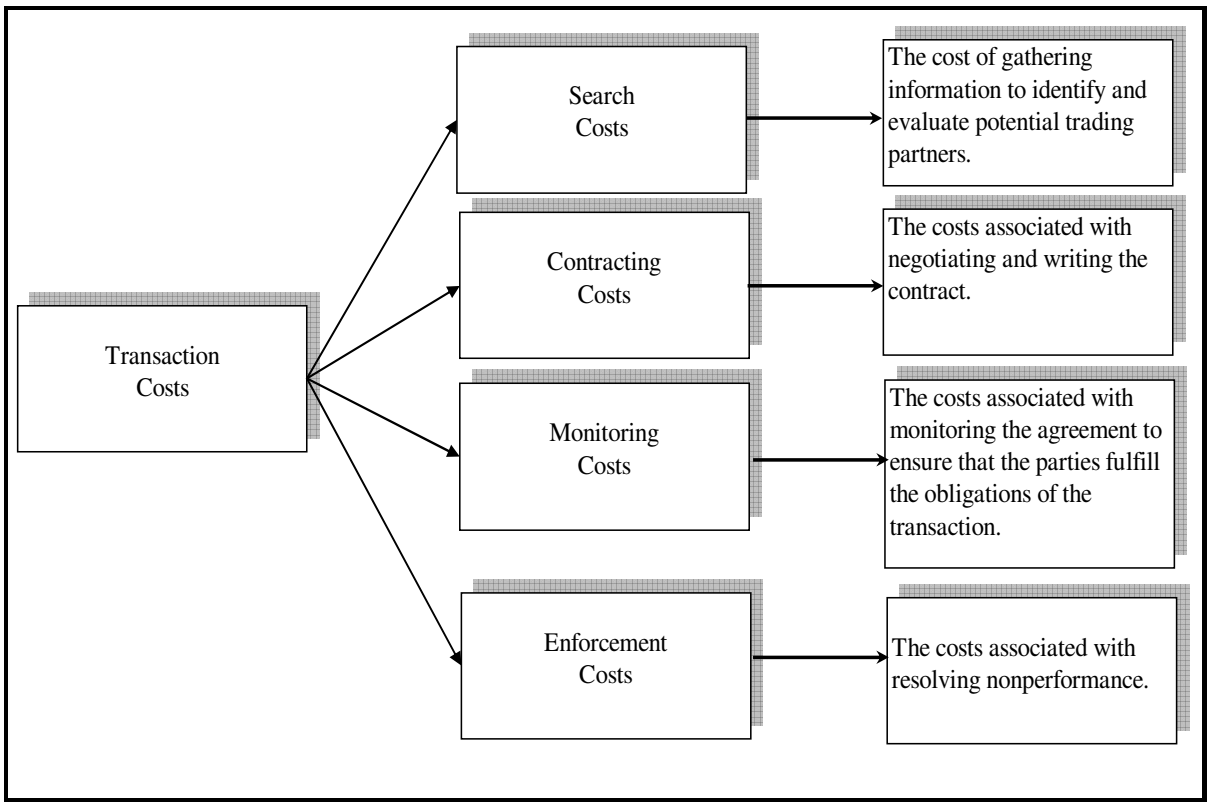


Figure 10. Types of Transaction Costs (adapted by the Author from McClellan, 2003).

Although firms may not have trust at the beginning of a relationship and may initially rely on functional complements to trust such as contractual provisions that provide for monitoring, experience with a specific firm breeds trust (Barber, 1983)[10] Davis and Spekman (2004) stress the dilemma surrounding any collaborative relationship and point out that "with closeness comes the fear of opportunism where one supply chain partner acts in its own self-interest to the detriment of others", which is in line with the propositions of TCT. Trust leads to superior knowledge sharing, facilitates investments and lowers transaction costs.

[10] As cited in Beekman and Robinson (2002).

Developing mutual trust appears as the ultimate solution to this prevailing dilemma. The conviction that partners will behave correctly in both formalizing and executing the agreement creates a climate of 'mutual trust' that is translated into a lesser probability of opportunist actions (Pena and Arroyabe, 2002). If the members of the supply chain can develop mutual trust, this should "reduce the negative effects of bounded rationality, specific investment in the alliance and the opportunism which would otherwise arise, and so reduce transaction costs" (Chiles and McMackin, 1996).[11] In other words, "trust between partners should make them more willing to share information and so better inform their actions and decisions (reduce bounded rationality) (Child and Faulkner, 2002). When both sides trust each other, they can share information and invest in understanding each other's business (Kumar, 2000).

So, how can trust be defined? According to Bigley and Pearce (1998) searching for a shared meaning of trust in organizational sciences is likely to be a relatively unproductive endeavor because of the lack of agreement on a suitable definition of the construct. Reviewing the available definitions of trust enables us to observe some common characteristics, such as vulnerability, uncertainty and mutuality (Table 3). Lewicki and Bunker (1996) suggest three types of trust that are linked in a sequential iteration in which achievement of trust at one level enables the development of trust at the next level.

These are, calculus-based trust, knowledge-based trust and identification-based trust respectively (Figure 11). They embrace the theory of deterrence on the way to explain their proposed forms of trust. According to this theory, trust is sustained to the degree that the deterrent (punishment) is clear, possible, and likely to occur if the trust is violated, which makes the threat of punishment a more significant motivator than the promise of reward. Lewicki and Bunker (1996) call this form of calculus-based trust stemming from their belief that "deterrence-based trust is grounded not only in the fear of punishment for violating the trust but also in the rewards to be derived from preserving it".

[11] as cited in Child and Faulkner (2002).

Authors	Year	Definiton
Zucker	1986	A set of expectations shared by all those involved in an exchange.
Anderson and Narus (*)	1990	A firm's belief that another company will perform actions that will result positive outcomes for the firm, as well as not taking unexpected actions that would result in negative outcomes for the firm.
Moorman, *et.al.* (*)	1993	Willingness to rely on exchange partner with whom one has confidence. Also trust has been viewed as (1) a belief, sentiment or expectation, (2) a behavioral intention that reflects reliance on trading partners and involves vulnerability and uncertainty on part of the trustor.
Ganesan (*)	1994	Willingness to rely on exchange partner with confidence.
Dyer and Chu (*)	2000	One party's confidence that the other party in the exchange relationship will not exploit vulnerabilities.
Mayer, *et.al.* (*)	1995	The willingness of a party to be vulnerable to the actions of another party based on the expectation that the other party will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party.
Mishra	1996	A party's willingness to be vulnerable to another party based on the belief that the latter party is a) competent, b) open, c) concerned and d) reliable.
Bhattacharya, *et.al.*	1998	Trust is an expectancy of positive (or nonnegative) outcomes that one can receive based on the expected action of another party in an interaction characterized by uncertainty.
Lewicki, *et.al.*	1998	Confident positive expectations regarding another's conduct.

Table 3. Definitions of Trust[12]

[12] (*) as cited in Ratnasingam (2003).

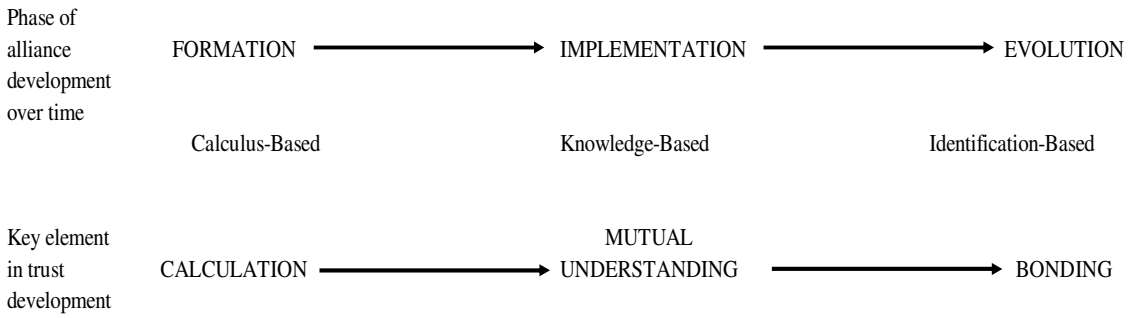


Figure 11. Phases of Alliance Development and Evolution of Trust (adapted and modified by the Author from Child and Faulkner, 2002)

Thus, "trust is an ongoing, market-oriented, economic calculation whose value is derived by determining the outcomes resulting from creating and sustaining the relationship relative to the costs of maintaining or severing it" Lewicki and Bunker (1996). Even if there are opportunities to be dishonest (or untrustworthy) short-term gains from untrustworthy acts must be balanced (in a calculus-based way) against the longer-run gains of maintaining a good reputation (Figure 12).

Trust based on calculation is likely to apply particularly to relationships which are new and hence can only proceed on the basis of institutionalized protection (incorporating deterrence) or the reputation of the partner (Child and Faulkner, 2002). Doney and Cannon (1997) highlights this calculative process as the initial phase of development of inter-organizational trust where trading partners calculate the costs and/or rewards of interacting with another trading partner.

The second type of trust in professional relationships suggested by Lewicki and Bunker (1996) is the knowledge-based trust, which relies on information rather than deterrence as it develops over time, as a function of the parties having a history of interaction that allows them to develop a generalized expectancy that the other's behavior is predictable. Knowledge-based trust is based on the "other's predictability – knowing the other sufficiently well so that the other's behavior in anticipatable".

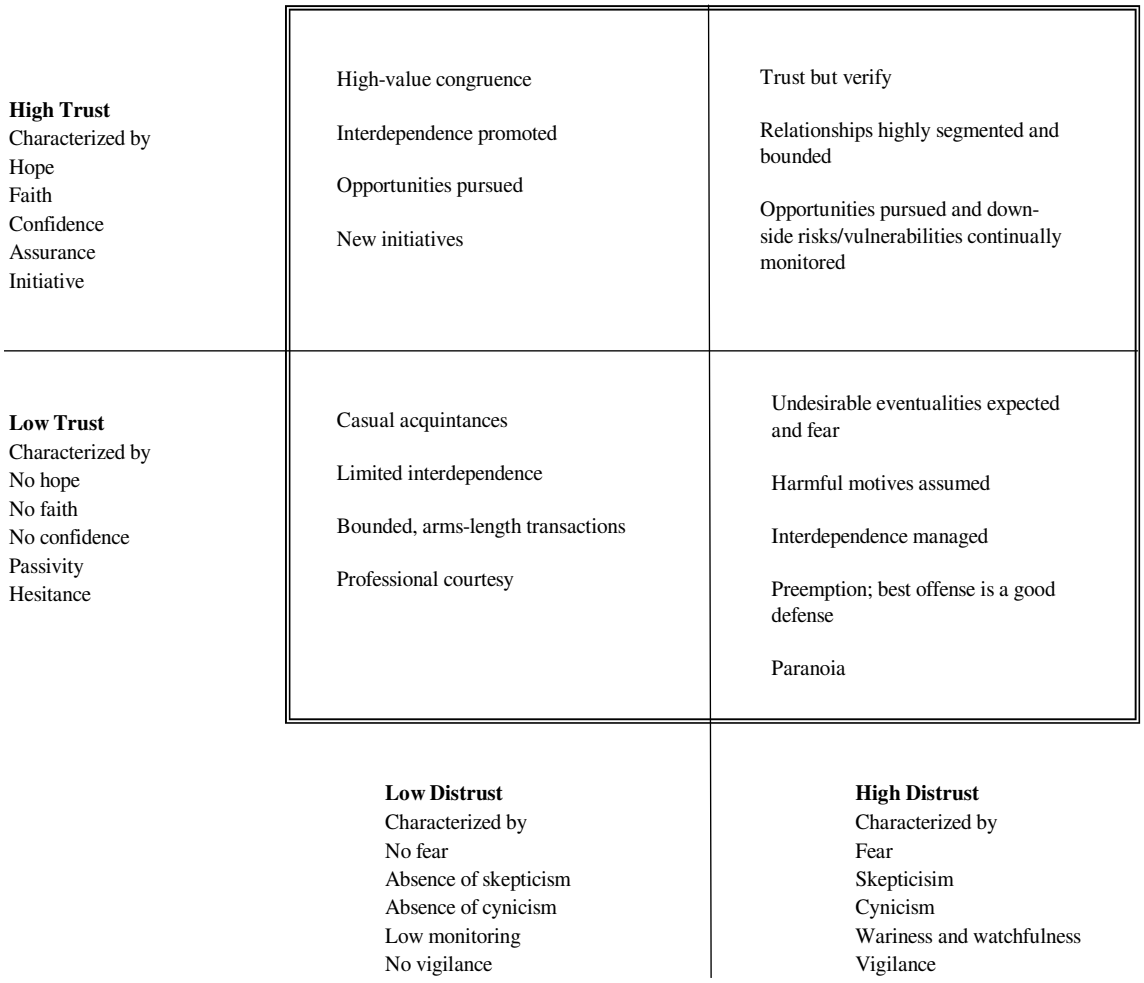


Figure 12. Trust and Distrust (Lewicki *et.al.*, 1998)

There exists a predictive process which relies on the trading partner's ability to forecast another trading partner's behavior (Table 4) mostly based on repeated interactions, thereby, enabling trading partners to interpret each other's actions (Doney and Cannon, 1997). The assumption of rationality contained in the calculative view of trust is relaxed somewhat under the assumption of cognitive trust, because trust here is founded upon both the security and the assurances that the partner is well understood and is known to share important assumptions with the other party (Child and Faulkner, 2002).

	The Power Game	The Trust Game
Modus Operandi	Create fear	Create trust
Guiding Principle	Pursue self-interest	Pursue what's fair
Negotiating Strategy	Avoid dependence by playing multiple partners off against each other	Create interdependence by limiting the number of partnerships
	Retain flexibility for self but lock in partners by raising their switching costs	Both parties signal commitment through specialized investment which lock them in
Communication	Primarily unilateral	Bilateral
Influence	Through coercion	Through expertise
Contracts	'Closed' or formal, detailed, and short-term	'Open' or informal and long-term
	Use competitive bidding frequently	Check market prices occasionally
Conflict Management	Reduce conflict potential through detailed contracts	Reduce conflict potential by selecting partners with similar values and by increasing mutual understanding
	Resolve conflict through the legal system	Resolve conflicts through procedures such as mediation or arbitration

Table 4. Power and Trust (Kumar, 2000)

According to Shapiro, *et.al.* (1992)[13], there are several dimensions of knowledge-based trust. First, "information contributes to the predictability of other", which is accepted to contribute to trust. Second, "predictability enhances trust – even if the other is predictably untrustworthy – because the ways that the other will violate trust can be predicted". Finally, "accurate prediction requires an understanding that develops over repeated interactions in multidimensional relationships (similar to calculus-based trust)".

[13] as cited in Lewicki and Bunker (1996).

The third type of trust suggested by Lewicki and Bunker (1996) is based identification with the other's intentions and goals. At this third level, "trust exists because the parties effectively understand and appreciate other's wants; this mutual understanding is developed to the point that each can effectively act for the other". A true affirmation of the strength of identification-based trust can be found when one party acts for the other in a manner even more zealous than the other might demonstrate. Issues of trust and risk can be significantly important in supply chain relationships which involve a higher degree of interdependency between companies (Kwon and Suh, 2005). This high level of interdependency stems mostly from the considerable amount of investment made in relationship specific assets.

Mishra (1996) highlights the centrality of trust and its multidimensional nature through categorizing the concept into four dimensions, of which it would be appropriate to deal with in the following sentences. The competence dimension of trust discusses the ability of supplier to meet the quality standards and keep up with the preset schedule. As parties trust in their competence based decisions there no longer will be need for any inspection, which will certainly reduce related costs. The openness dimension of trust refers to the perceptions of openness and honesty which are argued to be fostering trust. The concern dimension of trust means that one party believes it will not be taken unfair advantage of by another. This, however, goes beyond believing that the other party will not be opportunistic, but will also be concerned about my interests or the interests of the whole. The reliability dimension of trust refers to the existence of inconsistencies between words and actions and emphasizes the expectations about consistent and reliable behavior. Reliability appears as the prominent determinants of trustworthiness.

Mutual trust should make it safer for the partners to invest assets in their alliance which cannot readily be used elsewhere (asset specificity) (Child and Faulkner, 2002). Dyer and Chu (2003) argue that trust would be expected to emerge in situations where the "trustworthy" party in the exchange relationship: (a) is known to reliably make good faith efforts to behave in accordance with prior commitments, (b) makes adjustments (e.g., as market conditions change) in ways perceived as "fair" by

the exchange partner, and (c) does not take excessive advantage of an exchange partner even when the opportunity is available.

Sheth and Sharma (2007) display the link between trust and commitment as they say that "both, suppliers and buyers, need to demonstrate trust and commitment toward a long-term vision as trust and commitment have been shown to be the major predictors of successful relationships". Unless trust among trading parties exist, collaborative attempts would be limited in scope and potential benefits because the parties have not established a level of trust that ensures that the investment in collaboration is worth the effort (Esper, 2007).

When both trust and commitment – not just one or the other present – they produce outcomes that promote efficiency, productivity and effectiveness (Morgan and Hunt, 1994). Channel partnering and supply chain collaboration have been in part explained as resulting from trust between parties and relationship commitment (Tuominen, 2004). The suppliers are exposed to considerable amounts of monetary and time costs because of multi-level reviewing and inspection. If a trusting relationship between supply chain members can be developed, the costs of monitoring become avoidable (Evans, 2005).

It should be pointed out that unless trust is translated into actionable commitment, no measurable economic gains would be attained from supply chain management as the lack of trust among trading partners often creates a condition where every transaction has to be scrutinized and verified, thereby increasing transaction costs to a high level (Kwon and Suh, 2004). De Laat (1997), in this context, underscores the importance of trust for the creation of commitment as follows:

> "Partners who trust each other will feel no need to control each other. Instead, they will co-operate loyally, commit themselves to the relationship whenever necessary, communicate openly, and accept each other's influence. Loyalty in this context is to mean that partners not only meet standards of quantity and quality as agreed upon; they also go beyond these and spontaneously contribute in an innovative fashion whenever this seems necessary to reach the common goal."

Rinehart (2007) propose that trust leads to greater levels of communication frequency between the parties and is expected to contribute to increased investment in the relationship relative to other transactions and relationships. They attempt to support their argument with an example where a supplier who provides a dedicated engineering to the global customer in a relationship, who works closely with the customer's new product development team in helping to design and develop a new product targeted at a new international market, which integrates the supplier's technology.

The relationship between trust and commitment can also be observed via the utilization of relationship characteristics. Rinehart (2007) explains the relationships characteristics with an attempt to display the existing types of relationships. The interaction frequency and the level of commitment to the relationship by the parties involved. Partnerships occur under circumstances where both of the dimensions have significant values, which is compliant with the proposition by Tuominen (2004) suggesting that "partnerhips are integrated and coordinated relationships where channel members share a common goal, and both parties to maximize their benefits, but not at the expense of the other party".

Rinehart (2007) defines the contractual relationships as a location where the dimensions have average scores (Figure 13). It is possible to observe that elements of trust and commitment are scoring high in partnerships. Partnerships have greater levels of investment in the relationship to demonstrate the commitment to the other party, whereas in alliances, "emphasis must be placed on the use of reward and referent power, which is reflected by the limited use of formalized methods of documentation and increased use of verbal agreements or agreements that are designed by non-legal personnel" (Rinehart, 2007).

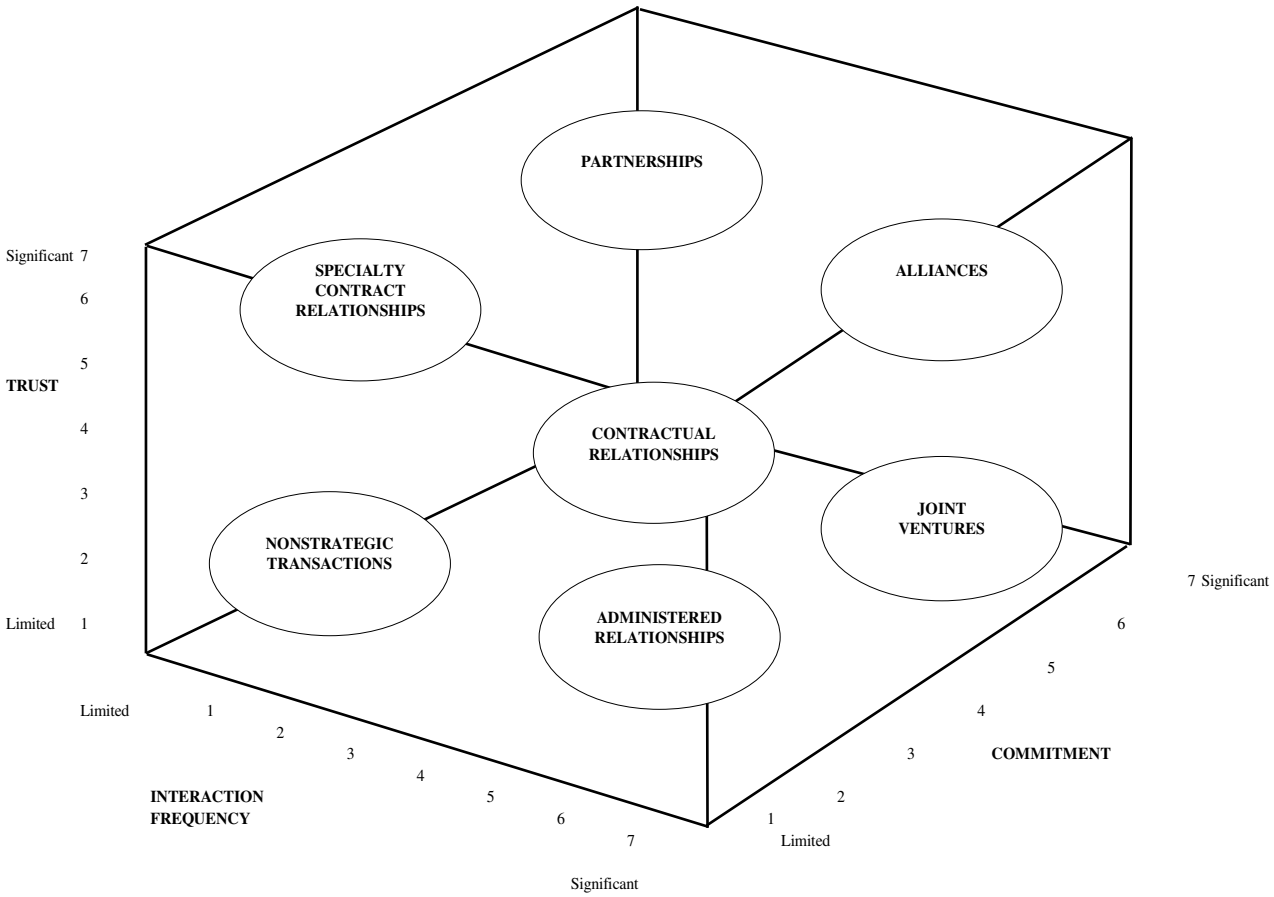


Figure 13 Relationship Characteristics. (adapted by the Author from Rinehart, 2007)

The proposed model in this dissertation assumes that inter-organizational trust is essential to enable the flawless flow of information between the members of the supply chain system. Once trust is created and sustained, information sharing and trust are anticipated to foster each other. However, creation of trust is the *modus operandi* of the contemporary global way of operating a supply chain sytem and is the initial and vital step on the way to attain the challenging task of establishing collaborative supply chains. The reason to emphasize creation of trust as a "vital" step stems from its critical role in balancing power between members of the supply chain[14]. When a member of the system engages in relational behaviors, such as sharing information with its supplier, or being flexible in adjusting to its supplier's needs, the member becomes increasingly satisfied with the relationship as the relational behavioral aspects increase the cooperative nature of the supply chain

[14] See Table 4 on p.35.

(Griffith, *et.al.*, 2006). Therefore, trust is central for creating an environment of information sharing as collaboration requires trust in the other party – *trust in the other's information* and trust that other will not exploit oneself (Thomas, 1979)[15].

Dyer and Chu (2003) put special emhasis on the relationship between trust and information through theorizing a positive relationship between buyer trustworthiness and supplier information sharing and suggest two primary reasons:

> "First, if the supplier can trust the buyer not to behave opportunistically, it will be more willing to share confidential information, such as on production costs or on product design and process innovations. However, a supplier will voluntarily share this information only if it trusts the buyer not to steal its ideas and/or share them with competitors or will not attempt to 'squeeze' the supplier's profit margins. In the absence of trust, information sharing on costs or new ideas/ technologies is unlikely because this information could be "poached" or used opportunistically.
>
> Second, a lack of trust may cause suppliers to suppress potentially relevant information that would be useful for problem solving. For example, suppliers may be unwilling to share information on production or design problems if they do not trust the buyer to work cooperatively in joint problem-solving. In particular, suppliers may be reluctant to share any information that exposes weaknesses in their operations or their cost structure, even though the sharing of such information could result in valuable suggestions from the buyer that could lead to effective solutions."

2.2.2. Establishing the Link between Information Sharing and Collaboration

Dealing with uncertainty appears as one of the most challenging issues for the firms on the way to respond to shifts in the marketplace. Traditionally, firms have tended to subscribe to the point of view that power is derived from information. This approach has been interpreted as sharing of information has a negative effect on power. This idea clearly is not in tune with the modern understanding and collaborative construct of supply chains (Figure 15), whereas information sharing appears as a power enhancing tool for each and every member of network. Therefore

[15] As cited in Mishra (1996).

the hypotheses related to information sharing trust element are stated in the following manner (Figure 14):

H_3 : Higher the level of information sharing, higher the level of collaboration.

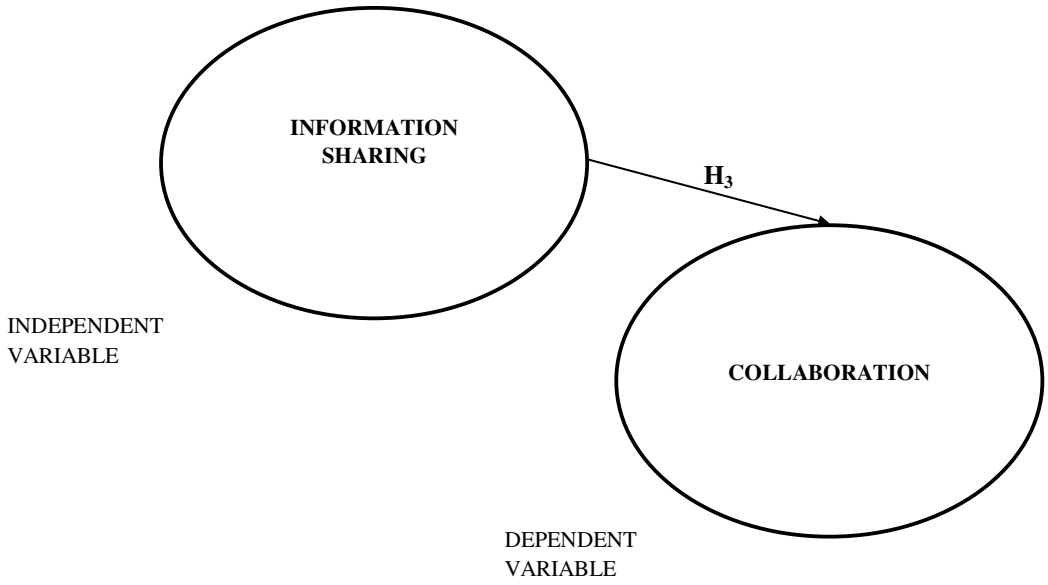


Figure 14. The Proposed Link Between Information Sharing and Collaboration

Evidently, the concept of '*sharing of information*' inherently exists in the nature of supply chains. National Research Council (2000) of USA defines that "supply chain includes all of the capabilities and functions required to design, fabricate, distribute, sell, support, use and recycle or dispose of a product, as well as the associated information that flows up and down the chain". If information between supply chain members is shared, its power increases significantly as shared information reduces uncertainty and thus reduces the need for safety stock (Christopher and Lee, 2004; Yu, *et.al.*, 2001).

When retail orders are volatile, it can be extremely difficult for a supplier to forecast demand trends. Suppliers are forced to interpret more or less reliable signals on future demand (Bonet and Pache, 2005), which ends up with an overreaction to the

existing data by the suppliers (Cachon and Christian, 2006), leading to a multiplication of safety stocks to face any contingencies (Bonet and Pache, 2005; Van Der Vorst and Beulens, 2002). Looking at the information flow direction, the information sharing is a two way communication between downstream and upstream organizations on the supply chain (Li, *et.al.*, 2005). It is essential that the better informed downstream members of the chain share their demand information effectively and efficiently with the less informed upstream members (Chu and Lee, 2006). The enhancement of value delivery and cost reductions can be accomplished only by sharing the information (Figure 16) and making sure that all involved understand the implications for total channel value performance (Reidenbach and Goeke, 2006). An important phenomenon observed in supply chain practices is that the variability of an upstream member's demand is greater than that of the downstream member (Yu, *et.al.*, 2001). In case of a lack of information sharing among the members of a supply chain, demand variability is amplified throughout the supply chain causing consequences including inaccurate forecasts, low capacity utilization, excessive inventory and inadequate customer service (Shore and Venkatachalam, 2003).

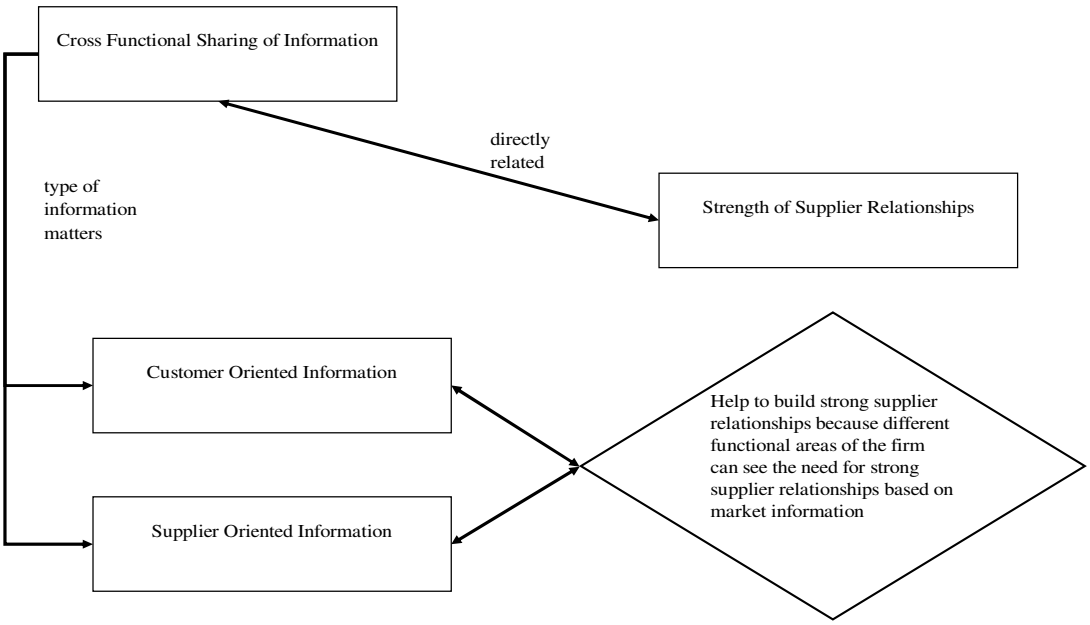


Figure 15. The Role of Information on Building Supplier Relationships (adapted by the Author from Martin and Grbac, 2003)

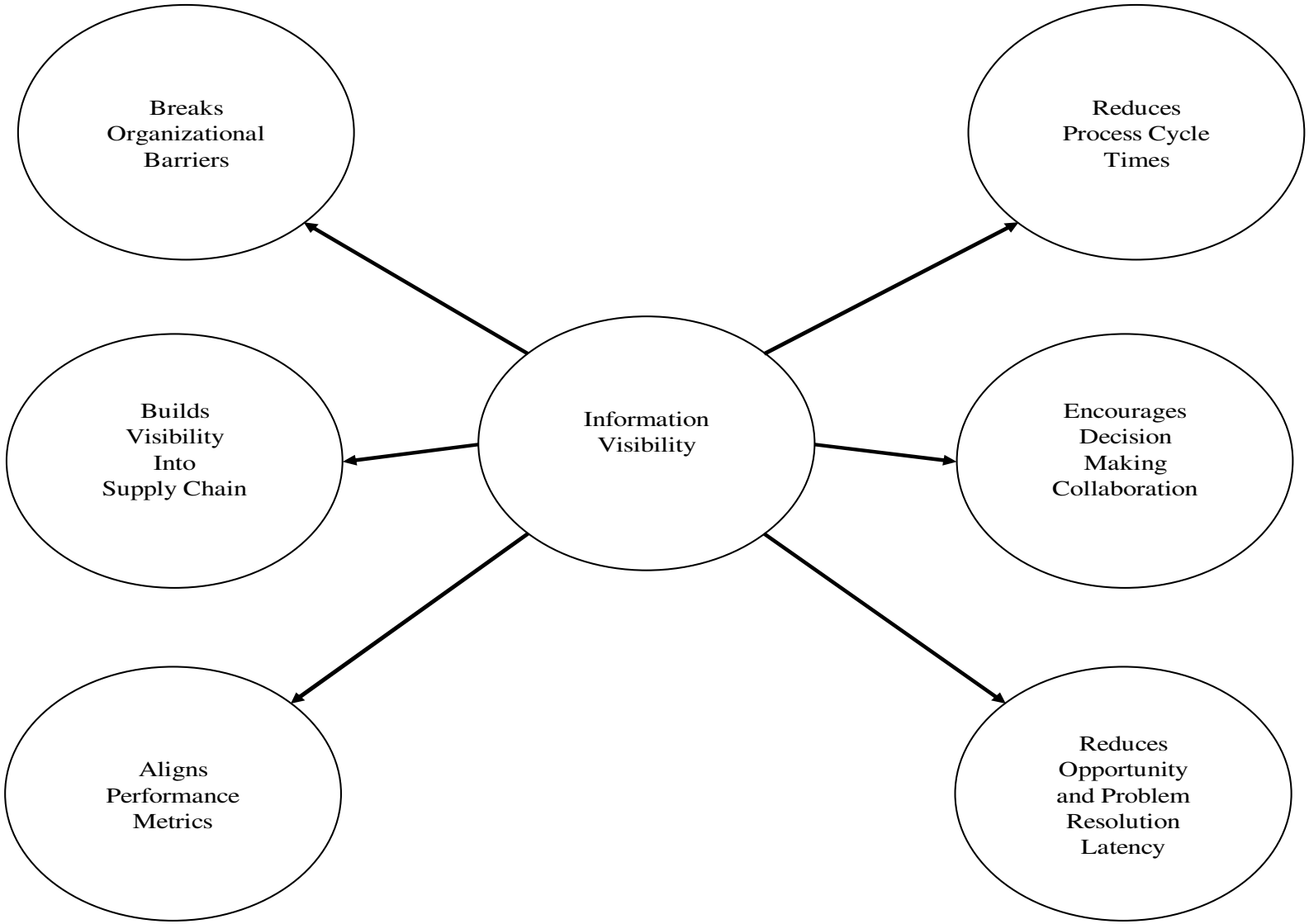


Figure 16. Benefits of Information Visibility (adapted by the Author from Handfield and Nichols, 2002).

McEvily and Zaheer (2005) highlight the importance of information visibility of downstream demand and mention that "data on real demand needs to be captured as far down the chain as possible and shared with upstream suppliers to make the transfer of the information possible". Information sharing (quality and quantity) refers to the extent to which critical and proprietary information is communicated to one's supply chain partner, as open and collaborative information sharing was found to lead to positive effects on interfirm relationship Chae, *et.al.* (2005).

In terms of level or degree of information sharing, there are partial and complete information sharing (Li, *et.al.*, 2005). According to their statement, partial information can be observed when a supplier obtains information from retailers about the demand distribution and the related inventory strategies. If the supplier obtains further information about retailers' daily inventory levels and customers' daily shifts in demand figures, it is the case of complete information sharing, which can be referred to as 'full visibility'.

When the visibility of future demand is imperceptible, each partner in the supply chain tries to predict what is needed to support the end user or consumer demand (Ireland and Crum, 2005). The stock level of the supply chain is determined by the upstream members of the supply chain, who are usually less informed than the downstream members about the market (Chu and Lee, 2006). When the suppliers are deprived of sufficient information about the customer demand process and determine its inventory policy on ambiguous forecasts, the "bullwhip effect" occurs. This effect was initiated by logistics executives at Procter & Gamble (P&G) (Yu, *et.al.*, 2001).

Bullwhip effect could briefly be defined as the mismatch between actual level of customer demand and forecasted magnitude of manufacturing leading to inflated inventory and causes a surge in the total costs that trims the efficiency of the suppliers. The bias and noise distorting the demand information through its transference between chain members leads to vast stock holding in the chain (Mason and Towill, 1997). Kwon and Suh (2005) mention that "uncertainty inherited by the

multi-layer decision making process in the supply chain unavoidably increases the level of behavioral uncertainty by the partner in the supply chain pipeline".

In order to be able to eliminate or, at least, mitigate this adverse effect, information sharing between members of a supply chain should be increased to reduce uncertainty (Yu, *et.al.*, 2001). The deeper the information sharing level, the higher in-time order fulfillment rate and lower average order cycle time because the information sharing reduces the demand uncertainty that firms normally face (Lin, *et.al.*, 2006). This statement supports the argument that relevant information is needed to be shared among the supply chain members to make efficient and optimum decisions to avoid bullwhip effect.

The financial impact of the bullwhip effect is what is motivating companies to focus on communicating demand information to supply chain members so that they can make product, components, and material available at the proper points in the supply chain when they are needed (Ireland and Crum, 2005). Lower levels of inventory would be needed as a hedge against uncertainty as well as the shortened lead times (Crum and Palmatier, 2003). Therefore, there is an imperative to create information enriched supply chains that must view their information as a strategic asset and ensure that it flows with minimum delay and minimum distortion (Mason and Towill, 2005).

When the nature of information sharing from a typological perspective is taken into consideration, Liu and Kumar (2003) suggest three information sharing structures based on inter-organizational interdependencies, which are sequential information sharing, reciprocal information sharing and hub-and-spokes information sharing. In sequential information sharing structure, the output of one partner's activity will flow into the next trading partner, as its input.

Liu and Kumar (2003) argue that the typical appearance of this kind of information flow can be observed as the transmission of sales orders data, prospective new product development project contents and expansion of investments made in relation

specific assets as a consequence of enhancing manufacturing capacity. The information sharing will link the collaborative process together into a sequential chain.

The sequential flow of information enables each pair of partners to establish their own protocols for exchange. The reciprocal information sharing is a more complex information sharing structure. Information flow is bidirectional and each partner may communicate with several others. The need for alignment and integration of communication systems and internal processes is so high as a consequence of the potential inconsistencies that are anticipated to arise between the information of different partners. Reduction in the number of suppliers and reengineering forcing firms to outsource internal activities lead to a hub and spokes organization in which one or two suppliers in each product or service category are the spokes, and the procurement organization is the hub (Sheth and Sharma, 2007).

There are two sides of the coin in terms of translating collaboration efforts into an increase in overall profitability from the standpoint of information sharing. Focusing only on trimming the overall costs would look like a table with one leg. Another leg is the demand enhancing initiatives that affect firms' revenue streams. Kulp, *et.al.* (2004) argue that such endeavors are facilitated by market and pooling of dispersed knowledge about consumers, as retailers are in closer contact with the end-consumer with a better position than the manufacturer to sense consumer preferences and perceptions of currently available products.

They also suggest that "when manufacturers and retailers coordinate their efforts, they develop products that are better tailored to consumer desires, communicate the benefits of the new products to consumers better and increase the effectiveness of marketing efforts that encourage purchases". The arguments of Kulp, *et.al.*, (2004) clearly indicate that information sharing not only enables the members of the supply chain to avert inflated costs, but more importantly, bring in resilience to the chain that enhances the "sense and respond" capabilities through fostering innovation.

Information sharing seems to be the essential element of collaborative supply chain relationships that enables the entire system become market sensitive implying that the supply chain is capable of responding to the real demand (Li, *et.al.*, 2007). In compliant with the propositions of KBV, on which assumptions of RBV is highly influential, information sharing will enable the entire supply chain system process the relevant information and transform it into the most crucial resource ever necessary to create competitive advantage, that is, knowledge.

2.2.3. Dedication to the Relationship: Inter-organizational Commitment

Powerful relationships are built on high mutual expectations and mutual expectations are translated into results through commitment and execution capability (Austin, 2000). Commitment has been accepted as central to building relationships throughout the literature as well as a basic requirement for successful and sustainable supply chain implementation. Therefore the hypotheses related to commitment trust element are stated in the following manner (Figure 17).

H_4 : Higher the level of commitment, higher the level of collaboration.

It is strongly expressed that commitment is a required element of the collaborative relationships, along with the trust (Davis and Spekman, 2004; Child and Faulkner, 2002). Morgan and Hunt (1994) define commitment[16] as "an exchange partner believing that an ongoing relationship with another is so important as to warrant maximum efforts at maintaining it; that is, the committed party believes the relationship endures indefinitely".

[16] as cited in Kwon and Suh (2005).

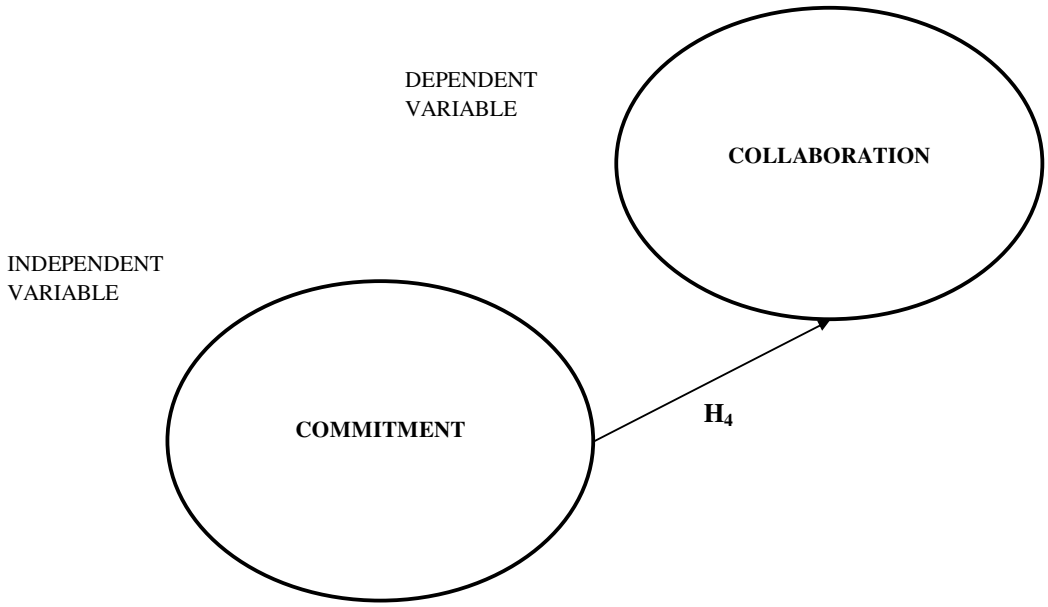


Figure 17. The Proposed Link between Commitment and Collaboration

Commitment involves one party's perception of their dependence on the other party and the amount of investment they make in the relationship in terms of time and resources (Rinehart, 2007). There are critical factors that affect the degree of dependence of one party on the other. These are articulated as the importance of the product or service exchanged, the extent to which each of parties has discretion over exchange, and the extent to which the parties have alternatives to the current relationship (Mentzer, *et.al.*, 2007). Monczka, *et.al.* (1998) found that when trading partners are willing to devote resources to ensure long term interaction, a higher probability of success ensues.[17]

In a brief sense, commitment could be defined as an implicit or explicit pledge for relational continuity among trading partners (Dwyer, *et.al.*, 1987). The greater commitment and confidence among parties involved in a relationship diminished uncertainty on the other party's behavior (Pena and Arroyabe, 2002). Blomqvist, *et.al.* (2005) refer to the concept of commitment as follows:

[17] As cited in Davis and Spekman (2004).

> "Commitment refers to the willingness of trading partners to exert effort on behalf of the relationship and suggests a future orientation in which firms attempt to build a relationship that can be sustained in the face of unanticipated problems. There is thus a temporal dimension to commitment associated with the duration or age of the relationship. Committed parties are willing to invest in transaction-specific assets**,** demonstrating that they can be relied upon to perform essential functions in the future. Such investments help stabilize associations and alleviate the uncertainty of continually seeking and developing new exchange relationships."

The strength of this pledge has become clearer when Heide and John (1990) studied the dimensions of industrial buyer-supplier relationships and they concluded that customer-supplier cooperation was positively correlated with specific investments in the relationship. Without commitment, business relationships and subsequent transactions become fragile and vulnerable (Kwon and Suh, 2005).

Kulp, *et.al.* (2004) argue that in order to be able to possess exceptional customer linking capabilities "an organization must devote substantial resources to develop competencies that allow it to communicate openly with its partners, solve problems as a team, exchange information electronically, co-ordinate production planning and replenishment scheduling and work together to improve the quality and reliability of the product".

Kulp, *et.al.* (2004) also propose that in spite of the high costs of such activities, ranging from investment in information technology infrastructure to the hiring of dedicated personnel to oversee proper implementation, the benefits to such coordination between supply chain members results in lower operating costs and/or higher consumer value, outcomes that positively impact the bottom line of manufacturers and retailers.

Handfield and Bechtel (2002) highlight the important role of asset specificity in order to be able to utilize commitment as a variable of long term inter-organizational relationships. They argue that "suppliers that dedicate local facilities and equipment to serving the customers are demonstrating their commitment to the relationship,

thereby establishing a basis for further communication", which is a pre-requisite for the joint development of new products and sharing of sensitive information.

Longer-term relationships tend to be characterized by a willingness of both parties to commit a variety of different resources to a set of future transactions (Mentzer, *et.al.,* 2007). The link between long-term relationship and commitment has been referred as 'long-term orientation' by Chae, *et.al.* (2005) and articulated as follows:

> "Long-term orientation refers to parties' willingness to exert effort in developing long-term relationships. Such willingness is frequently demonstrated by committing resources to the relationship, which may occur in the form of an organization's time, money, facilities, etc. Studies have shown that successful partnerships result when both buyers and suppliers demonstrate a willingness to commit a variety of assets to a set of future transactions. Productivity gains in the supply chains are possible when firms are willing to make transaction or relation-specific investments, an important indication of commitment. Transaction-specific investment might enhance coordination and cooperation between partners."

Spekman, *et.al.* (1997) use the "relation specific investment" in explaining the very nature of commitment and define it as the "specialized investments that partners make that are of little value outside their relationships owing to the idiosyncratic nature of investments".[18] They also state that as the level of partner's relation specific investment increases, so does the partner's dependence on the relationship. When both partners are mutually convinced that there are similar levels of relationship specific investments made by both parties, mutual recognition of interdependence exist, as should a mutual willingness to collaborate (Spekman, *et.al.*, 1997).

Members of the supply chain must trust that the others parties involved are willing to share both the rewards and risks associated with the collaboration effort. Handfield and Bechtel (2002) view asset specificity under two sub-titles, which are human asset specificity and site asset specificity. According to their argument, human asset

[18] For example, a supplier who dedicates engineering expertise to solve a unique design problem for a manufacturer has made a relation specific investment (Spekman, *et.al.*, 1997).

specificity arises in learning by doing fashion through long-standing customer specific operations, whereas sites asset specificity refers to the successive stages that are immobile and are located in close proximity to one another so as to economize on inventory and transportation expenses. Dedication of tangible and human based assets to the relationship does not seem to be fully adequate for enduring supply chain relationships. Fawcett, *et.al.* (2006) propose that "achieving competitive advantage through collaborative breakthroughs will require higher levels of sustained managerial commitment than are typically in place in today's business world".

This study attempts to measure the attitude of purchasing managers, working at the leading industrial enterprises of Turkey, towards each variable in the porposed relationships asserted by the hyptoheses constructed. The suggested relationships between the inter-organazitonal concepts will be articulated by running a research amongst the purchasing managers of the leading industrial enterprises of Turkey.

CHAPTER 3

METHODOLOGY

3.1. Source of Data

The study population is the top one - hundred industrial enterprises of Turkey, selected from the Top 500 list announced annually by Istanbul Chamber of Industry (ICI)[19]. The number of the ICI members, 700 in 1952, year of foundation, increased to 2,000 within ten years and exceeded 12,500 as of year 2006. Some of the following statistical data clearly justifies the reason for selecting the sample from the ICI annual list. (Figure 18).

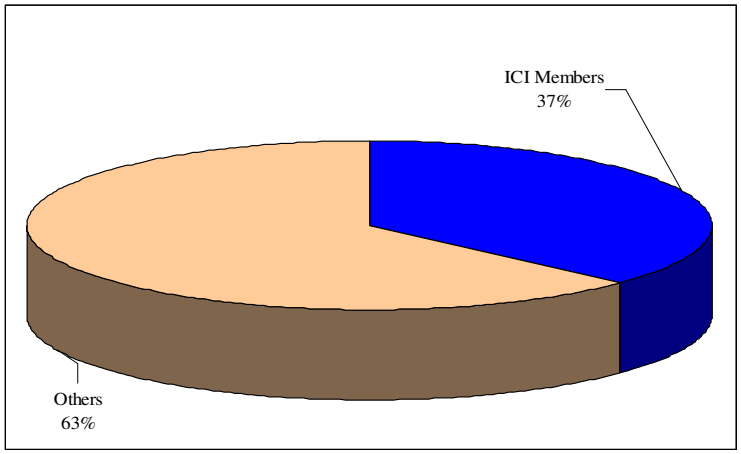


Figure 18. Share of ICI Members in the Gross Value Added Created by Turkish Manufacturing Industry
(Source: http://www.iso.org.tr/en/iso_ekonomikkonum.asp as of September 2007)

According to the data disseminated by its website[20] ICI, 98% of whose members are small and medium-sized enterprises, is accepted as the most dynamic and powerful representative of the Turkish industry. The total added value created by ICI member

[19] The translation of ICI into Turkish is "İstanbul Sanayi Odası" (ISO).
[20] http://www.iso.org.tr/en/iso_ekonomikkonum.asp

corporations constitutes approximately 37% of the total added value generated by the Turkish manufacturing industry (Figure 19 and Table 5).

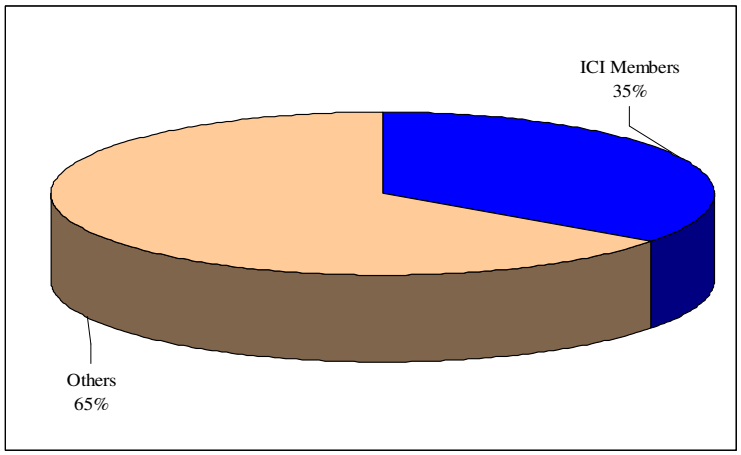


Figure 19. Share of ICI Members in the Total Exports of Turkey

(Source: http://www.iso.org.tr/en/iso_ekonomikkonum.asp as of September 2007)

Foreign trade by years: TURKEY
Value 000 $

Years	Exports		Imports		Proportion of Imports covered by Exports
	Value '000 $	Change %	Value '000 $	Change %	Change %
2000	27 774 906	4,5	54 502 821	34,0	51,0
2001	31 334 216	12,8	41 399 083	-24,0	75,7
2002	36 059 089	15,1	51 553 797	24,5	69,9
2003	47 252 836	31,0	69 339 692	34,5	68,1
2004	63 167 153	33,7	97 539 766	40,7	64,8
2005	73 476 408	16,3	116 774 151	19,7	62,9
2006***	85 528 416	16,4	139 480 361	19,4	61,3

Note: 2006 figures are provisional.

Table 5. Foreign Trade by Years

(Source: http://www.turkstat.gov.tr/VeriBilgi.do as of September 2007)

The employees at ICI member corporations constitute approximately 15.5% of the total workforce in the Turkish manufacturing industry. The share of ICI members within the total export of Turkey is about 35% (Table 5 on p.53). Half of the Top 500 industrial enterprises of Turkey are good-standing members of ICI. The total added value created by ICI member corporations constitutes approximately 40.9% of the total added value of Turkey's Top 1,000 industrial enterprises.

Therefore, the major reason for selecting the top one - hundred industrial enterprises among ICI members is the high representative power they posses. Several meetings have been arranged with ICI officials and experts to ensure the elimination of potential flaws of data collection process from the very beginning.

The list is composed of industrial enterprises' annual production based sales figures, as the major criterion of sorting and ranking. The top one - hundred firms out of the leading 500 is calculated to be creating more than 65% of the value added in the Turkish manufacturing industry during the year 2007.

3.2. Data Collection Method

After establishing the population the data collection is constructed.

3.2.1. Selection of Respondents and Sampling Method

Since the survey attempts to measure attitudes towards the proposed causal relationships, purchasing managers are considered as the most appropriate respondents to provide sufficient data for the research purposes.

A special emphasis is given to the selection of respondents among the executives of those leading industrial enterprises, holding the responsibility for managing the flow of inter-organizational purchasing activities. They hold prestigious positions in Turkey's leading industrial enterprises and very much capable of providing high quality data when responding to questionnaires within their area of expertise.

Visiting all facilities included in the population has appeared to be infeasible, due to the cost and time-based limitations. Therefore, a combination of methods are utilized in data collection.

The restrictions mentioned above made sampling a favorable option. The sample is based on the most current list available at the time of the design of the study (second quarter-2007). The selection of Top 100 manufacturing enterprises of ICI is a critical decision for attaining homogeneity of the sample.

The majority of the firms included in the study can be classified as *primary members*, which have become a part of integrated supply chain systems that "carry out value-adding activities (operational and/or managerial) in the business processes designed to produce a specific output for a particular customer or market" (Sanchez and Nagi, 2001).

This "quality" of the firms in the study helps the researcher to ensure the homogeneity of the sample, as well as confirming satisfactory credentials possessed by the managers included in the sample.

The seamless interaction between the purchasing managers of the buyer and supplier companies, as a consequence of the basic nature of supply chain system, is anticipated to display attitudes developed by purchasing managers of these enterprises. They are highly involved in dealing with fulfillment of daily supply chain operations, as well as incorporation of managerial value-adding contributions into the entire system on a continuous base.

The high representative power attained through careful selection of the firms and the managers empowers the study in attempts to decipher deeper underlying assumptions of the respondents proposed by the model.

3.2.2. Data Collection Process

The data collection process is conducted through utilization of several methods, such as field survey, electronic mail (e-mail) and phone calls. These methods have been embraced, due to the monetary and time-based restrictions on reaching and every geographical location where the facilities are established.

The first phase of the data collection was to compile a list of contact persons and their e-mail addresses. The names and the e-mail addresses are obtained via the phone calls made to the mentioned contact persons of firms on the list. This task itself took for a week to be completed, as repeat calls were made due to the occasional failures of reaching managers because of their frequent visits to the production areas to their suppliers and/or buyers.

At first attempt, 100 e-mails have been sent with questionnaires attached and deadlines highlighted. Reminders have been sent the day before the pre-stated deadlines. This cycle has been repeated periodically, extending the due dates every week and making additional phone calls to motivate and encourage the managers to respond.

Some of the managers agreed to respond on the phone and 10 of the questionnaires have been applied that way. Another 10 respondents preferred to respond to the survey via having interviews with the researcher. These interviews have been quite fruitful as a consequence of the off-the-record delineations and depictions provided by the researchers about the way the buyer-supplier relationships are designed and carried out in the various sectors of the manufacturing business in Turkey. The survey was conducted over a 5-month period during the spring and summer of 2007.

3.3. The Design and Content of the Questionnaire

Moser and Kalton (1971) suggest that[21] a survey with the return rate lower than 30 – 40 per cent could be considered as biased. The rate of return on the survey conducted has been 50 per cent for this study, which is an acceptable rate that allows the researcher to run required statistical tools of analysis. This study employs Likert scale, which is accepted as the most frequently used variation of the summated rating scale. In Likert scales, responses over a number of items tapping a particular concept or variable are then summated for every respondent (Sekaran, 2003). The respondents are asked to agree or disagree with each statement and a numerical score is assigned to each response, in anticipation to reflect the degree of attitudinal favorableness and the scores, and the scores may be totaled to measure the respondents' attitudes (Cooper and Schindler, 2003). The respondents have been asked to choose one of five levels of agreement, as shown in Figure 20. The numbers indicate the value to be assigned to each possible answer with 1 the least favorable impression of related variables of supply chain collaboration and 5 the most favorable.

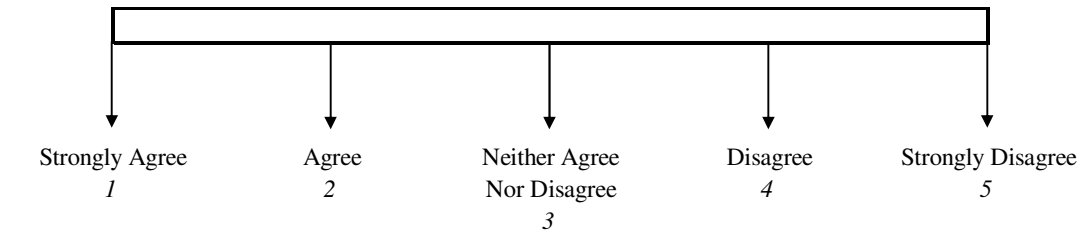


Figure 20. Sample Rating Scales

The statements in the questionnaire are formulated based on findings from relevant literature and surveys conducted by various researchers and academicians. Each statement is designed carefully to attain the highest statistical reliability possible,

[21] as cited in Akintoy, *et.al.* (2000).

through which it is intended to reveal the direction and the strength of the proposed causal relationship.

3.4 Operationalization of the Variables

The study is designed in order to be able to measure the respondents' (purchasing managers) attitudes towards the proposed relationships demonstrated by the hypotheses constructed. It should be mentioned that this research study is based on an opinion survey. The questionnaire is consisted of four groups, each of which is designed specifically to test the proposed relationships, namely the hypotheses constructed. Each statement is designed and assigned to measure the independent and dependent variables of each group. The figures 20-21-22-23-24 and 25 illustrate the general structure of the questionnaire in detail.

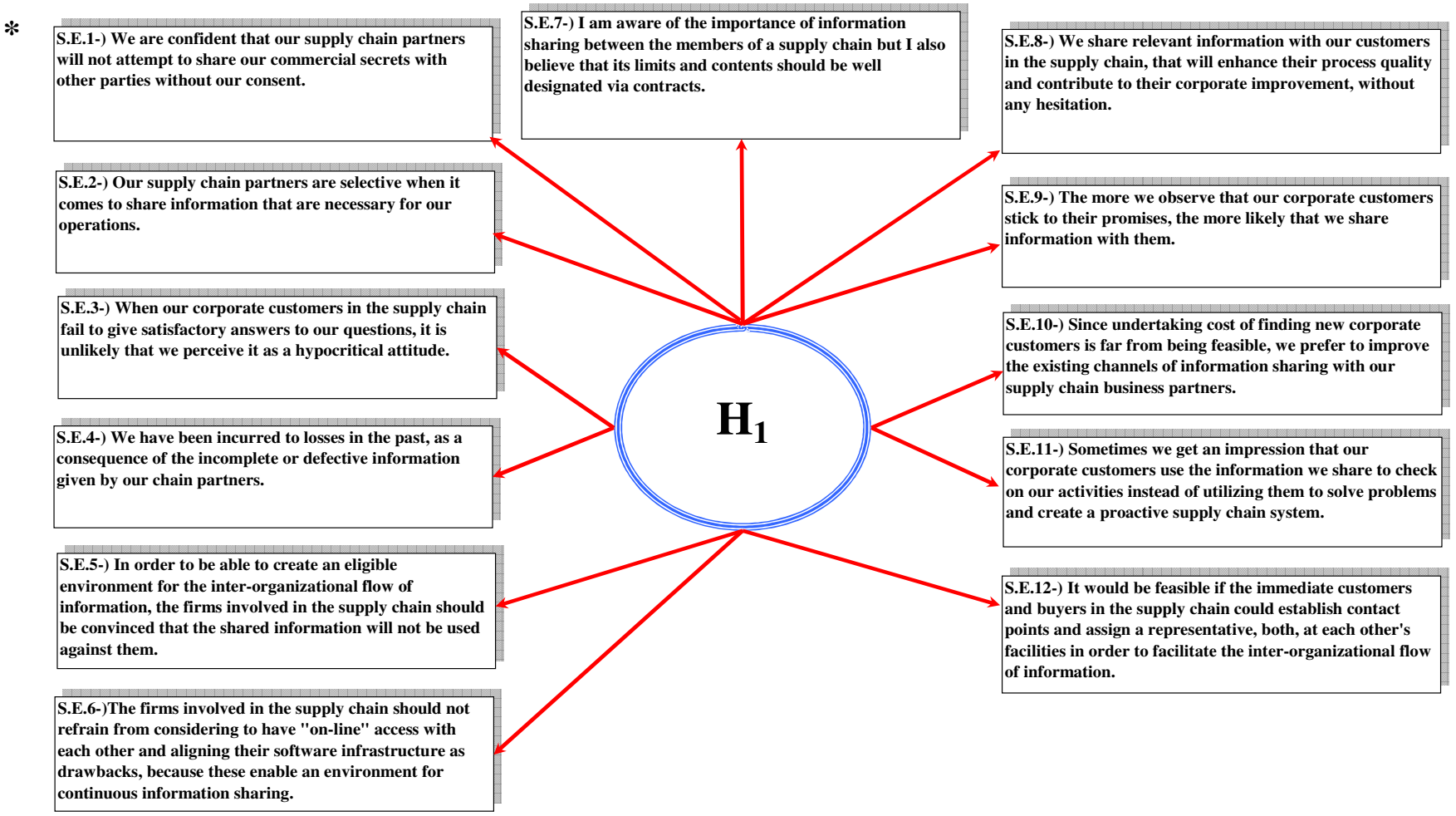
The survey statements between 1 and 12 are designed for H_1, which is constructed to reveal the relationship between the existence of inter-organizational trust and information sharing. (Figures 21 and 22)

The survey statements between 13 and 27 are designed for $H_{2,}$ which is constructed to reveal the relationship between the existence of inter-organizational trust and commitment. (Figures 23 and 24)

The survey statements between 28 and 42 are designed for $H_{3,}$ which is constructed to measure the degree of relationship between inter-organizational information sharing and collaboration. (Figures 25 and 26)

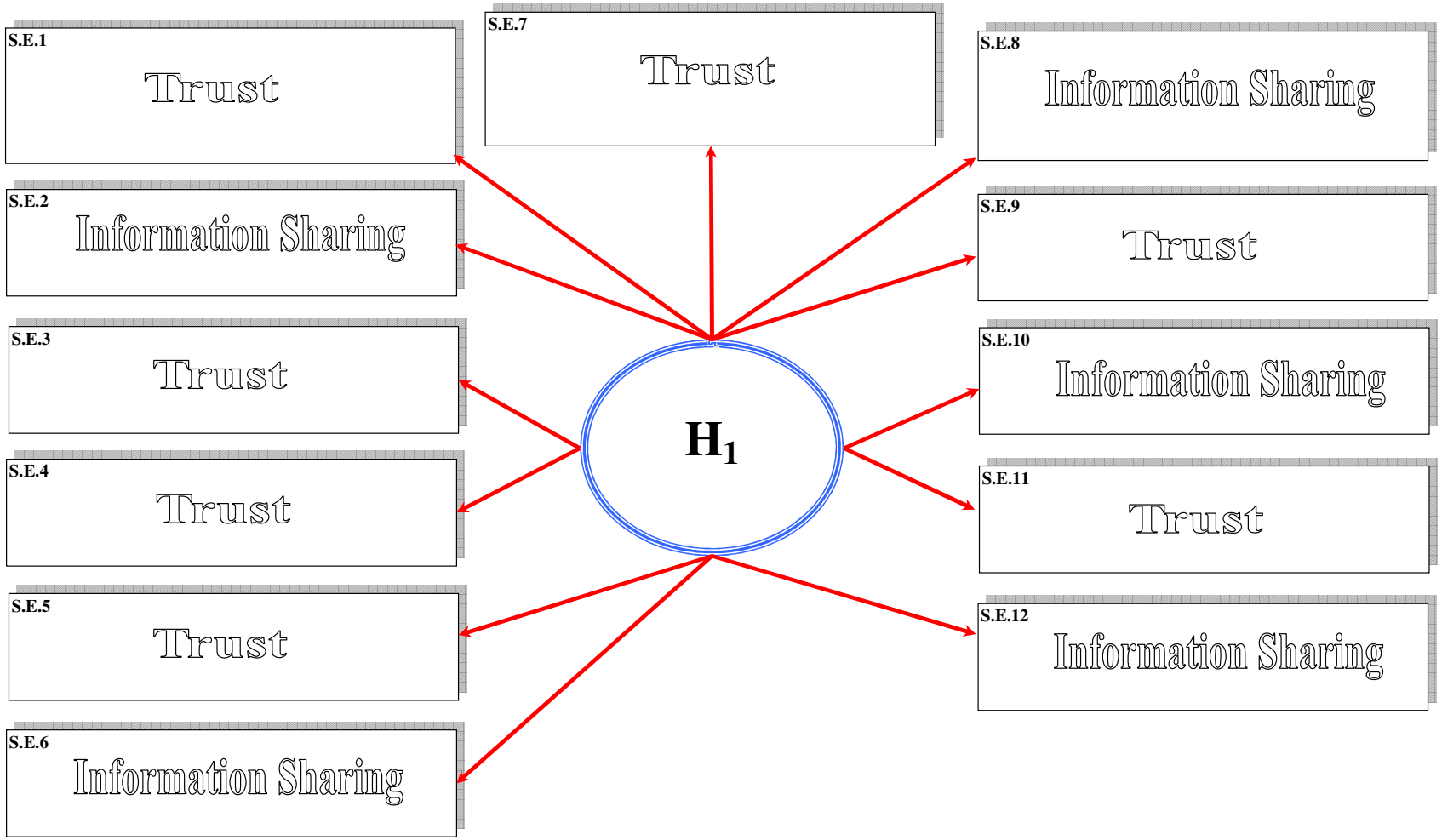
Finally, the survey statements between 43 and 55 are designed for $H_{4,}$ which is constructed to measure the degree of relationship between commitment and collaboration. (Figures 27 and 28)

The whole structure of the study is demonstrated in the following pages, in Figures 20 – 28.



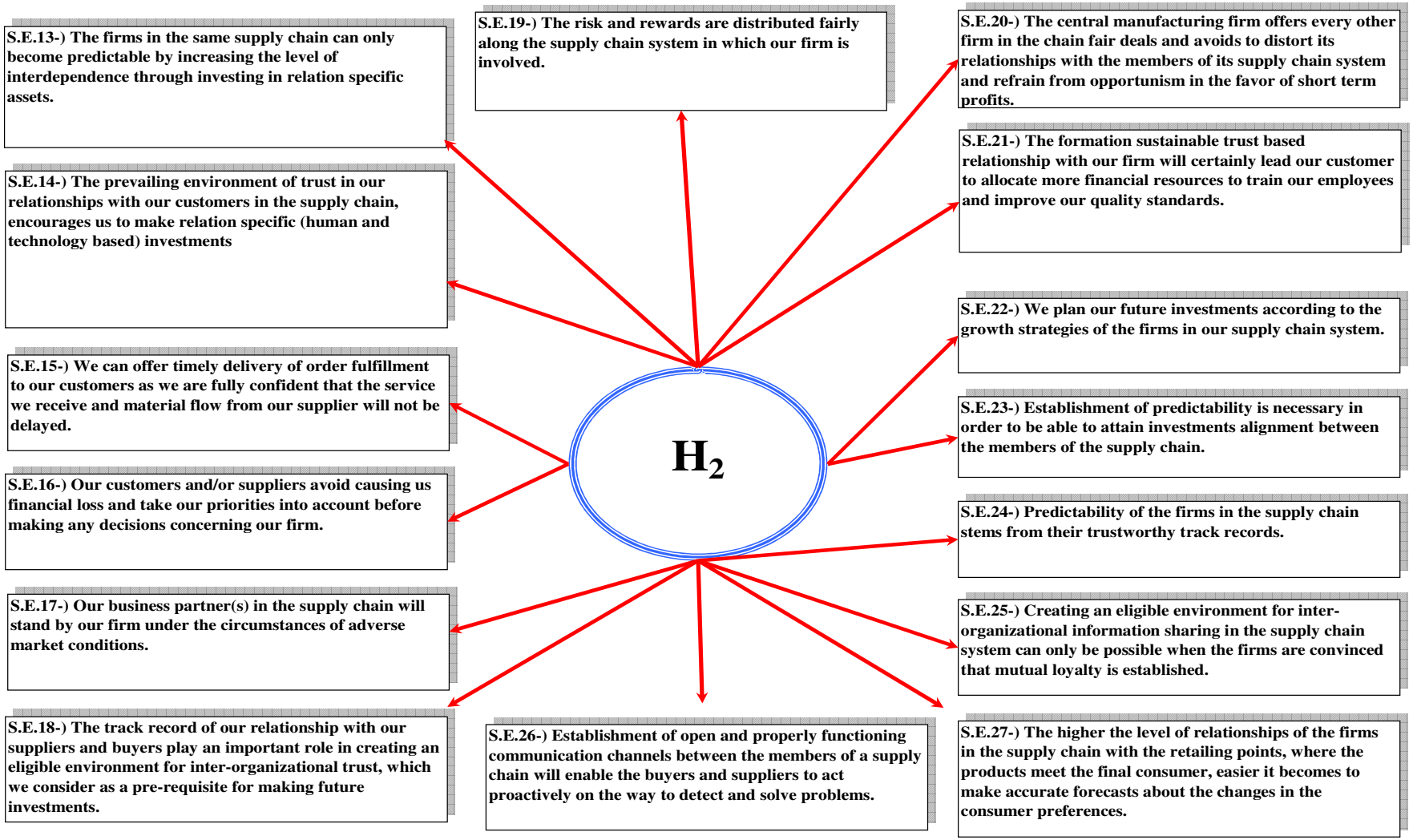
* S.E. : Survey Expression

Figure 21. The Expressions Designed for Measuring H_1



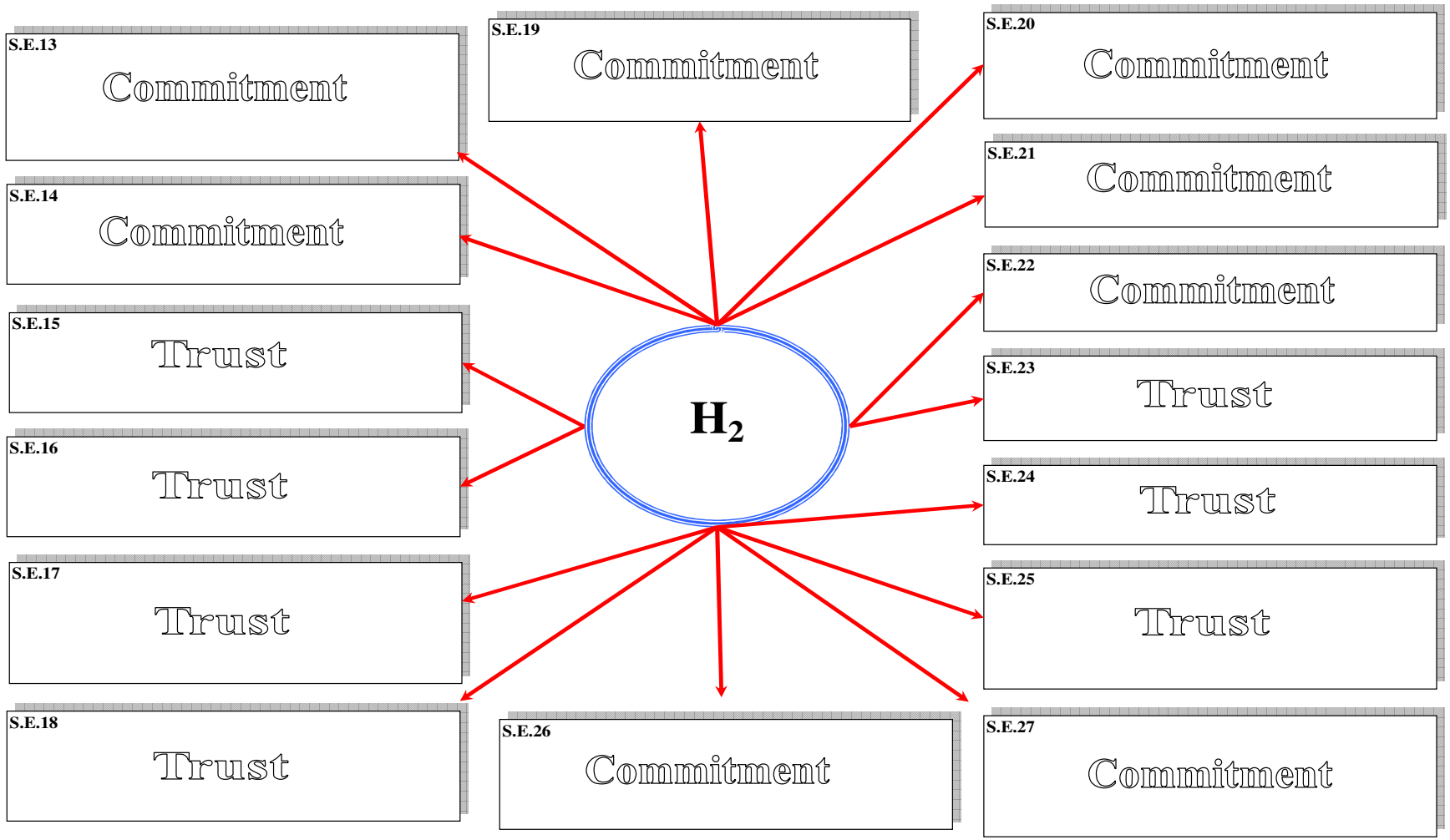
* S.E. : Survey Expression

Figure 22. The Expressions Assigned for Each Variable of H_1



* S.E. : Survey Expression

Figure 23. The Expressions Designed for Measuring H_2



* S.E. : Survey Expression

Figure 24. The Expressions Assigned for Each Variable of H_2

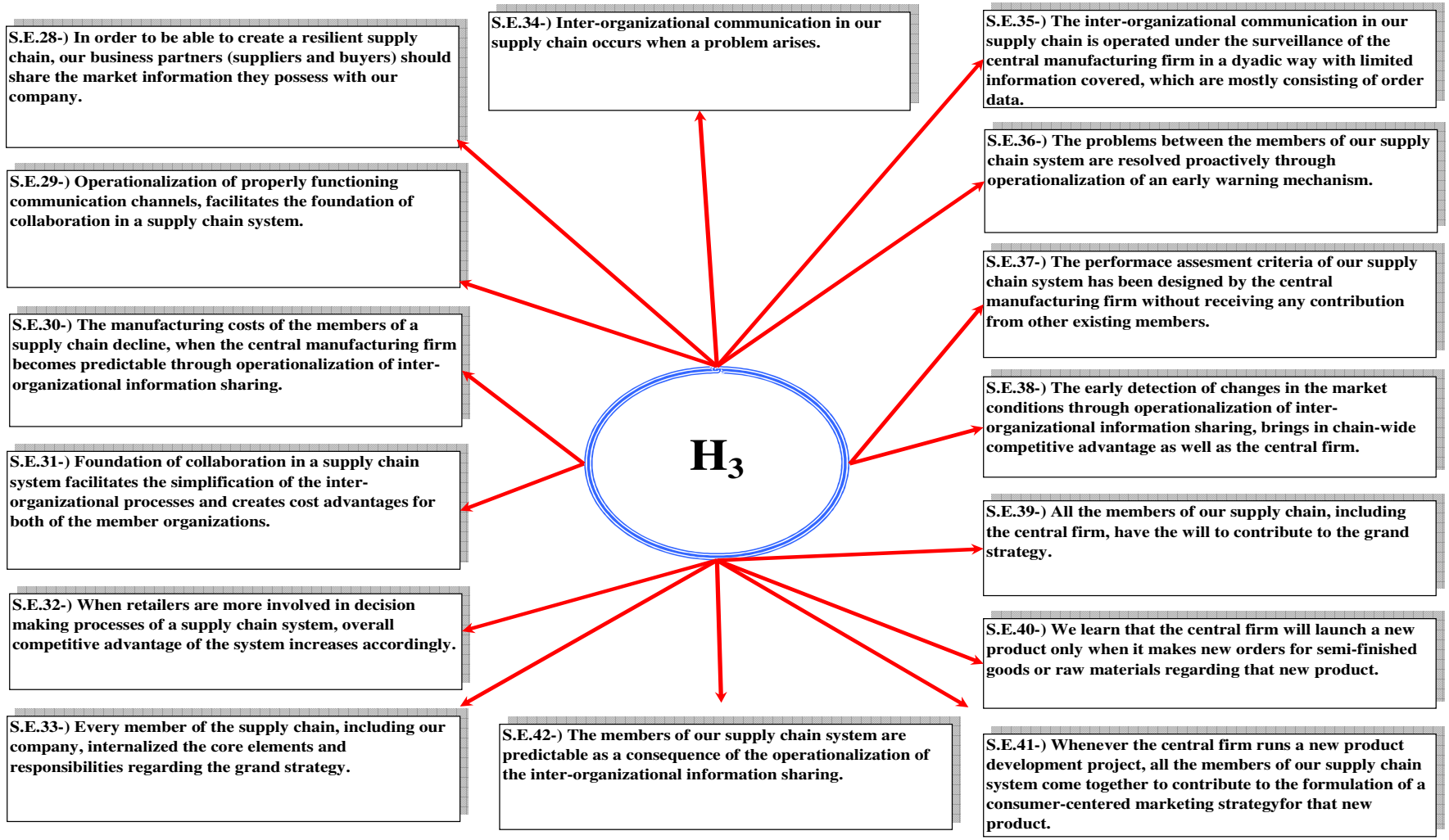


Figure 25. The Expressions Designed for Measuring H_3

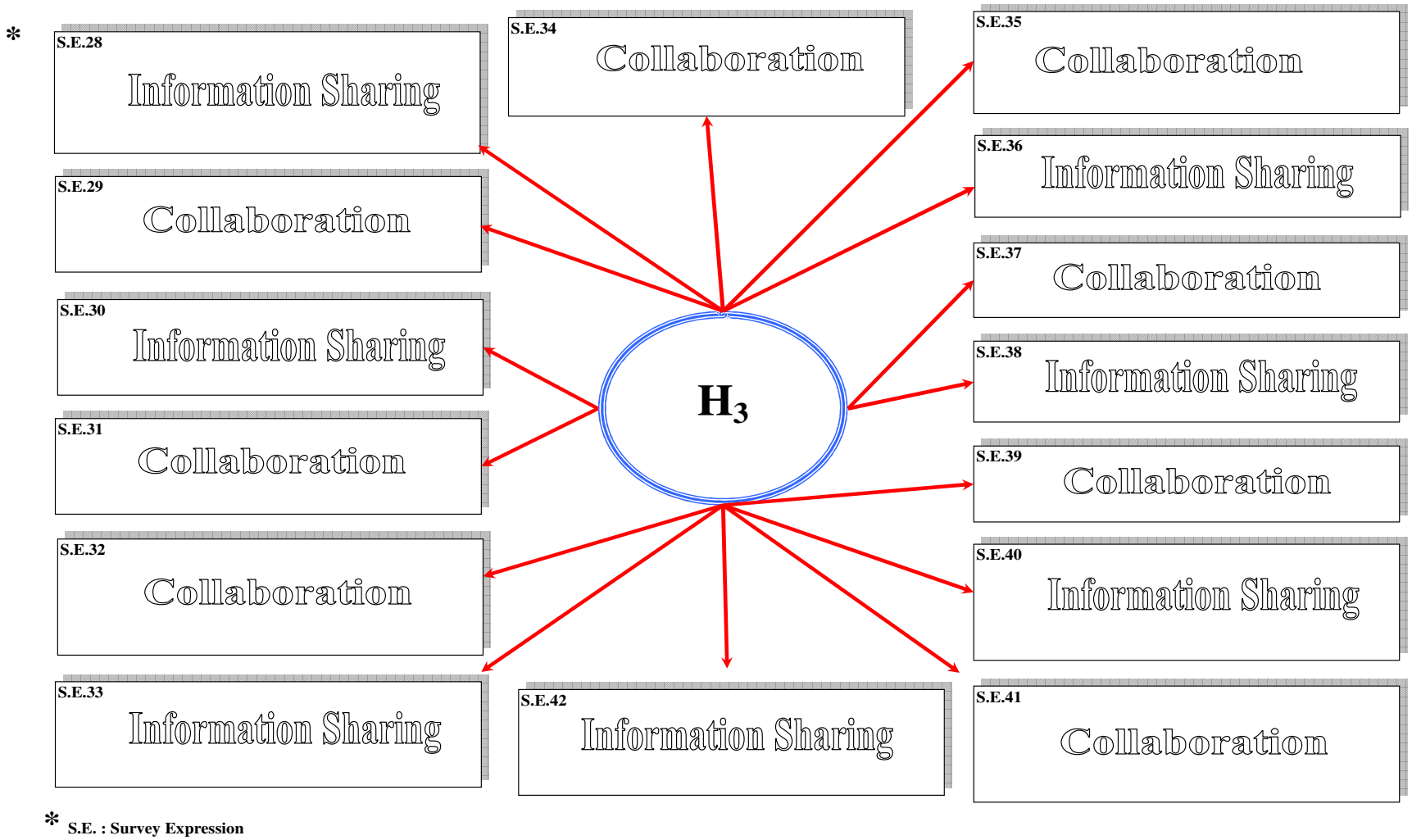
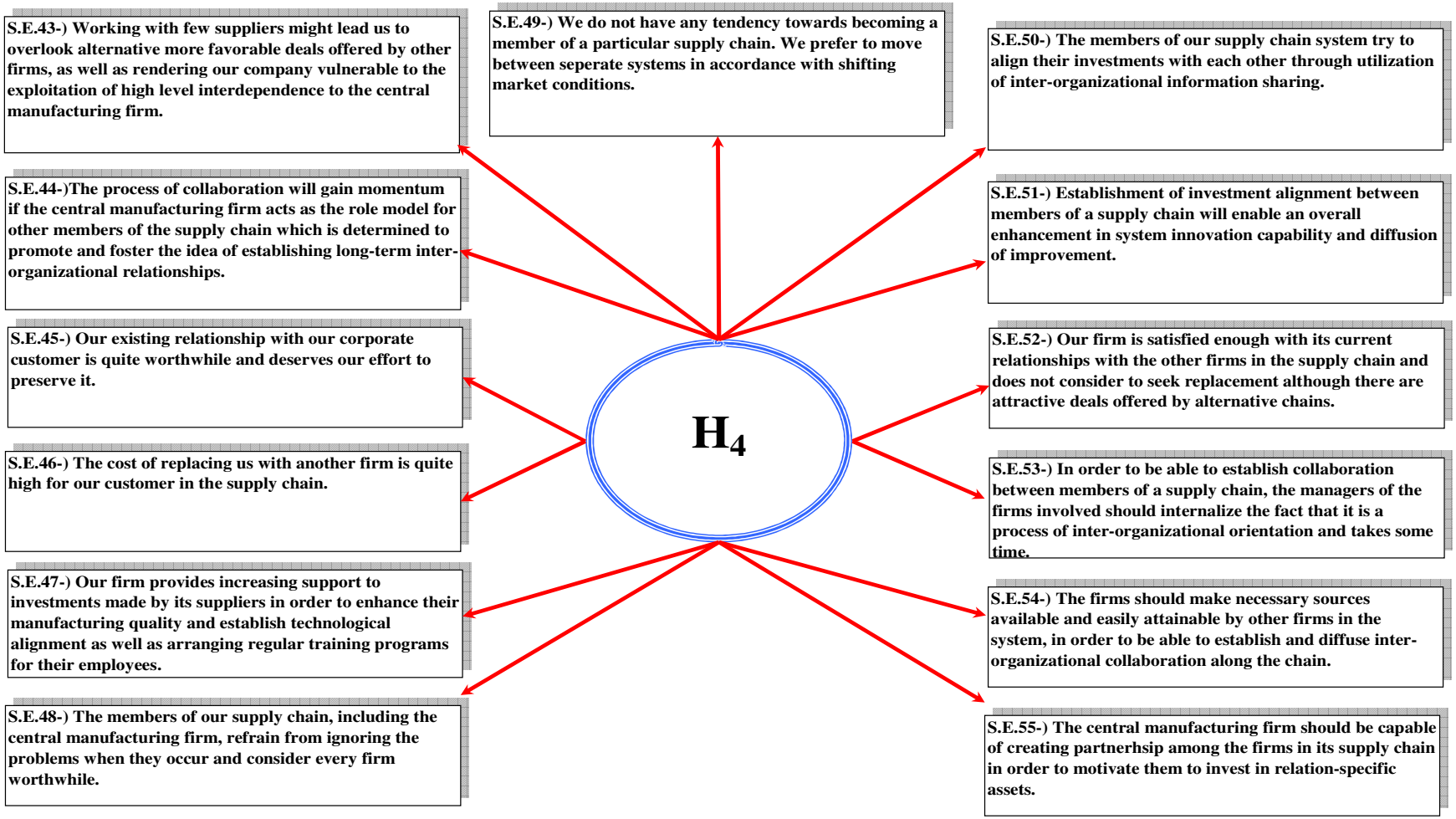


Figure 26. The Expressions Assigned for Each Variable of H_3



* S.E. : Survey Expression

Figure 27. The Expressions Designed for Measuring H_4

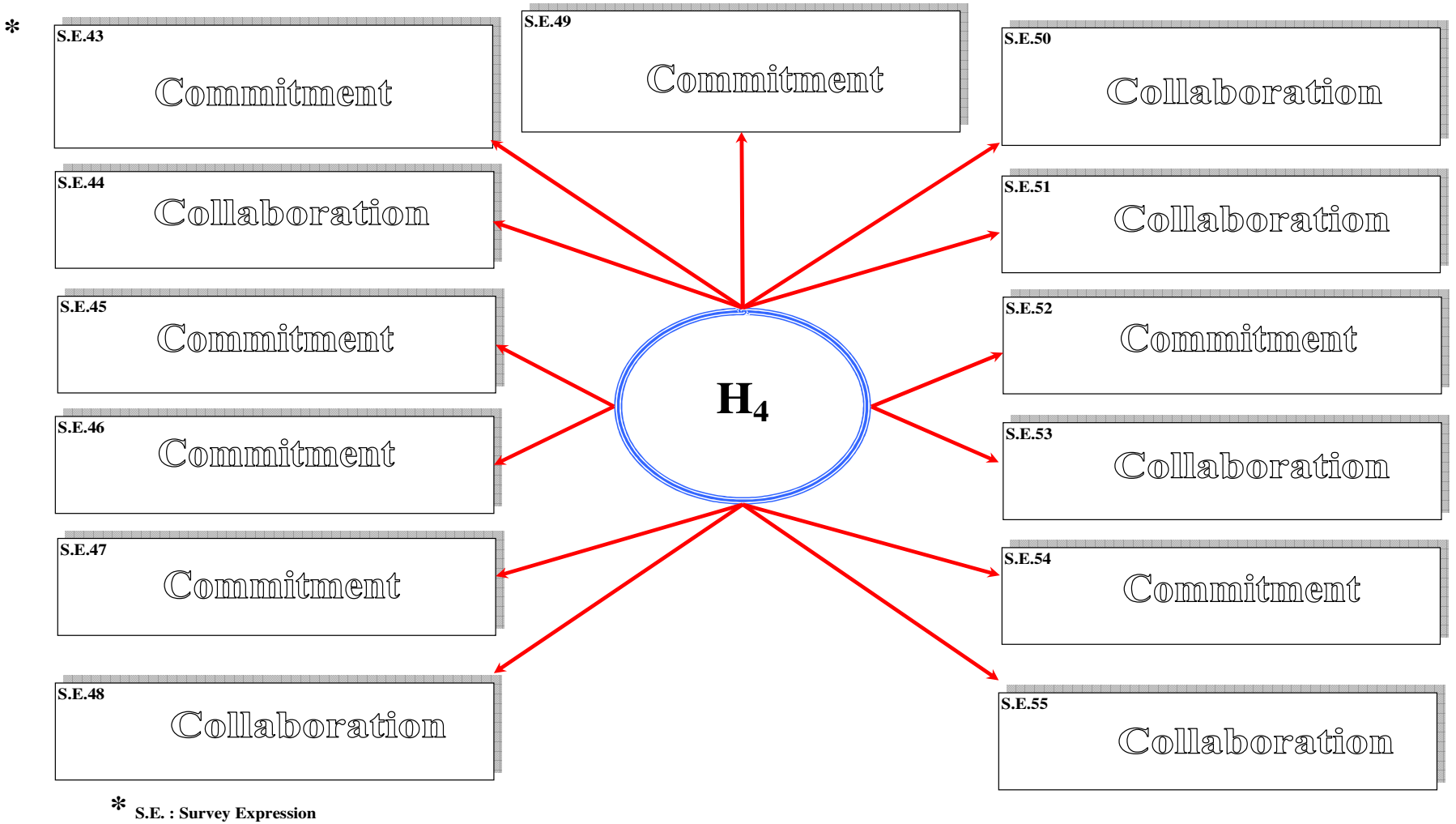


Figure 28. The Expressions Assigned for Each Variable of H_4

3.5. Analytical Methods Utilized

The aim of the research is to be able to extract and define the factors that embody the variables and determine the mutual relationship. The reasoning behind the selection of these methods is explained below.

3.5.1. Extraction of Factors

Each statement in the survey is designed to measure a specific variable in the proposed hypotheses. In order to be able to determine the utility of a set of statements, factor extraction method is utilized for H_1 and H_2. Factor analysis explicitly enables the recognition that any relationship is limited to a particular area of applicability (Gorsuch, 1983).

Factor analysis is employed in first phase of the analysis which is conceded as the most relevant statistical technique for analyzing the correlations between a number of variables in order to reduce them to a smaller number of underlying dimensions, called factors[22], and to determine to correlation of each of the original variables with each factor (Colman and Pulford, 2006). The aim is to summarize the inter-relationships among the variables in a concise but accurate manner as an aid in conceptualization (Gorsuch, 1983).

The utilization of this technique, allows the researcher to simplify each of four sets of data, all designed specifically in relation with the hypotheses, the variables with the highest explanatory power are to be figured out. This will enable to pick the prominent statements of the survey for each hypothesis on which the attitudes of the respondents are highly concentrated. These findings will serve as the objective means of assessing the explanatory power of the variables.

[22] Factor is a "construct operationally defined by its factor loadings" (Royce, 1963), as cited in Kline (1994).

The primary concern of this study is to determine the optimum number of factors needed to account for the maximum portion of the of the variance represented in the original variables, which in turn will form the basis for further explanation of causal relationships between the variables placed in the model.

3.5.2. Application of Regression Analysis

Explanatory factors are extracted out of the computed components which provide the opportunity to have the independent and dependent variables of each hypothesis to be embodied in these factors. Both, the dependent and the independent variables, are reduced into explanatory factors through running factor analysis only by only taking the items designed uniquely for the related variables. Following this method allowed to establish regression equations between these factors, in order to be able seek for significant relationships, by which it is anticipated that findings will enable us to make conceptual inferences about the relationships between the variables in the hypotheses.

Regression analysis is utilized to search for the existence of a causal connection and attempts to figure out influences that might occur when dependent and independent variables interact (Nakip, 2006). Within the framework of this research, this analysis can barely be used to make estimations for purposes of measuring such connection, that is to say, the hypotheses of the model are constructed for purposes of searching for the relationships, rather than reaching any conclusions based on predictions.

CHAPTER 4

DATA ANALYSIS AND EMPIRICAL FINDINGS

4.1. Computation of Reliability Statistics

There are 55 items (completed questionnaires) included in the study, each consisting 55 statements each. Therefore the response rate is realized as 50%. The covariance matrix is calculated and used in the analysis to demonstrate the existing interdependencies between items. A statistical software tool (SPSS) is utilized in analyzing the survey data entered.

Prior to getting started with the analytical process, it is essential to asses the reliability of the data provided by the application of the scale used in the study. It is emphasized that reliability tests are especially important when derivative variables are intended to be used for subsequent analyses (Santos, 1999).

Cronbach's alpha measures how well a set of items (or variables) measures a single one-dimensional latent construct. Cronbach's alpha is an index of reliability associated with the variation accounted for by the true score of the underlying constructs and generated scale is accepted to be more reliable as the score for this indicator becomes higher (Santos, 1999).

The computed score obtained on standardized items appears to be 0.906. Nunnaly (1978) and Sipahi, *et.al.* (2006), indicate a score level of 0.70 to be an acceptable reliability coefficient, though lower thresholds are sometimes used in the social sciences research literature. Therefore, the computed score in Table 6 can be accepted as highly satisfactory in terms of data reliability.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
,891	,906	55

Table 6. Reliability Scores

The item total statistics (Appendix A) is generally used to determine to what extent the alpha score could be increased when the individual items in the survey are excluded from the computation.

The table in Appendix A clearly indicates that exclusion of any item would decrease the score of reliability (i.e. Cronbach's Alpha if item deleted), rather than increasing it.

The level of consistency of the questionnaire items is quite satisfactory allowing the research procedure to proceed with the further phases of the statistical analysis.

4.2. Pretest Measures for Factor Analysis

Factor analysis is conducted after the data had been scrutinized for sample adequacy, using the Kaiser-Mayer-Olkin measure and Bartlett's test of sphericity.

The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy is an index for comparing the magnitudes of the observed correlation coefficients to the magnitudes of the partial correlation coefficients.

It is calculated from the sum of the correlation coefficients divided by the sum of the correlation coefficients and partial correlation coefficients, and if its value is less than 0.50, then partial correlations are high and correlations between pairs of variables are therefore relatively unaffected by other variables, and factor analysis should not proceed (Colman and Pulford, 2006). Large values for the KMO measure indicate that a factor analysis of the variables is plausible. (Table 7)

KMO Sampling Adequacy Index Scores	*Validity*
0.90 – 1.00	Perfect
0.80 – 0.89	Very Good
0.70 – 0.79	Good
0.60 – 0.69	Moderate
0.50 – 0.59	Poor
Below 0.50	Unacceptable

Table 7. Intervals of Validity for Kaiser-Mayer-Olkin Sampling Adequacy Index Scores (Akgül and Çevik, 2003)

Another indicator of the strength of the relationship among variables is Bartlett's test of sphericity. Bartlett's test of sphericity is used to test the null hypothesis that the variables in the population correlation matrix are uncorrelated. If the test fails to reject this hypothesis at $p<0.05$, then there are insufficient correlations between variables and factor analysis is futile (Colman and Pulford, 2006).

4.3. Factor and Regression Analyses for Hypothesis – 1

The results of the factor analysis run for Hypothesis – 1 are as follows:

4.3.1. Factor Analysis for the Variables of Trust in Hypothesis – 1

The variables of trust in H_1 are extracted and a factor analysis is applied in order to be able to figure out the outstanding expressions that constitute the factors. The

KMO and Bartlett's test scores allow the study to proceed with the further steps of factor analysis. (Table 8)

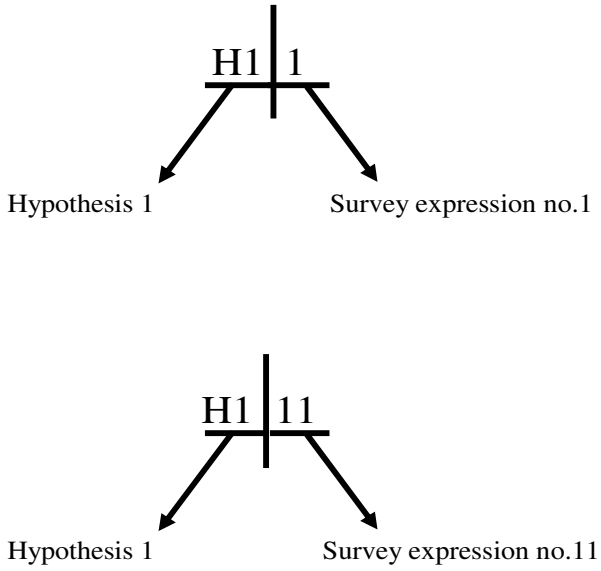


Figure 29. Explanation of the Abbreviations Used for Assigned Survey Expressions for Related Hypothesis

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,617
Bartlett's Test of Sphericity	Approx. Chi-Square	46,487
	df	21
	Sig.	,001

Table 8. KMO and Bartlett's Test Scores Computed for Variables of Trust in H_1

There are three components with eigenvalues greater than 1.00 selected and they appear to be capable of explaining the 66.72% of the total variance. The table of total variance explanation shows all the factors extracted, in descending order of their eigenvalues, together with the percentage of the variance in the original variables explained by each factor, and the cumulative percentage of variance explained after the extraction of factors with progressively lower eigenvalues (Colman and Pulford,

2006). Table 10 indicates the number of factors that we are going to deal with in finding out the determining sub-factors of the "Trust" side of H_1. Thus, we will be able to focus on the prominent items constituting the factors, which will be used to figure out the anticipated relationships. (Table 9 and Figure 30)

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2,120	30,284	30,284	2,120	30,284	30,284	1,902	27,169	27,169
2	1,447	20,671	50,956	1,447	20,671	50,956	1,655	23,638	50,808
3	1,104	15,765	66,720	1,104	15,765	66,720	1,114	15,912	66,720
4	,724	10,345	77,065						
5	,617	8,813	85,878						
6	,561	8,017	93,894						
7	,427	6,106	100,000						

Extraction Method: Principal Component Analysis.

Table 9. Total Variance Explained for Factor Analysis of Trust Variables in H_1

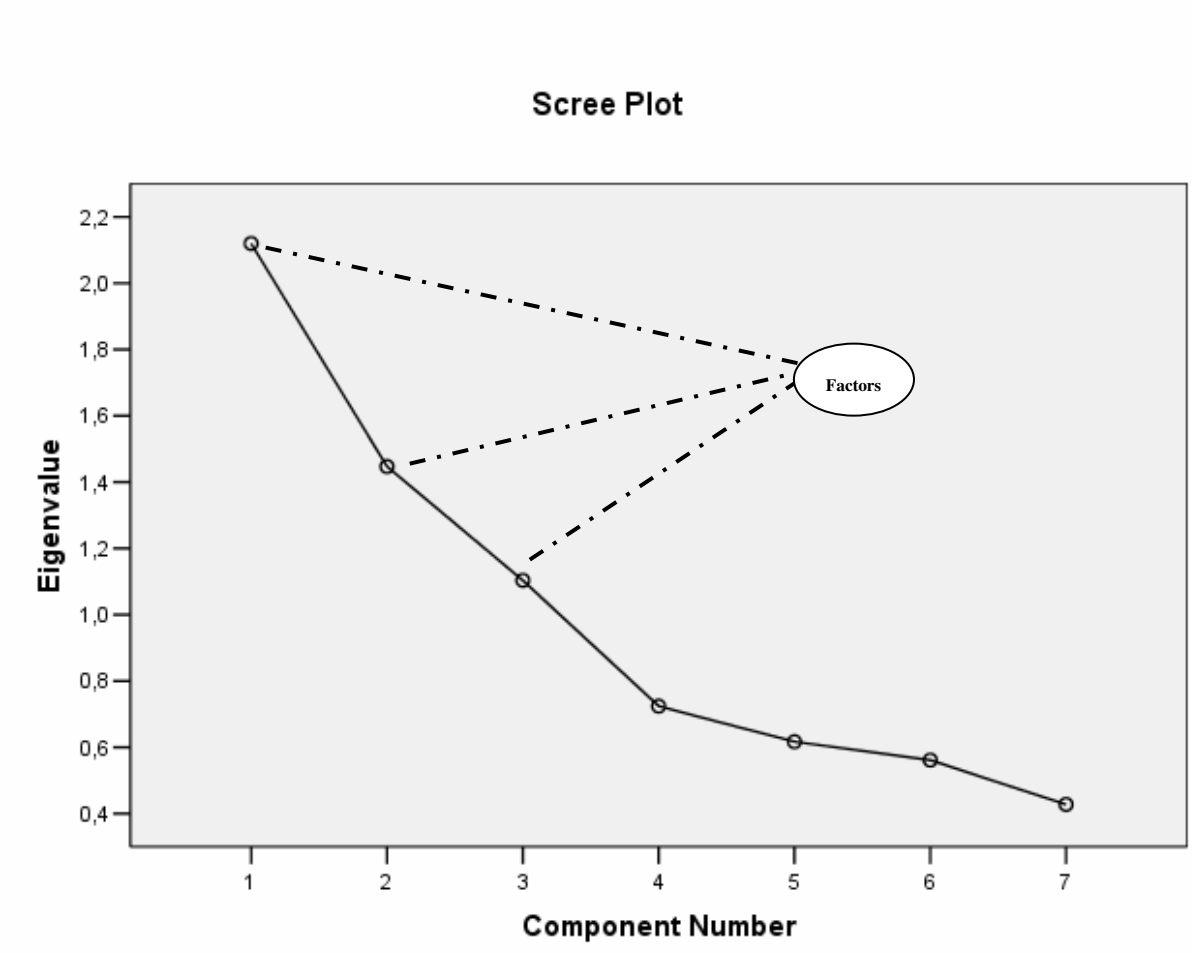


Figure 30. Eigenvalues for the Trust Based Variables in H_1

The rotated component matrix clearly indicates the factors extracted for trust variables of H_1 (Table 10).When the items that constitute the factors are monitored, $_{H1\text{-}TRUST}F_1$ is labeled as "Need for Warranty" (Figure 31). This factor involves the managers' attitudes towards need for avoiding vulnerability. The adverse effects that might be caused within the framework of inter-organizational relationships in the supply chain are considered to be a major concern for the purchasing managers. In spite of their awareness about the necessity for information sharing, the managers who responded to the survey emphasize the requirement of a contract that will serve as protective legal shield against any possibility of opportunistic behavior (H_1 – 7).

Rotated Component Matrix[a]

	Component		
	1	2	3
H17	,808	-,194	-,286
H15	,774	,085	,294
H19	,709	,283	,106
H14	,027	-,793	,012
H11	,047	,785	,055
H13	,371	,530	-,222
H111	,076	-,052	,939

$_{H1\text{-}TRUST}$ Factor$_1$ (H17, H15, H19)

$_{H1\text{-}TRUST}$ Factor$_2$ (H14, H11, H13)

$_{H1\text{-}TRUST}$ Factor$_3$ (H111)

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalizatio
a. Rotation converged in 4 iterations.

Table 10. Outstanding Factors of Trust after Rotation (H_1)

This concern could also be seen in the second constituting item of $_{H1\text{-}TRUST}F_1$, which indicates that need for information sharing and anxiety of becoming vulnerable to adverse impact of opportunistic behavior, co-exist. The third item of $_{H1\text{-}TRUST}F_1$ (H_1 – 9) points out the source of the "Need for Warranty", as well as revealing a pathway to overcome prevailing concerns that stand against establishing channels of information sharing

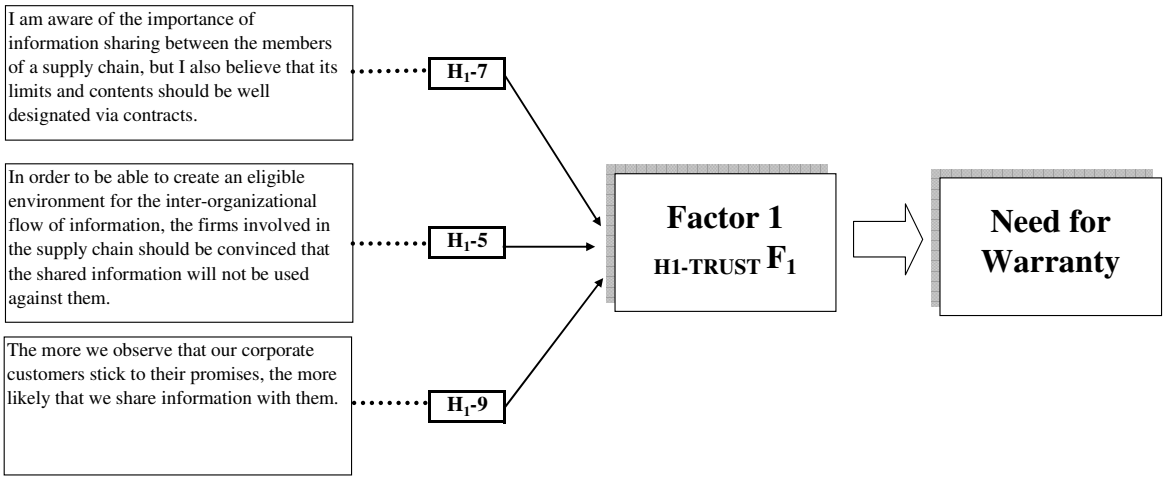


Figure 31. Factor – 1 of H_1 – Trust

The managers stress the need for "testing the waters" prior to engaging into relationship building, that is to say, the reliability of the other party should be confirmed and the track record of the relationship should be proven as trustworthy. Managers make special emphasis on the perils of opportunism.

The managers appear to be inclined to make observations about the buyers and/or suppliers that they deal with in the supply chain. These observations will set the grounds for building inter-organizational trust, which will also enable both parties build properly functioning information channels, to the extent the members of the supply chain system are capable of fulfilling what they have undertaken.

When the items that constitute the factors are monitored, $_{H1\text{-}TRUST}F_2$ is labeled as "Good Intention" (Figure 32). This factor involves the managers' attitudes towards tendency to creating an environment of transparency and compliance with rules of confidentiality. Especially, the issue of transferring confidential data, which could sometimes include commercial secrets, is highly fragile in terms of establishing trust building mechanisms between organizations. The occurrence of losses caused by the incomplete or defective information regarding manufacturing operations, order quantities and schedule, transferred by the buyer or supplier in the chain, is detrimental on the way to establish inter-organizational trust.

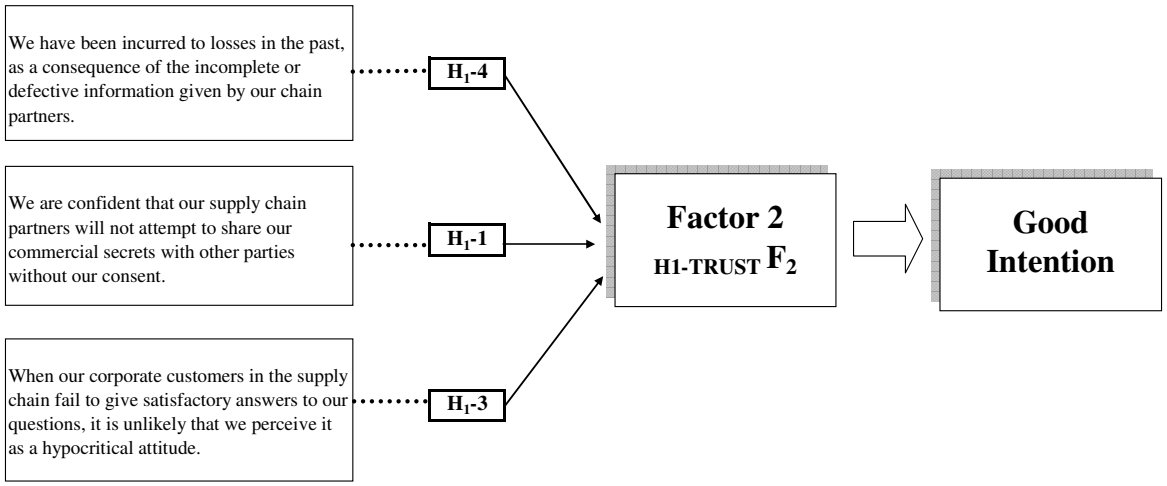


Figure 32. Factor – 2 of H_1 – Trust

The buyers' and/or suppliers' failure to provide complete and satisfactory information could be tolerated to some degree under the circumstances of an existence of "Good Intention" and the will to carry it on. However, violation of confidentiality is unacceptable. A breach in rules of confidentiality will cause an irrevocable damage in the reliability of the violating party, which will inevitably sweep away any possibility to preserve the relationship.

When the rotated component matrix is taken into consideration, Item-11 appears with the highest score of correlation, which also constitutes the $_{H1\text{-}TRUST}F_3$ by itself (Figure 33). The interaction of $_{H1\text{-}TRUST}F_3$ with other two factors will enable to decipher the significance of this factor. "Skepticism" is highly inter-related with other factors, "Need for Warranty" and "Good Intention", and significant in determining the link between trust and information sharing with its potential to discompose the way the information sharing mechanisms are functioning. When one of the firms in the chain attempts to use the information received to the disadvantage of its buyer and/or supplier, this kind of action is perceived to cause serious damage to the establishment of inter-organizational trust.

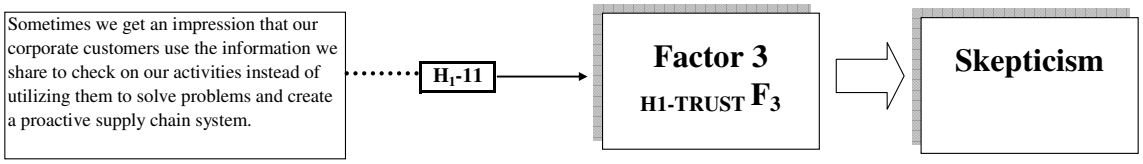


Figure 33. Factor – 3 of H_1 – Trust

The underlying assumption of information sharing is to enhance the supply chain system's overall ability to resist against the competitive pressures rather than exploiting information channel as a tool of conducting intelligence activity. The information shared are supposed to foster the overall innovation capability and its misuse will set obstacles on the way to create a proactive supply chain system.

4.3.2. Factor Analysis for Variables of Information Sharing in Hypothesis – 1

The variables of information sharing in H_1 are extracted and a factor analysis is applied in order to be able to figure out the outstanding statement items that constitute the factors. The KMO and Bartlett's test scores allow the study to proceed with the further steps of factor analysis (Table 11).

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,595
Bartlett's Test of Sphericity	Approx. Chi-Square	19,323
	df	10
	Sig.	,036

Table 11. KMO and Bartlett's Test Scores Computed for Variables of Information Sharing in H_1

There are two components with eigenvalues greater than 1.00 selected and they appear to be capable of explaining approximately 58% of the total variance. (Table 12 and Figure 34)

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1,750	34,991	34,991	1,750	34,991	34,991	1,453	29,064	29,064
2	1,150	23,006	57,997	1,150	23,006	57,997	1,447	28,933	57,997
3	,875	17,497	75,494						
4	,635	12,699	88,192						
5	,590	11,808	100,000						

Extraction Method: Principal Component Analysis.

Table 12. The Factors with High Eigenvalues and Total Variance Explained for Factor Analysis of Information Sharing Variables in H_1

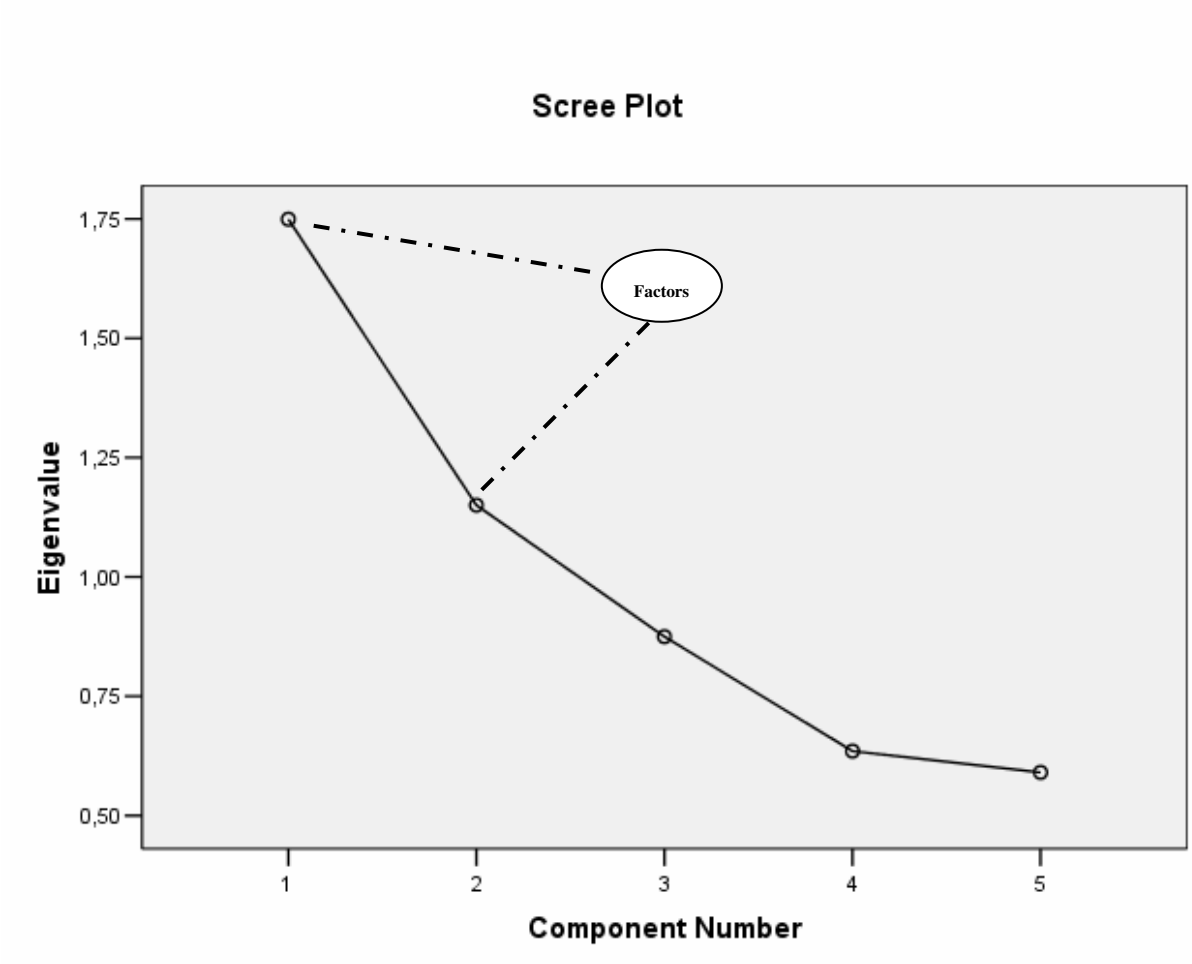


Figure 34. Eigenvalues for the Information Sharing Based Variables in H_1

Rotated Component Matrix [a]

	Component	
	1	2
H110	,846	-,059
H16	,770	,174
H12	,092	,741
H112	-,123	,659
H18	,348	,656

H1 INF.SHA.Factor$_1$ (H110, H16)

H1 INF.SHA.Factor$_2$ (H12, H112, H18)

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 3 iterations.

Table 13. Outstanding Factors of Information Sharing after Rotation

The rotated component matrix (Table 13 above) clearly indicates the factors extracted for information sharing variables of H_1.When the items that constitute the factors are monitored, $_{H1\text{-}INF.SHA.}F_1$ is labeled as "Open Communication" (Figure 35). This factor includes two sides of communication, which are compliant with the arguments observed throughout the literature. One of them is the emphasis made by the responding purchasing managers on being connected on-line through software infrastructure alignment, in order to be able to create an eligible environment for information sharing.

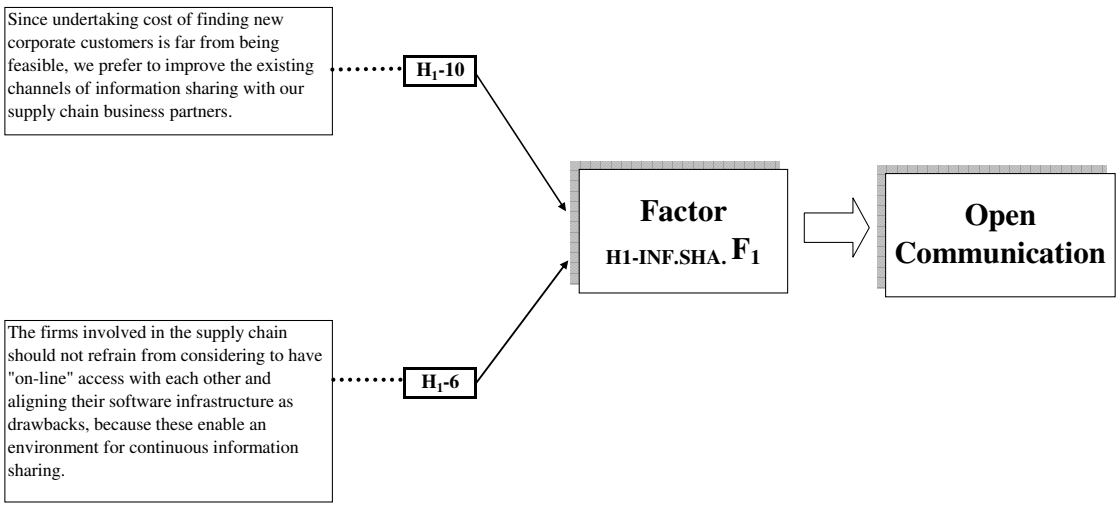


Figure 35. Factor – 1 of H_1 – Information Sharing

Another aspect is the cost of replacing existing corporate customer (downstream and/or upstream) within the chain that the respondents' firms are operating. Improving the current relationships is perceived to be more feasible by the managers, as the experiences of both parties has led to the achievement of mutual compatibility to some extent and dismantling the relationship will force firms to incur to high costs.

When the items that constitute the factors are monitored, $_{H1\text{-}INF.SHA.}F_2$ is labeled as "Continuity" (Figure 36). The co-existence of this factor with "Open Communication" is quite significant. This factor indicates the way the respondents perceive inter-organizational information sharing. The managers underscore the importance of continuous flow of information between the members of the supply chain, which is also one of the components of the $_{H1\text{-}INF.SHA.}F_1$. They believe that the content of the information shared should be able to make contribution to the enhancement of process qualities of the firms. And for this reason, they do not seem to hesitate to carry the relationship up to a higher level through establishing mutual contact points and employ representatives in each other's firms and stress the necessity for the continuity of the flow of inter-organizational information sharing.

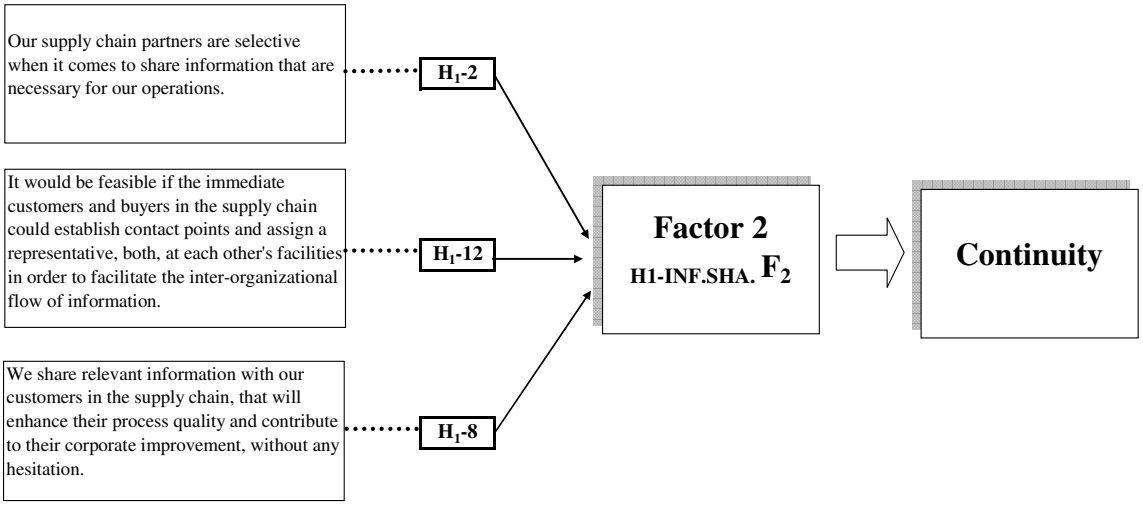


Figure 36. Factor – 2 of H_1 – Information Sharing

4.3.3. Regression Analysis between the Factors Extracted for Hypothesis – 1

Regression analysis is applied on each factor extracted related to H_1. As can be seen in Figure 37, three significant regression equations are obtained.

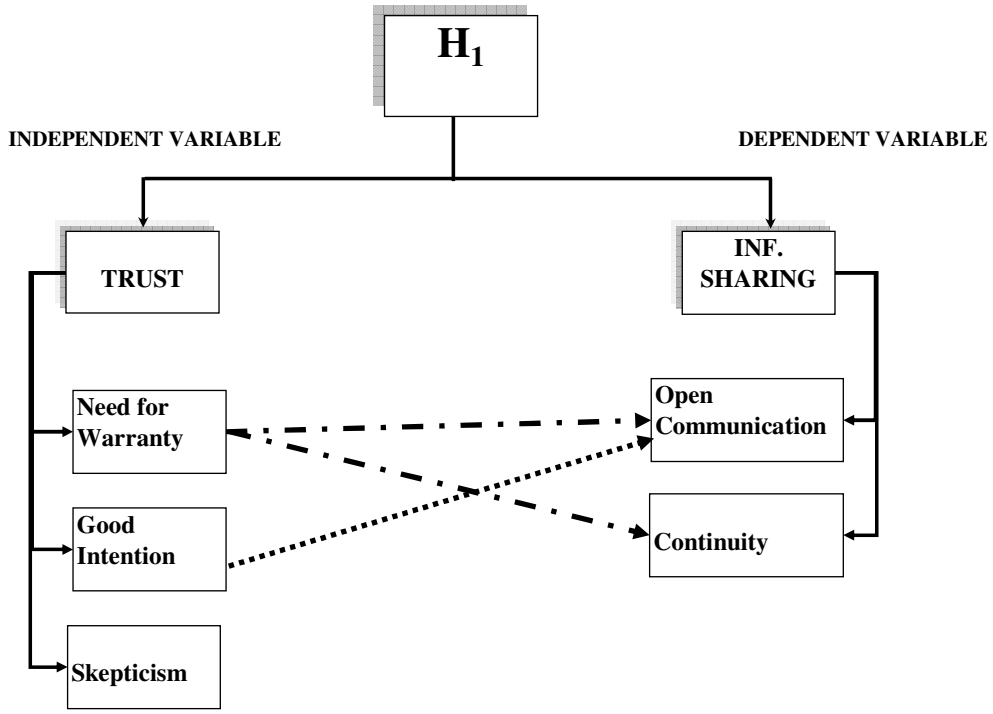


Figure 37. Significant Relationships Demonstrated for the Factors of H_1

4.3.3.1. Regression Analysis between $_{H1\text{-}TRUST.}F_1$ and $_{H1\text{-}INF.SHA.}F_1$

The regression between "Need for Warranty" ($_{H1\text{-}TRUST.}F_1$) and "Open Communication" ($_{H1\text{-}INF.SHA.}F_1$) is significant at $p<=0.01$ (Table 15). It is highly feasible to assert that there is a significant relationship between these two variables. The *moderate* strength found for the equation (as shown by the coefficient of determination score, R in Table 14) allows making inferences from the existing relationship between these two factors.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,504[a]	,254	,239	,87254036

a. Predictors: (Constant), REGR factor score 1 for analysis 1

Table 14. Model Summary for Regression Between $_{H1\text{-}TRUST.}F_1$ and $_{H1\text{-}INF.SHA.}F_1$

The relationship observed between "Need for Warranty" and "Open Communication" sounds quite plausible as managers perceive the operationalization of open communication between organizations in the chain as becoming vulnerable to potential adverse effects caused by opportunistic behavior. Need for warranty appears to be a determining the way the open communication is established and maintained.

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	12,456	1	12,456	16,361	,000[a]
	Residual	36,544	48	,761		
	Total	49,000	49			

a. Predictors: (Constant), REGR factor score 1 for analysis 1

b. Dependent Variable: REGR factor score 1 for analysis 2

Table 15. Significance of Regression between $_{H1\text{-}TRUST.}F_1$ and $_{H1\text{-}INF.SHA.}F_1$

Since communication will allow the inter-organizational flow information, managers appear to be seeking for some kind of protection prior to getting involved into information sharing activities. It should be highlighted that the relationship between these two factors does not suggest any avoidance from building properly functioning information channels. The need for warranty is perceived to be a pre-requisite for the sustainability of the functionality of the open communication, rather than an obstacle on the way to create an environment for inter-organizational information sharing.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	-1,3E-016	,123		,000	1,000	-,248	,248
	REGR factor score 1 for analysis 1	,504	,125	,504	4,045	,000	,254	,755

a. Dependent Variable: REGR factor score 1 for analysis 2

Table 16. Regression Coefficients for $_{H1\text{-}TRUST.}F_1$ and $_{H1\text{-}INF.SHA.}F_1$

4.3.3.2. Regression Analysis between $_{H1\text{-}TRUST.}F_1$ and $_{H1\text{-}INF.SHA.}F_2$

The regression between "Need for Warranty" ($_{H1\text{-}TRUST.}F_1$) and "Continuity" ($_{H1\text{-}INF.SHA.}F_2$) is significant at p<=0.050 (Table 17). It is highly feasible to assert that there is a significant relationship between these two variables. The score of strength is found to be *poor* (as shown by the coefficient of determination score, R in Table 16), *but* allows making inferences from the existing relationship between these two factors.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,282[a]	,079	,060	,96950474

a. Predictors: (Constant), REGR factor score 1 for analysis 1

Table 17. Model Summary for Regression between $_{H1\text{-}TRUST.}F_1$ and $_{H1\text{-}INF.SHA.}F_2$

The finding is compliant with what is suggested in the relationship between the factors of "Need for Warranty" and "Open Communication". It is mentioned above that the managers consider the sustainability of the relationship extremely important because of the potential high cost of replacing the buyer/and or supplier they are working with in the supply chain.

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3,883	1	3,883	4,131	,048[a]
	Residual	45,117	48	,940		
	Total	49,000	49			

a. Predictors: (Constant), REGR factor score 1 for analysis 1

b. Dependent Variable: REGR factor score 2 for analysis 2

Table 18. Significance of Regression between $_{\text{H1-TRUST.}}F_1$ and $_{\text{H1-INF.SHA.}}F_2$

At this point, the factor of "Continuity" appears as a significant determinant of an attitude towards what is being perceived as crucial, on the way to establish inter-organizational information channels. The managers not only stress the requirement of some kind of protection in order to be able to assure the security of the content, they also seek for some form of pledge of assurance for ensuring the continuity of the relationship.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	-4,9E-017	,137		,000	1,000	-,276	,276
	REGR factor score 1 for analysis 1	,282	,139	,282	2,032	,048	,003	,560

a. Dependent Variable: REGR factor score 2 for analysis 2

Table 19. Regression Coefficients for $_{\text{H1-TRUST.}}F_1$ and $_{\text{H1-INF.SHA.}}F_2$

4.3.3.3. Regression Analysis between $_{\text{H1-TRUST.}}F_2$ and $_{\text{H1-INF.SHA.}}F_1$

The regression between "Good Intention" ($_{\text{H1-TRUST.}}F_2$) and "Open Communication" ($_{\text{H1-INF.SHA.}}F_1$) is significant at p<=0.050 (Table 19). It is highly feasible to assert that there is a significant relationship between these two variables. The score of strength is found to be *poor* (as shown by the coefficient of determination score, R in Table 18), *but* allows making inferences from the existing relationship between these two factors.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,318[a]	,101	,082	,95789840

a. Predictors: (Constant), REGR factor score 2 for analysis 1

Table 20. Model Summary for Regression between $_{\text{H1-TRUST.}}F_2$ and $_{\text{H1-INF.SHA.}}F_1$

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	-9,8E-017	,135		,000	1,000	-,272	,272
	REGR factor score 2 for analysis 1	,318	,137	,318	2,324	,024	,043	,593

a. Dependent Variable: REGR factor score 1 for analysis 2

Table 21. Regression Coefficients for $_{\text{H1-TRUST.}}F_2$ and $_{\text{H1-INF.SHA.}}F_1$

The managers, who have responded to the survey, favor the existence of good intention to enable open communication. The existence of good intention is sought after besides the precautionary measures needed for the protective purposes. The analysis of the responds of the managers lead us to extract a prevailing understanding that although firms put considerable amount of effort in designing "perfect" contracts, there is always a weakness to be exploited. At this point, existence good intention appears as a unique self auditing mechanism that even might lead to ideal state of removing contracts in the future.

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4,957	1	4,957	5,402	,024[a]
	Residual	44,043	48	,918		
	Total	49,000	49			

a. Predictors: (Constant), REGR factor score 2 for analysis 1

b. Dependent Variable: REGR factor score 1 for analysis 2

Table 22. Significance of Regression between $_{\text{H1-TRUST.}}F_2$ and $_{\text{H1-INF.SHA.}}F_1$

4.4. Factor and Regression Analyses for Hypothesis – 2

The results of the factor analysis run for Hypothesis – 2 are as follows:

4.4.1. Factor Analysis for Variables of Trust in Hypothesis – 2

The variables of trust in H_2 are extracted and a factor analysis is applied in order to be able to figure out the outstanding statement items that constitute the factors. The KMO and Bartlett's test scores allow the study to proceed with the further steps of factor analysis (Table 20).

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,639
Bartlett's Test of Sphericity	Approx. Chi-Square	67,211
	df	21
	Sig.	,000

Table 23. KMO and Bartlett's Test Scores Computed for Variables of Trust in H_2

There are two components with eigenvalues greater than 1.00 selected and they appear to be capable of explaining approximately 55% of the total variance (Table 21 and Figure 38).

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2,588	36,978	36,978	2,588	36,978	36,978	2,280	32,572	32,572
2	1,260	17,994	54,972	1,260	17,994	54,972	1,568	22,400	54,972
3	,985	14,075	69,047						
4	,775	11,069	80,116						
5	,612	8,739	88,855						
6	,415	5,924	94,779						
7	,365	5,221	100,000						

Extraction Method: Principal Component Analysis.

Table 24. The Factors with High Eigenvalues and Total Variance Explained for Factor Analysis of Trust Variables in H_2

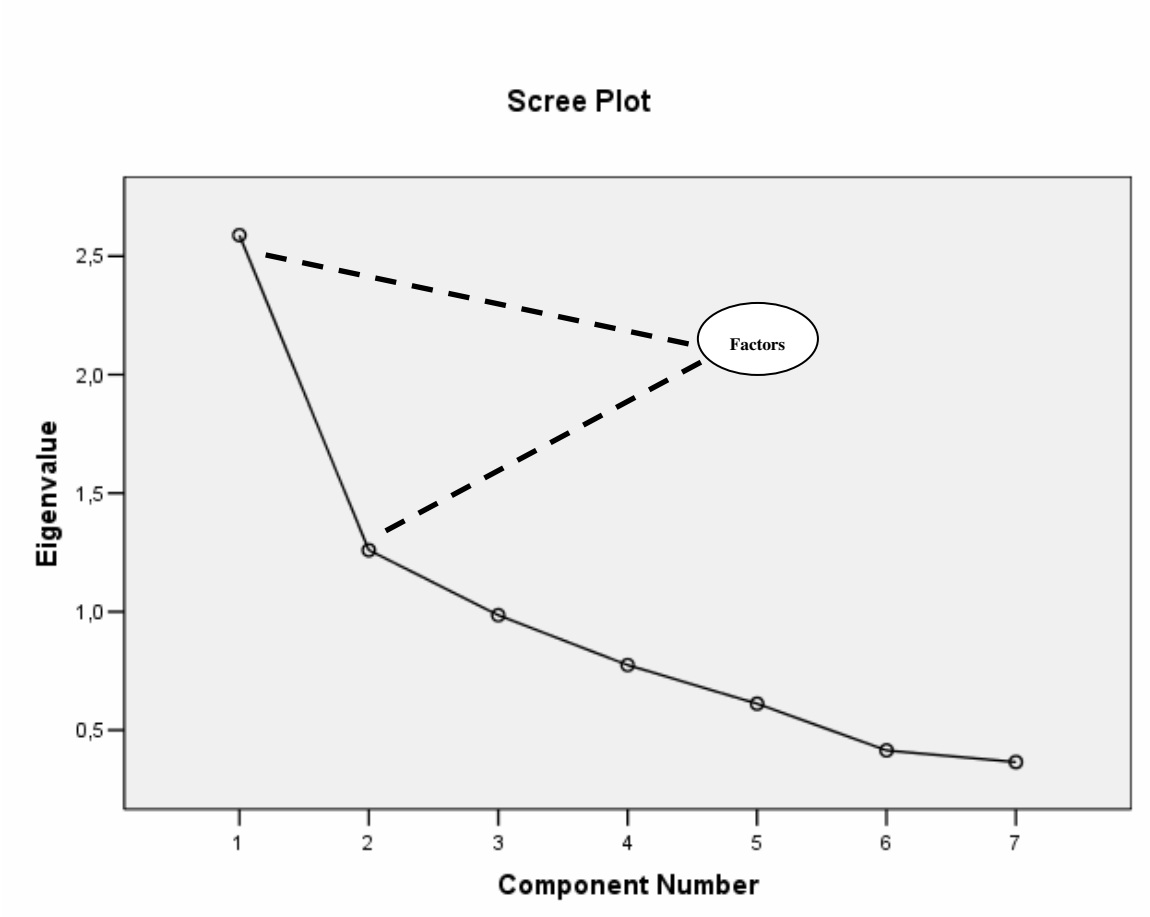


Figure 38. Eigenvalues for the Trust Based Variables in H_2

The rotated component matrix (Table 22) clearly indicates the factors extracted for variables of trust in H_2.

Rotated Component Matrix[a]

	Component	
	1	2
H223	,788	,030
H224	,728	,087
H218	,713	,239
H215	,586	,006
H225	,468	,402
H216	-,078	,853
H217	,228	,783

H2 TRUST Factor$_1$

H2 TRUST Factor$_2$

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 3 iterations.

Table 25. Outstanding Factors of Trust after Rotation

When the items that constitute the factors are monitored, $_{H2\text{-}TRUST}F_1$ is labeled as "Past Experience with Buyers and/or Suppliers" (Figure 39). This factor indicates that the managers consider the track record of the relationship as crucial, prior to getting involved in any form of commitment. As it is clearly articulated in the survey item, the track record of the relationship is perceived to be quite critical for trusting in the other party along the supply chain. It is also salient what managers anticipate from the track record of the relationship to prove.

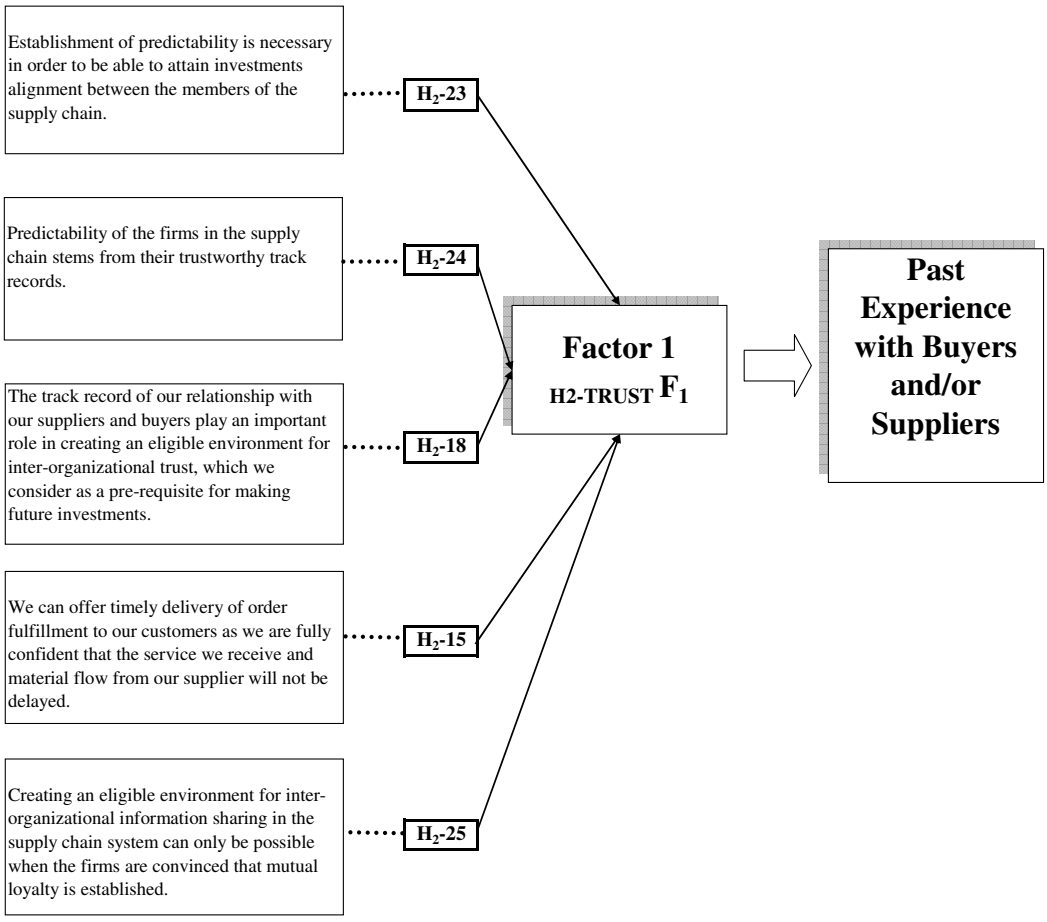


Figure 39. Factor – 1 of H_2 – Trust

Loyalty, at this point, is emphasized clearly as a designation for inter-organizational trust. They expect the track record of the interaction to prove that the buyers and/or suppliers refrain from involving into any kind of opportunistic behavior and avoid causing damage to the other firm for short term gains. The last, but not the least,

favored finding this factor suggests is the special emphasis put on predictability. Predictability is accepted to set the grounds on which commitment to the relationship can be built on.

When the items that constitute the factors are monitored, $_{H2\text{-}TRUST}F_2$ is labeled as "Being a Supportive Trading Partner" (Figure 40). This factor indicates another anticipatory aspect of inter-organizational relationship postulated from the analysis of survey items. Apparently, the responding purchasing managers take heed of the existence of a supporting trading partner who acts cautiously to avoid unilateral decision making through excluding its immediate buyers and/or suppliers, as well as the other members of the supply chain system. Besides, a definitive anticipation of support is clearly articulated via this factor. Managers expect the other party to release aid (financial or managerial) as soon as possible under the circumstances of turbulent market conditions.

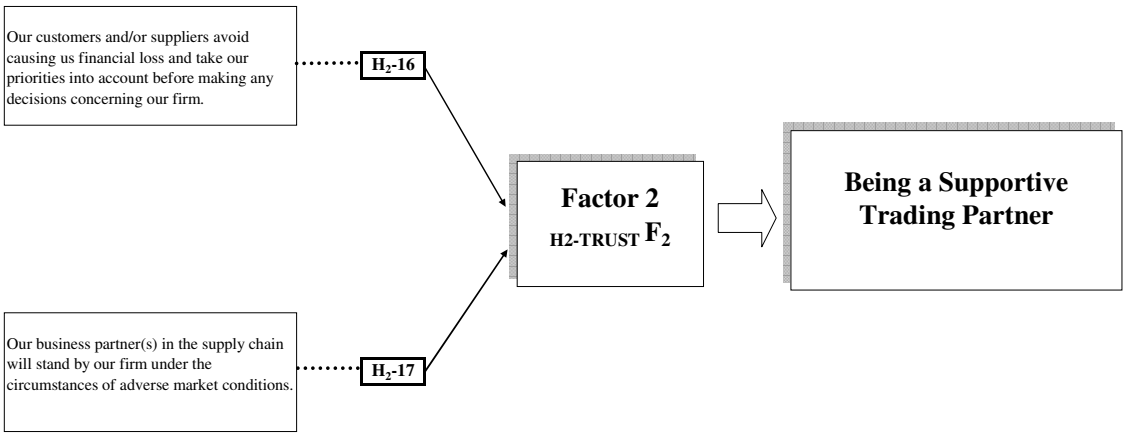


Figure 40. Factor – 2 of H_2 – Trust

4.4.2. Factor Analysis for Variables of Commitment in Hypothesis – 2

The variables of commitment in H_2 are extracted and a factor analysis is applied in order to be able to figure out the outstanding expressions that constitute the factors. The KMO and Bartlett's test scores allow the study to proceed with the further steps of factor analysis (Table 23).

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,712
Bartlett's Test of Sphericity	Approx. Chi-Square	110,862
	df	28
	Sig.	,000

Table 26 KMO and Bartlett's Test Scores Computed for Variables of Commitment in H_2

There are three components with eigenvalues greater than 1.00 selected and they appear to be capable of explaining approximately 69% of the total variance (Table 24 and Figure 41).

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3,147	39,339	39,339	3,147	39,339	39,339	2,101	26,269	26,269
2	1,276	15,948	55,287	1,276	15,948	55,287	1,839	22,993	49,262
3	1,052	13,153	68,440	1,052	13,153	68,440	1,534	19,178	68,440
4	,848	10,597	79,037						
5	,645	8,057	87,094						
6	,420	5,251	92,344						
7	,366	4,576	96,920						
8	,246	3,080	100,000						

Extraction Method: Principal Component Analysis.

Table 27 The Factors with High Eigenvalues and Total Variance Explained for Factor Analysis of Commitment Variables in H_2

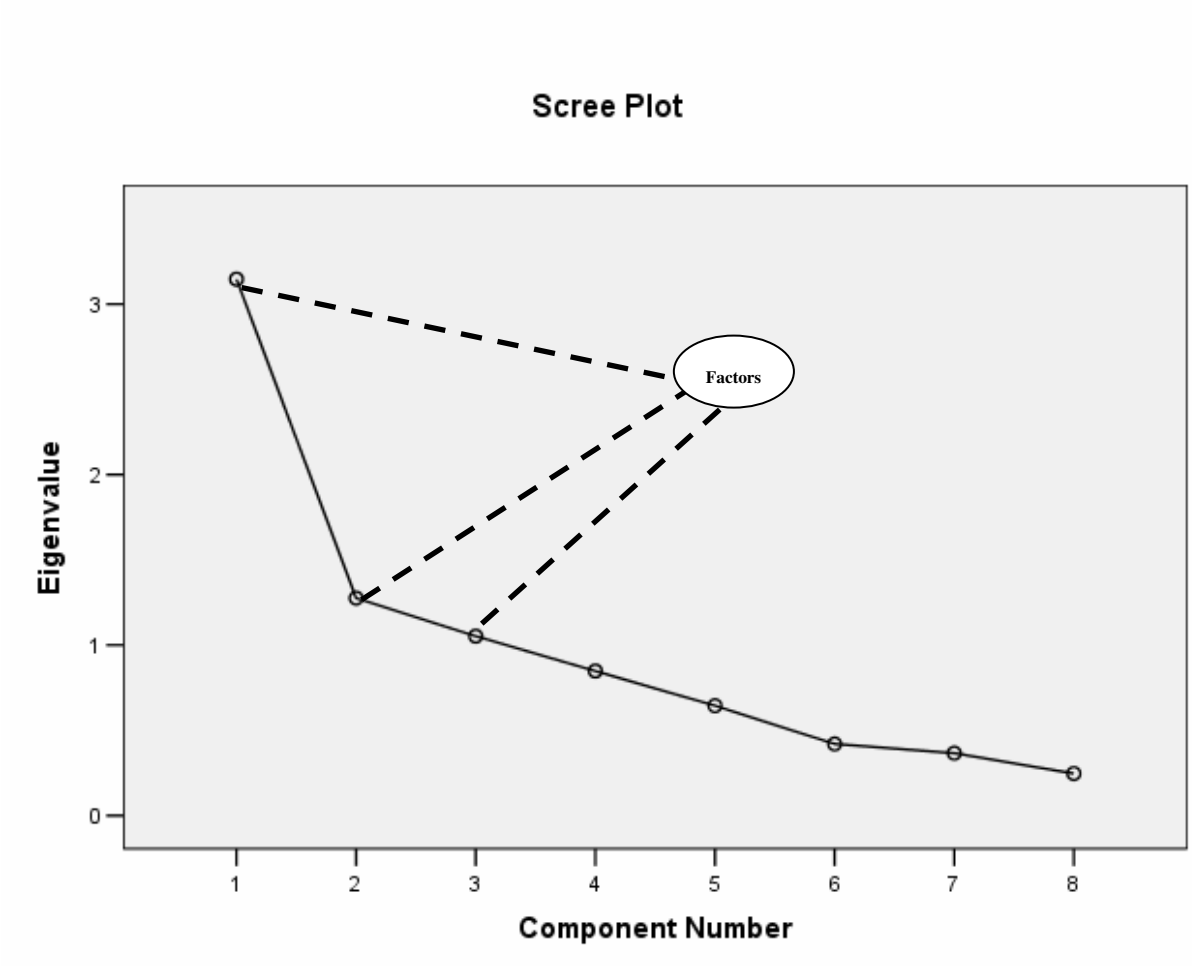


Figure 41. Eigenvalues for the Commitment Based Variables in H_2

The rotated component matrix (Table 25) clearly indicates the factors extracted for variables commitment in H_2.

Rotated Component Matrix [a]

	Component		
	1	2	3
H219	,884	-,038	,062
H220	,829	,355	,041
H213	,007	,692	-,083
H222	,412	,641	,023
H221	,495	,640	,235
H227	-,031	,626	,473
H226	-,037	-,029	,911
H214	,463	,140	,642

$_{H2\ CMMT}Factor_1$ — H219, H220

$_{H2\ CMMT}Factor_2$ — H213, H222, H221, H227

$_{H2\ CMMT}Factor_3$ — H226, H214

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 5 iterations.

Table 28 Outstanding Factors of Commitment after Rotation

When the items that constitute the factors are monitored, $_{H2\text{-}CMMT}F_1$ is labeled as "Fairness" (Figure 42). This factor focuses on one of the other expectations of managers extracted from the analysis, which is the institution of fairness along the entire supply chain system.

They specially highlight the role of central manufacturing enterprise as it has the capability to manipulate upstream and downstream supply chain activities with its bargaining power stemming from its ability to make purchasing in high volumes.

The responding purchasing managers pay attention to this critical role of the leading firm and impute a great deal of importance to the fair distribution of risks and rewards along the supply chain in order to be able to maintain the nature of the inter-organizational relationships.

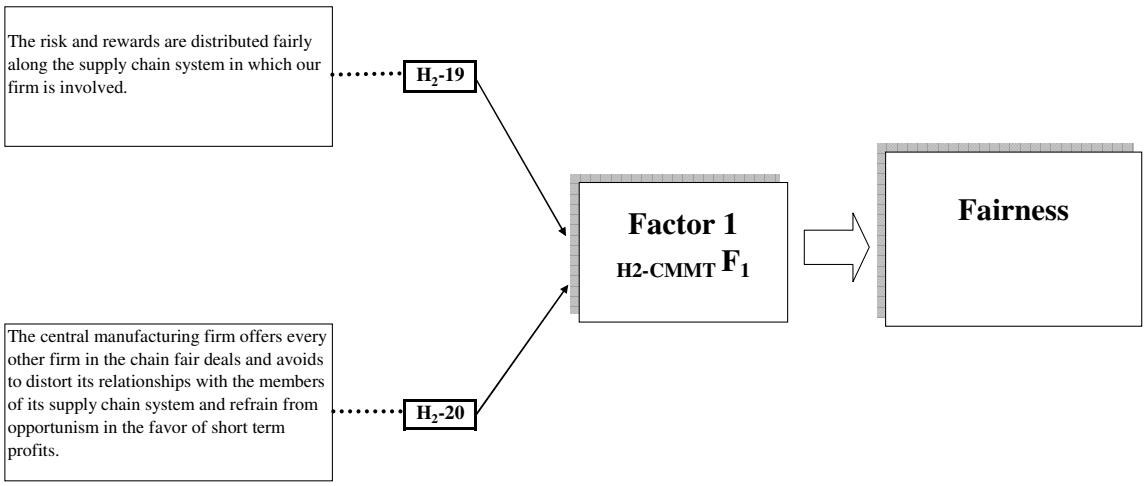


Figure 42. Factor – 1 of H_2 – Commitment

When the items that constitute the factors are monitored, $_{H2\text{-}CMMT}F_2$ is labeled as "Investment Alignment" (Figure 43). This factor is perfectly compliant with the way the concept of commitment is handled within the framework of this dissertation. Once again, as it appeared in $_{H2\text{-}TRUST}F_1$, predictability is encountered as one of the

requirements of building trust based inter-organizational relationship and increasing the level of interdependence is considered is be leading towards predictability.

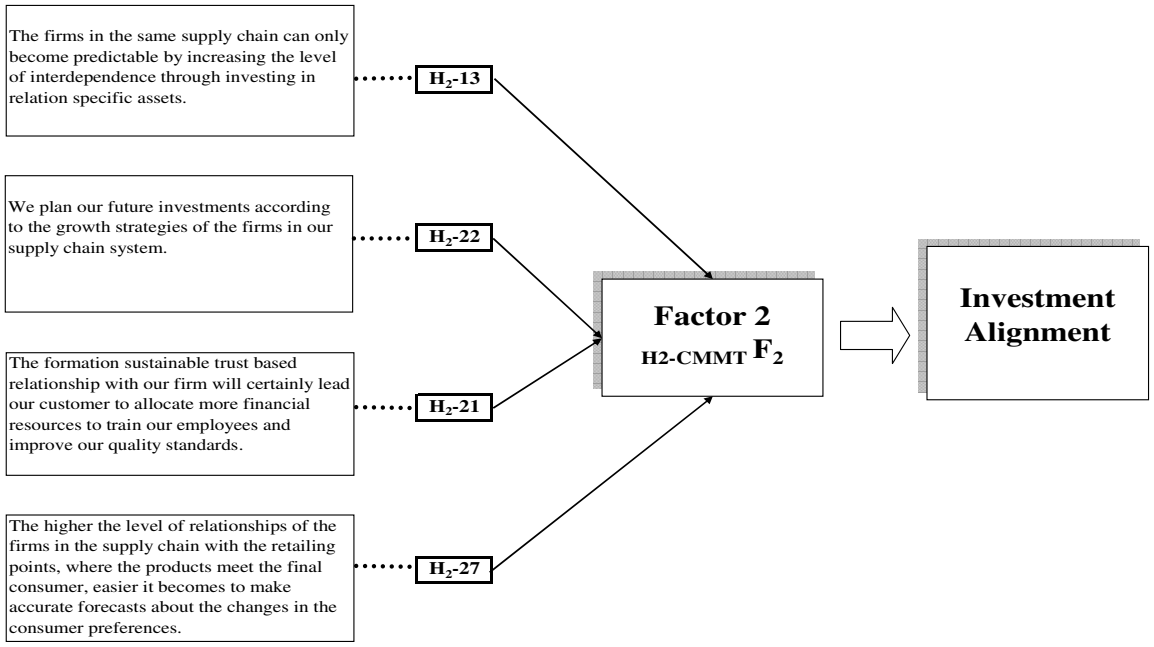


Figure 43. Factor – 2 of H_2 – Commitment

Managers highly value the existence of relation specific asset investment that will enable the alignment of the processes and will make future foreseeable in terms of determining the sources to be allocated and market strategies to be pursued based on the anticipated changes in the target customers' product preferences. The managers stress the importance of investing in organizational activities of mutual improvement, such as training each other's employees. The high level of importance given to the retailing points is worth mentioning. The repercussions of this outcome will be dealt further with the incorporation of complementary findings.

When the items that constitute the factors are monitored, $_{H2\text{-}CMMT}F_3$ is labeled as "Channel Involvement" (Figure 44). Through this factor, the managers underscore the importance of designing an inter-organizational channel in such a way that will enable both parties benefit from receiving early warning signals, such as communication of market volatility or shifts in inventory quantity requirements.

Besides, managers again impute a great deal of importance to the relation specific asset investment created and fostered by an environment of trust.

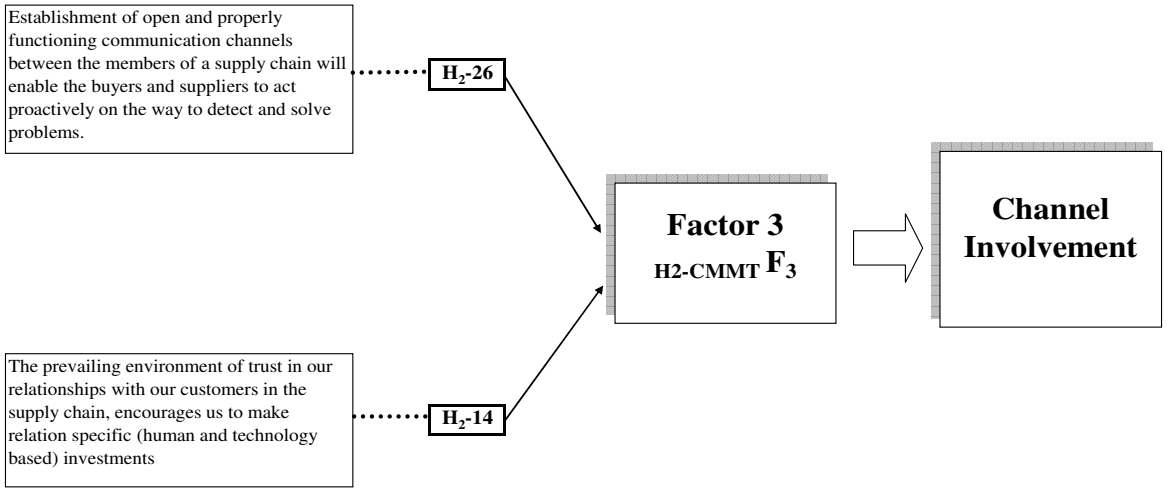


Figure 44. Factor – 3 of H_2 – Commitment

4.4.3. Regression Analysis between Factors of Hypothesis – 2

Regression analysis is applied on each factor extracted related to H_2. As can be seen in Figure 45, three significant regression equations are obtained.

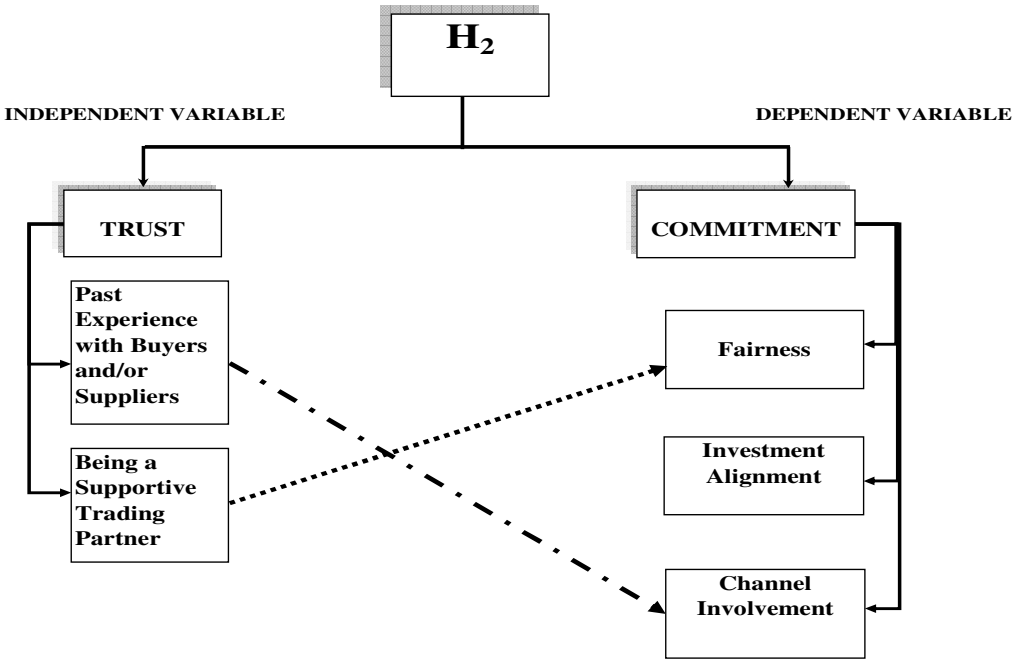


Figure 45. Significant Relationships Demonstrated for the Factors of H_2

4.4.3.1. Regression Analysis between $_{H2\text{-}TRUST.}F_1$ and $_{H2\text{-}CMMT}F_3$

The regression between "Past Experience with Buyers and/or Suppliers" ($_{H2\text{-}TRUST.}F_1$) and "Channel Involvement" ($_{H2\text{-}CMMT}F_3$) is significant at p<=0.01 (Table 27). It is highly feasible to assert that there is a significant relationship between these two variables. The *moderate* strength found for the equation (as shown by the coefficient of determination score, R in Table 26) allows making inferences from the existing relationship between these two factors.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,443[a]	,196	,179	,90597190

a. Predictors: (Constant), REGR factor score 1 for analysis 4

Table 29 Model Summary for Regression between $_{H2\text{-}TRUST.}F_1$ and $_{H2\text{-}CMMT}F_3$

The meaningful link between past experience with buyers and/or suppliers and channel involvement lead us to concentrate, once again, on the importance of a proven track record as a determining parameter.

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9,602	1	9,602	11,699	,001[a]
	Residual	39,398	48	,821		
	Total	49,000	49			

a. Predictors: (Constant), REGR factor score 1 for analysis 4

b. Dependent Variable: REGR factor score 3 for analysis 3

Table 30 Significance of Regression between $_{H2\text{-}TRUST.}F_1$ and $_{H2\text{-}CMMT}F_3$

The evidence obtained via analysis of survey data suggests that when the members of a supply chain feel confident that their partners in the chain will stick what has been agreed upon, that is to say they are predictable, the channel involvement will increase

and lead to a greater amount of relation specific asset investment, especially human based investments. The lack of a reliable track record is perceived to impede building a properly functioning communication channel. The managers also take heed of the effect of mutual loyalty on designing a proactive supply chain.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	-8,3E-017	,128		,000	1,000	-,258	,258
	REGR factor score 1 for analysis 4	,443	,129	,443	3,420	,001	,182	,703

a. Dependent Variable: REGR factor score 3 for analysis 3

Table 31 Regression Coefficients for $_{H2\text{-}TRUST.}F_1$ and $_{H2\text{-}CMMT}F_3$

4.4.3.2. Regression Analysis between $_{H2\text{-}TRUST.}F_2$ and $_{H2\text{-}CMMT}F_1$

The regression between "Being a Supportive Trading Partner" ($_{H2\text{-}TRUST.}F_2$) and "Fairness" ($_{H2\text{-}CMMT}F_1$) is significant at p<=0.01 (Table 29). The score of strength is found to be *poor* (as shown by the coefficient of determination score, R in Table 28), *but* allows making inferences from the existing relationship between these two factors.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,372[a]	,138	,120	,93801716

a. Predictors: (Constant), REGR factor score 2 for analysis 4

Table 32. Model Summary for Regression between $_{H2\text{-}TRUST.}F_2$ and $_{H2\text{-}CMMT}F_1$

The managers consider that being a supportive trading partner and fairness concepts act together. As the members of the supply chain, especially the dominant manufacturing firm, avoid from causing any potential damage to their partners in the

supply chain and take heed of their partners' priorities before making any decision, institution of fairness becomes possible.

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6,766	1	6,766	7,690	,008[a]
	Residual	42,234	48	,880		
	Total	49,000	49			

a. Predictors: (Constant), REGR factor score 2 for analysis 4

b. Dependent Variable: REGR factor score 1 for analysis 3

Table 33. Significance of Regression between $_{H2\text{-}TRUST.}F_2$ and $_{H2\text{-}CMMT}F_1$

It is worth to mention that managers put special emphasis on receiving corporate aid in turbulent times and consider the existence of this attribute as a determinant on buyers' and/or suppliers' commitment to shy away from opportunistic attitude and pave the way to create an environment of for inter-organizational trust.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	-2,7E-017	,133		,000	1,000	-,267	,267
	REGR factor score 2 for analysis 4	,372	,134	,372	2,773	,008	,102	,641

a. Dependent Variable: REGR factor score 1 for analysis 3

Table 34 Regression Coefficients for $_{H2\text{-}TRUST.}F_2$ and $_{H2\text{-}CMMT}F_1$

4.5. Factor and Regression Analyses for Hypothesis – 3

The results of the factor analysis run for Hypothesis – 2 are as follows:

4.5.1. Factor Analysis for Variables of Information Sharing in Hypothesis – 3

The variables of information sharing in H_3 are extracted and a factor analysis is applied in order to be able to figure out the outstanding expressions that constitute

the factors. The KMO and Bartlett's test scores allow the study to proceed with the further steps of factor analysis (Table 30).

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,690
Bartlett's Test of Sphericity	Approx. Chi-Square	87,886
	df	21
	Sig.	,000

Table 35. KMO and Bartlett's Test Scores Computed for Variables of Information Sharing in H_3

There are three components with eigenvalues greater than 1.00 selected and they appear to be capable of explaining approximately 72% of the total variance (Table 31 and Figure 46).

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2,790	39,859	39,859	2,790	39,859	39,859	2,403	34,322	34,322
2	1,206	17,222	57,081	1,206	17,222	57,081	1,584	22,630	56,952
3	1,063	15,180	72,261	1,063	15,180	72,261	1,072	15,309	72,261
4	,669	9,551	81,812						
5	,542	7,748	89,560						
6	,507	7,246	96,806						
7	,224	3,194	100,000						

Extraction Method: Principal Component Analysis.

Table 36. The Factors with High Eigenvalues and Total Variance Explained for Factor Analysis of Information Sharing Variables in H_3.

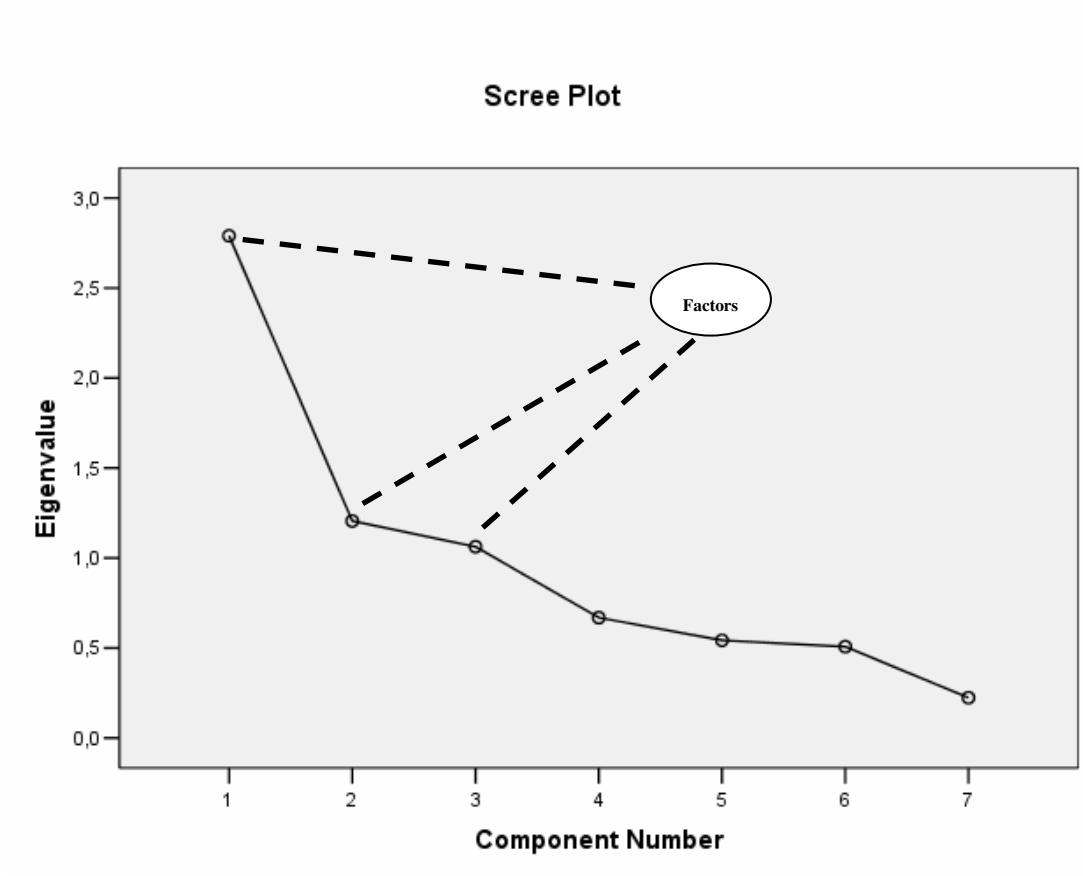


Figure 46. Eigenvalues for the Information Sharing Based Variables in H_3.

The rotated component matrix clearly indicates the factors extracted for H_3. (Table 32)

Rotated Component Matrix [a]

	Component		
	1	2	3
H328	,916	,089	,090
H338	,793	,142	,042
H330	,762	,094	-,232
H342	-,096	,851	-,178
H333	,286	,678	,238
H336	,509	,603	,037
H340	-,057	,009	,958

H3-INF.SHA Factor$_1$

H3-INF.SHA Factor$_2$

H3 INF.SHA Factor$_3$

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 5 iterations.

Table 37. Outstanding Factors of Information Sharing after Rotation

When the items that constitute the factor are monitored, $_{H3\text{-}INF:SHA:}F_1$ is labeled as "Resilience" (Figure 47). This factor postulates the link between information sharing and collaboration. The prevailing conditions of global competition impose the creation of resilient supply chains in order to be able to act proactively according to the shifts in market conditions. This also includes the establishment of a system in a way that will allow the members of the supply chain detect these shifts beforehand. Information sharing is perceived by the responding purchasing managers as one of the building stones on the way to incorporate collaboration into supply chain systems through enabling flexibility, cost reduction and its ability to make the system 'sense – and – respond".

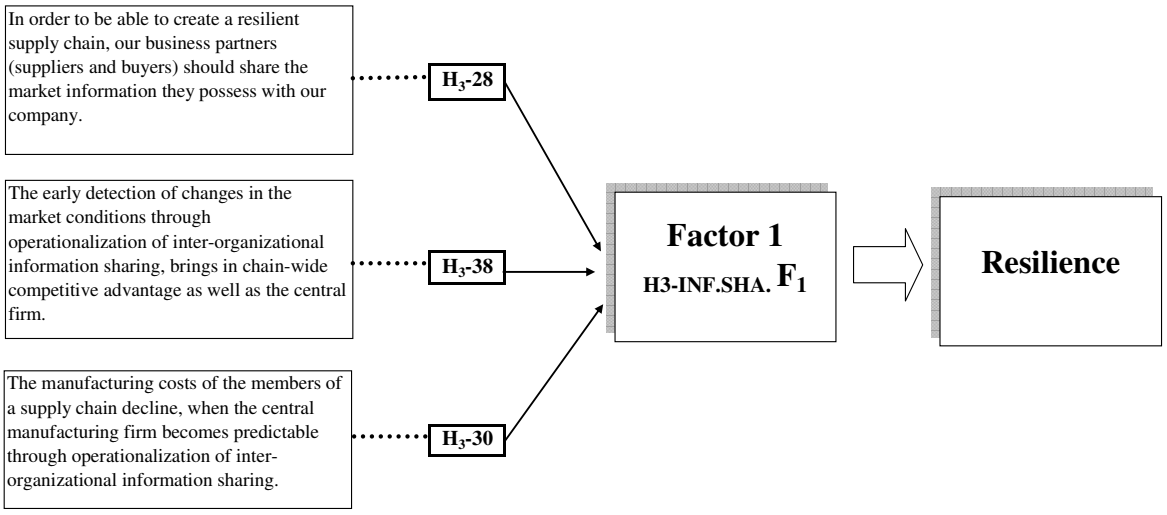


Figure 47. Factor – 1 of H_3 – Information Sharing

When the items that constitute the factor are monitored, $_{H3\text{-}INF:SHA:}F_2$ is labeled as "Predictability" (Figure 48). This factor is already been detected before as one of the elements of H_2, which now appears as one of the factors of H_3. The analysis of managers' perceptions on this issue articulate that in order to be able to create an eligible environment for the institution of collaboration, each member in the supply should have the ability to predict others' managerial and operational behavioral acts, for which inter-organizational information sharing and flawless flow of this information is necessary. Information sharing is also expected to allow inter-organizational collaboration through keeping the grand strategy alive and letting

every member in the chain detect any sort of deviation from the content of this strategy.

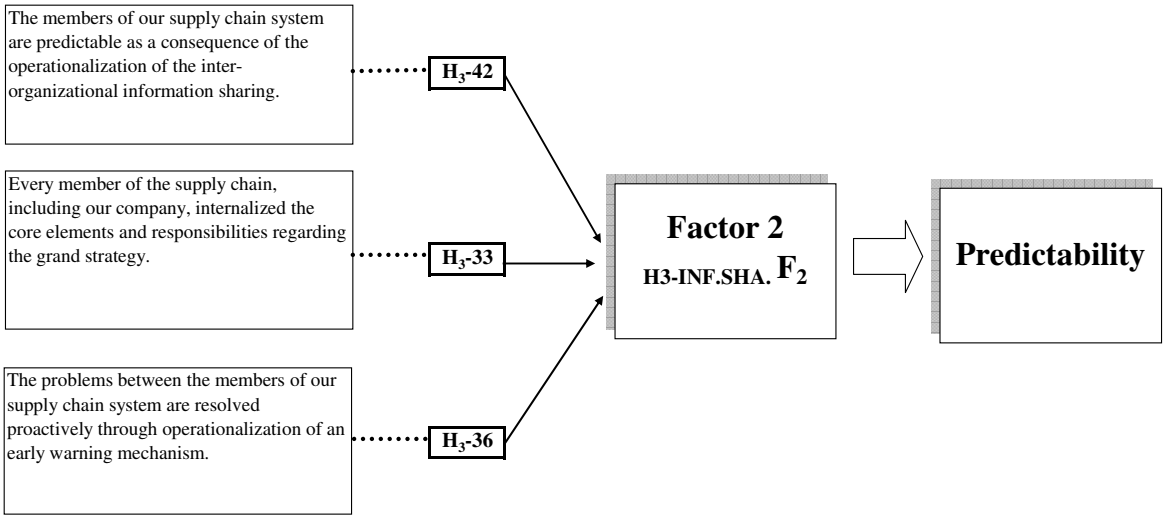


Figure 48. Factor – 2 of H_3 – Information Sharing

When the item that constitute the factor are monitored, $_{H3\text{-}INF:SHA:}F_3$ is labeled as "Lack of Recognition" (Table 49). This individual factor is totally based on dominant manufacturing firm ignoring the members of the supply chain system in which it also operates. Managers stress that the lack of information sharing is not only detrimental to the operations of the members in the supply chain, but also trims the dominant firm's competitiveness through hindering the firm's ability to sense and respond. Lack of recognition is perceived to be a major impediment on the way to establish a collaborative supply chain.

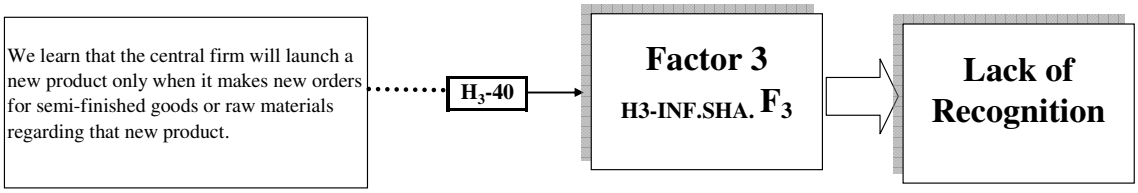


Figure 49. Factor – 3 of H_3 – Information Sharing

4.5.2. Factor Analysis for Variables of Collaboration in Hypothesis – 3

The variables of commitment in H_3 are extracted and a factor analysis is applied in order to be able to figure out the outstanding expressions that constitute the factors. The KMO and Bartlett's test scores allow the study to proceed with the further steps of factor analysis (Table 33).

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,546
Bartlett's Test of Sphericity	Approx. Chi-Square	107,907
	df	28
	Sig.	,000

Table 38. KMO and Bartlett's Test Scores Computed for Variables of Collaboration in H_3

There are three components with eigenvalues greater than 1.00 selected and they appear to be capable of explaining approximately 68% of the total variance (Table 34 and Figure 50)

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2,436	30,456	30,456	2,436	30,456	30,456	2,184	27,298	27,298
2	1,746	21,825	52,281	1,746	21,825	52,281	1,740	21,753	49,051
3	1,235	15,432	67,713	1,235	15,432	67,713	1,493	18,661	67,713
4	,986	12,326	80,039						
5	,583	7,292	87,330						
6	,489	6,115	93,445						
7	,337	4,211	97,657						
8	,187	2,343	100,000						

Extraction Method: Principal Component Analysis.

Table 39. The Factors with High Eigenvalues and Total Variance Explained for Factor Analysis of Collaboration Variables in H_3

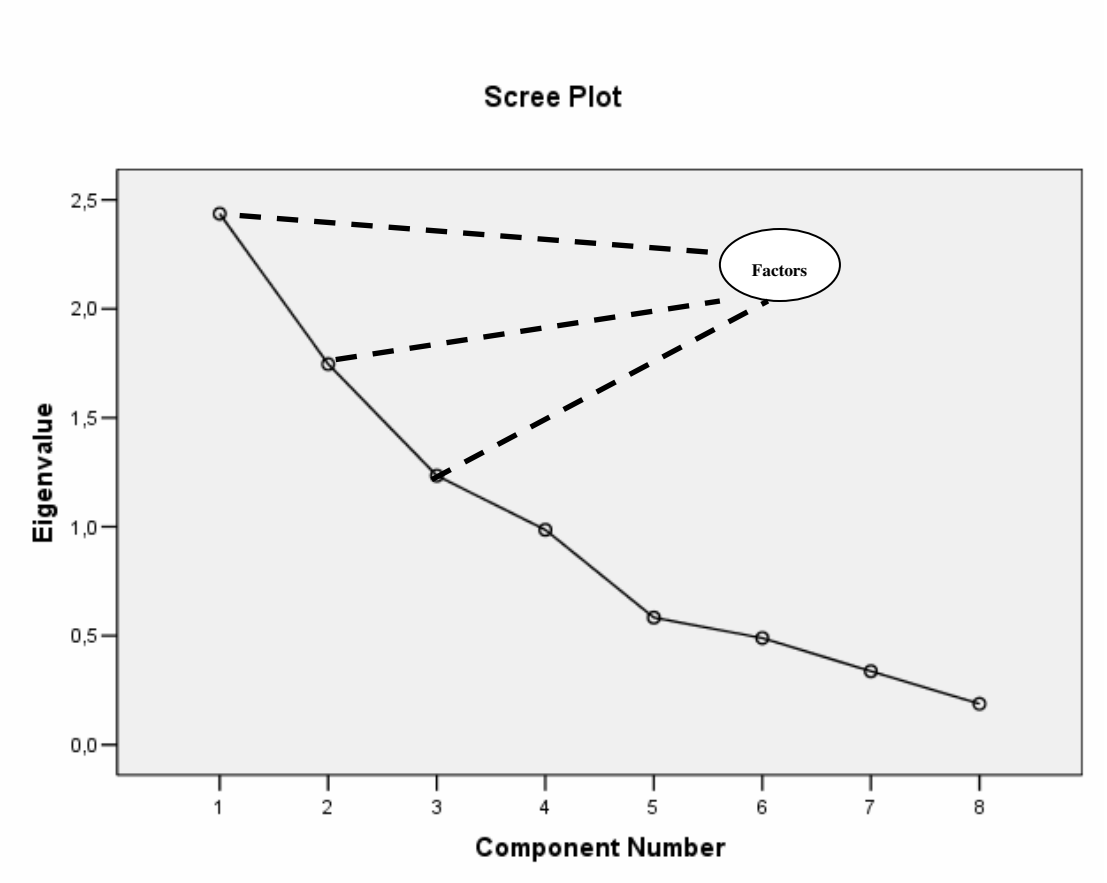


Figure 50. Eigenvalues for the Information Sharing Based Variables in H_3

The rotated component matrix clearly indicates the factors extracted for H_3.

Rotated Component Matrix[a]

	Component		
	1	2	3
H329	,906	-,028	-,020
H331	,897	-,101	,098
H332	,654	,247	,381
H335	,094	,796	,053
H337	,111	,781	-,067
H334	-,275	,482	,000
H341	,038	,187	,878
H339	,184	-,397	,748

H3 COLBRTFactor1 — H329, H331, H332

H3 COLBRTFactor2 — H335, H337

H3 CLBRTFactor3 — H341, H339

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 4 iterations.

Table 40 Outstanding Factors of Collaboration after Rotation

When the items that constitute the factor are monitored, $_{H3\text{-}CLBRT:}F_1$ is labeled as "Participation" (Figure 51). Through this factor, manager stress the need for participating in the overall decision making process of the supply chain system and simplification of the inter-organizational processes that will enable the incoming information easily access into these processes to be utilized. Respondents re-emphasize the importance of achieving cost reductions, in both, in-house operations and inter-organizational network interactions.

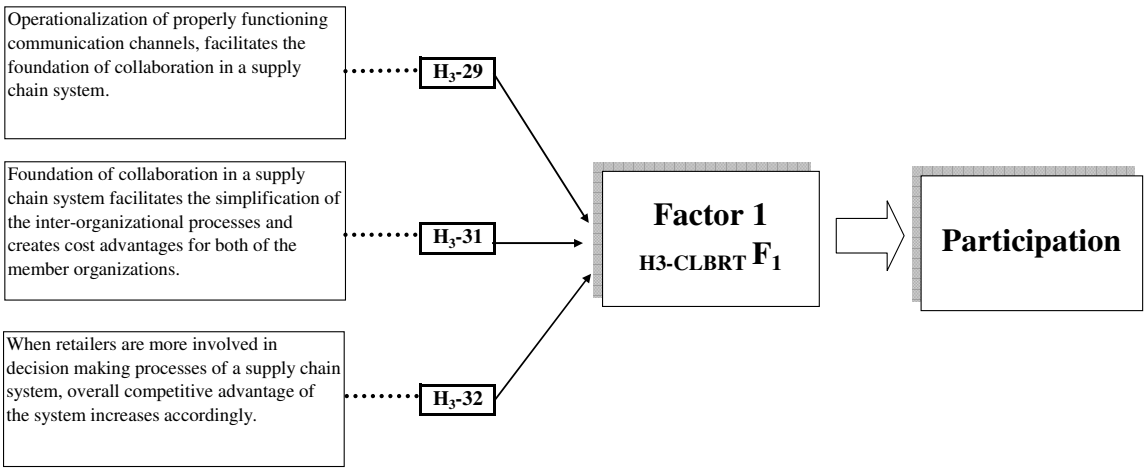


Figure 51. Factor – 1 of H_3 – Collaboration

Collaboration is perceived to be attained via utilization of communication channels that will transport the relevant information between the members of the supply chain and participation appears as the key element for this. Besides, the special emphasis put on incorporation of retailers into decision making system has crucial implications, which will be dealt further in the next chapter. Retailers are perceived to be vital for the first pre-requisite step to be taken in order to be able to take the second; that is to say, sense – and – respond.

When the items that constitute the factor are monitored, $_{H3\text{-}CLBRT:}F_2$ is labeled as "Unilateral Attitude of Central Dominant Firm" (Figure 52). This factor is also encountered as one of the elements in the factor analysis of H_2. The managers underscore the vitality of the dominant firm's attitude towards establishing collaborative supply chain. As the dominant firm insists on taking unilateral actions, excluding the other members of the supply chain, such as embracing a dyadic way of communication and determining performance assessment criteria without receiving members' contributions, supply chain collaboration can barely be established or maintained.

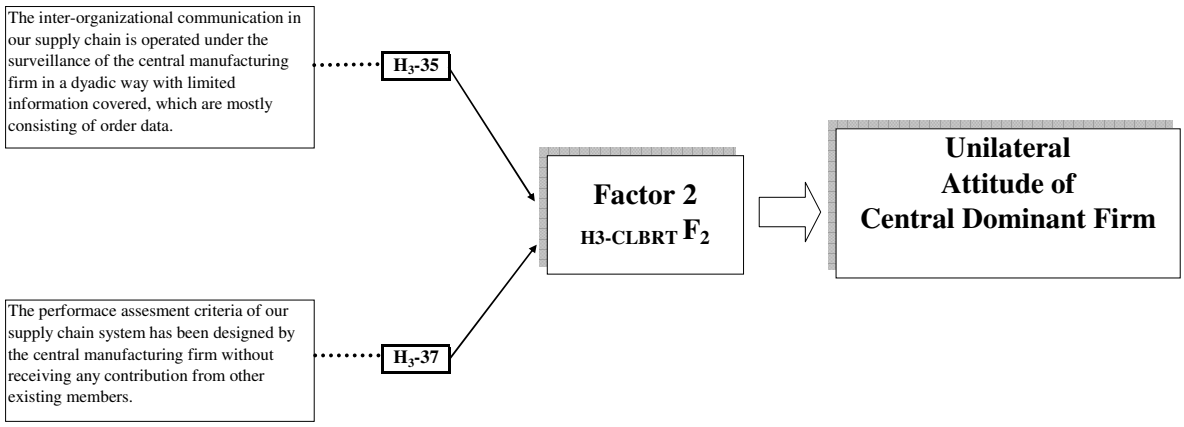


Figure 52. Factor – 2 of H_3 – Collaboration

When the items that constitute the factor are monitored, $_{H3\text{-}CLBRT:}F_3$ is labeled as "Common Decision Making" (Figure 53). The underlying assumptions of this factor are quite compliant with other factors extracted for H_3. The managers impute great deal of importance to the participation and common decision making for becoming an innovative and flexible supply chain which is capable of developing new products. It also can be observed from the responses received that most of the managers who participated to the survey are aware of the importance of having customer – centered supply chain system.

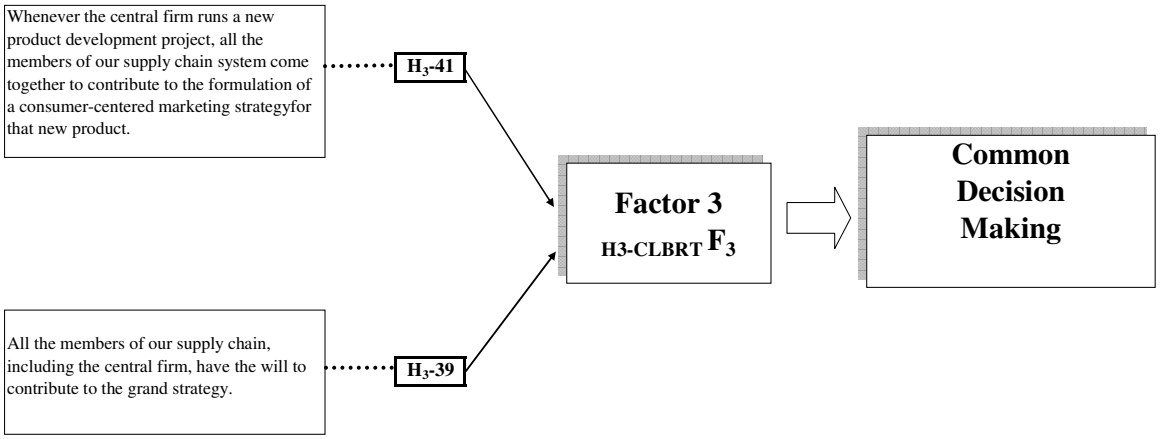


Figure 53. Factor – 3 of H_3 – Collaboration

4.5.3. Regression Analysis between Factors of Hypothesis – 3

Regression analysis is applied on each factor extracted related to H_3. As can be seen in Figure 45, three significant regression equations are obtained.

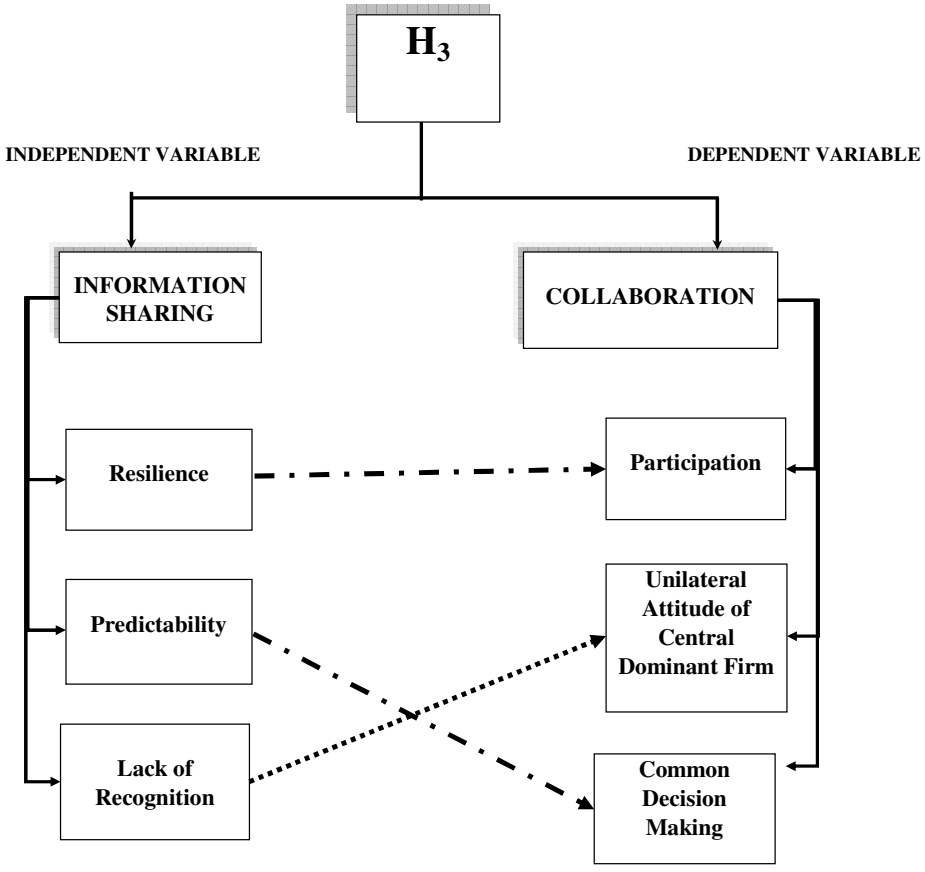


Figure 54. Significant Relationships Demonstrated for the Factors of H_3

4.5.3.1. Regression Analysis between $_{H3\text{-}INF.SHA.}F_1$ and $_{H3\text{-}CLBRT}F_1$

The regression between "Resilience" ($_{H3\text{-}INF.SHA.}F_1$) and "Participation" ($_{H3\text{-}CLBRT}F_1$) is significant at p<=0.01 (Table 37). It is highly feasible to assert that there is a significant relationship between these two variables. The *strong* relationship found for the equation (as shown by the coefficient of determination score, R in Table 36) allows making inferences from the existing relationship between these two factors.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,886[a]	,785	,780	,46896993

a. Predictors: (Constant), REGR factor score 1 for analysis 6

Table 41. Model Summary for Regression between $_{H3\text{-}INF.SHA..}F_1$ and $_{H3\text{-}CLBRT}F_1$

A resilient supply chain perceived to be relying on the existence of opportunity for both member to participate the in the decision making processes of the entire supply chain. According to the analysis of the data obtained from survey items, existence of properly functioning communication channels can be considered to be determinant of becoming predictable and proactive by the utilization of the information flowing through those channels. Resilience is required to create a supply chain wide competitive advantage and involvement of firms in the chain, including retailers, into decision making process leads the way towards attaining it.

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	38,443	1	38,443	174,795	,000[a]
	Residual	10,557	48	,220		
	Total	49,000	49			

a. Predictors: (Constant), REGR factor score 1 for analysis 6

b. Dependent Variable: REGR factor score 1 for analysis 5

Table 42. Significance of Regression between $_{H3\text{-}INF.SHA..}F_1$ and $_{H3\text{-}CLBRT}F_1$

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	2,42E-017	,066		,000	1,000	-,133	,133
	REGR factor score 1 for analysis 6	,886	,067	,886	13,221	,000	,751	1,020

a. Dependent Variable: REGR factor score 1 for analysis 5

Table 43. Regression Coefficients for $_{H3\text{-}INF.SHA..}F_1$ and $_{H3\text{-}CLBRT}F_1$

4.5.3.2 Regression Analysis between $_{H3\text{-}INF.SHA.}F_2$ and $_{H3\text{-}CLBRT}F_3$

The regression between "Predictability" ($_{H3\text{-}INF.SHA.}F_2$) and "Common Decision Making" ($_{H3\text{-}CLBRT}F_3$) is significant at p<=0.01 (Table 39). It is highly feasible to assert that there is a significant relationship between these two variables. The *moderate* strength found for the equation (as shown by the coefficient of determination score, R in Table 38) allows making inferences from the existing relationship between these two factors.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,544[a]	,295	,281	,84810457

a. Predictors: (Constant), REGR factor score 2 for analysis 6

Table 44. Model Summary for Regression between $_{H3\text{-}INF.SHA.}F_2$ and $_{H3\text{-}CLBRT}F_3$

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	1,49E-016	,120		,000	1,000	-,241	,241
	REGR factor score 2 for analysis 6	,544	,121	,544	4,486	,000	,300	,787

a. Dependent Variable: REGR factor score 3 for analysis 5

Table 45. Regression Coefficients for $_{H3\text{-}INF.SHA.}F_2$ and $_{H3\text{-}CLBRT}F_3$

The internalization of the grand strategy by all the members of the supply chain and establishment of early warning mechanisms through proactive communication will

open the way to common decision making. The operationalization of inter-organizational information sharing has considerable impact on attaining an environment for common decision making through including all the members of the supply chain and allowing them to make contributions in terms of improvement of order fulfillments and inventory management to avoid bullwhip effect, as well as paving the way to the incorporating them into the new product development activities, from idea generation until launching the product.

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	14,474	1	14,474	20,124	,000[a]
	Residual	34,526	48	,719		
	Total	49,000	49			

a. Predictors: (Constant), REGR factor score 2 for analysis 6

b. Dependent Variable: REGR factor score 3 for analysis 5

Table 46. Significance of Regression between $_{H3\text{-}INF.SHA.}F_2$ and $_{H3\text{-}CLBRT}F_3$

4.5.3.3. Regression Analysis between $_{H3\text{-}INF.SHA.}F_3$ and $_{H3\text{-}CLBRT}F_2$

The regression between "Lack of Recognition" ($_{H3\text{-}INF.SHA.}F_3$) and "Unilateral Attitude of Central Dominant Firm" ($_{H3\text{-}CLBRT}F_2$) is significant at p<=0.01 (Table 41). It is highly feasible to assert that there is a significant relationship between these two variables. The *moderate* strength found for the equation (as shown by the coefficient of determination score, R in Table 40) allows making inferences from the existing relationship between these two factors.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,442[a]	,195	,178	,90655767

a. Predictors: (Constant), REGR factor score 3 for analysis 6

Table 47. Model Summary for Regression between $_{H3\text{-}INF.SHA.}F_3$ and $_{H3\text{-}CLBRT}F_2$

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	2,58E-017	,128		,000	1,000	-,258	,258
	REGR factor score 3 for analysis 6	,442	,130	,442	3,409	,001	,181	,702

a. Dependent Variable: REGR factor score 2 for analysis 5

Table 48. Regression Coefficients for $_{H3\text{-}INF.SHA.}F_3$ and $_{H3\text{-}CLBRT}F_2$

Existence of a relationship between lack of recognition and unilateral attitude of central dominant firm is quite meaningful. As long as the central firm shies away from creating an eligible environment for the incorporation of the supply chain members into the 'system', the firms in the chain will not be able feel any belongingness to the entire network and will have the proclivity to limit the content and frequency of the interactions. Dyadic relationships will inevitably overwhelm in the chain drifting the whole system away from being competitive.

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9,551	1	9,551	11,622	,001[a]
	Residual	39,449	48	,822		
	Total	49,000	49			

a. Predictors: (Constant), REGR factor score 3 for analysis 6

b. Dependent Variable: REGR factor score 2 for analysis 5

Table 49. Significance of Regression between $_{H3\text{-}INF.SHA.}F_3$ and $_{H3\text{-}CLBRT}F_2$

4.6. Factor Analysis for Hypothesis – 4

The factor analysis of H_4 is conducted via utilization of a distinct method that differs from the way it is applied on other hypotheses. In first three analyses, the survey items that are designed to represent and measure a specific variable are gathered together to form homogeneous subgroups and factor analysis is applied on each group in order to be able to determine the prominent items with highest correlations which also served as the constituting elements of the factors extracted.

For instance, the survey items between 1 and 12 are designed to measure H_1 and of these 12 items, 7 of them are assigned for the independent variable, which is 'Trust', and 5 of them are assigned for the dependent variable, which is 'Information Sharing'. In-group factor analyses are conducted for each homogeneous subgroup consisting of 7 items of 'Trust' and 5 items of 'Information Sharing', separately. Then, regression analyses are run in search for the inter-relationships between the factors of each subgroup.

This is not the case for the factor analysis of H_4. When the same method was applied for this hypothesis, it has been observed that the inter-correlations between the variables were quite low. In the factor analysis high scores of inter-correlations are sought for and as the correlations between the variables get weaker, the more reliability of the analysis becomes questionable. The computations made by separating the survey items, designed for the independent variable of H_4 (Commitment) failed to produce satisfactory scores of KMO, though, the same type of calculations produced satisfactory scores when the survey items designed for dependent variable of H_4 (Collaboration) are gathered together and incorporated into the factor analysis. So, a factor analysis is applied on the entire survey items designed for H_4 (between 43 and 55).

This situation can be explained by the existing intersection of perceptual attitudes towards independent and dependent variables. Apparently, the managers fail to decompose the variables of the assumption of H_4 proposing that higher commitment leads to higher collaboration. The implications of this situation will be dealt in the next chapter.

The variables of commitment in H_4 are extracted and a factor analysis is applied in order to be able to figure out the outstanding expressions that constitute the factors. The KMO and Bartlett's test scores allow the study to proceed with the further steps of factor analysis (Table 42).

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,650
Bartlett's Test of Sphericity	Approx. Chi-Square	170,504
	df	78
	Sig.	,000

Table 50. KMO and Bartlett's Test Scores Computed for H_4

There are four components with eigenvalues greater than 1.00 selected and they appear to be capable of explaining approximately 62% of the total variance (Table 43 and Figure 55).

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3,703	28,488	28,488	3,703	28,488	28,488	3,397	26,129	26,129
2	1,697	13,050	41,538	1,697	13,050	41,538	1,720	13,233	39,362
3	1,463	11,250	52,788	1,463	11,250	52,788	1,624	12,494	51,856
4	1,135	8,728	61,516	1,135	8,728	61,516	1,256	9,660	61,516
5	,919	7,073	68,589						
6	,832	6,400	74,989						
7	,713	5,487	80,475						
8	,656	5,050	85,525						
9	,589	4,534	90,060						
10	,443	3,405	93,464						
11	,350	2,691	96,155						
12	,300	2,304	98,459						
13	,200	1,541	100,000						

Extraction Method: Principal Component Analysis.

Table 51. The Factors with High Eigenvalues and Total Variance Explained for Factor Analysis of H_4

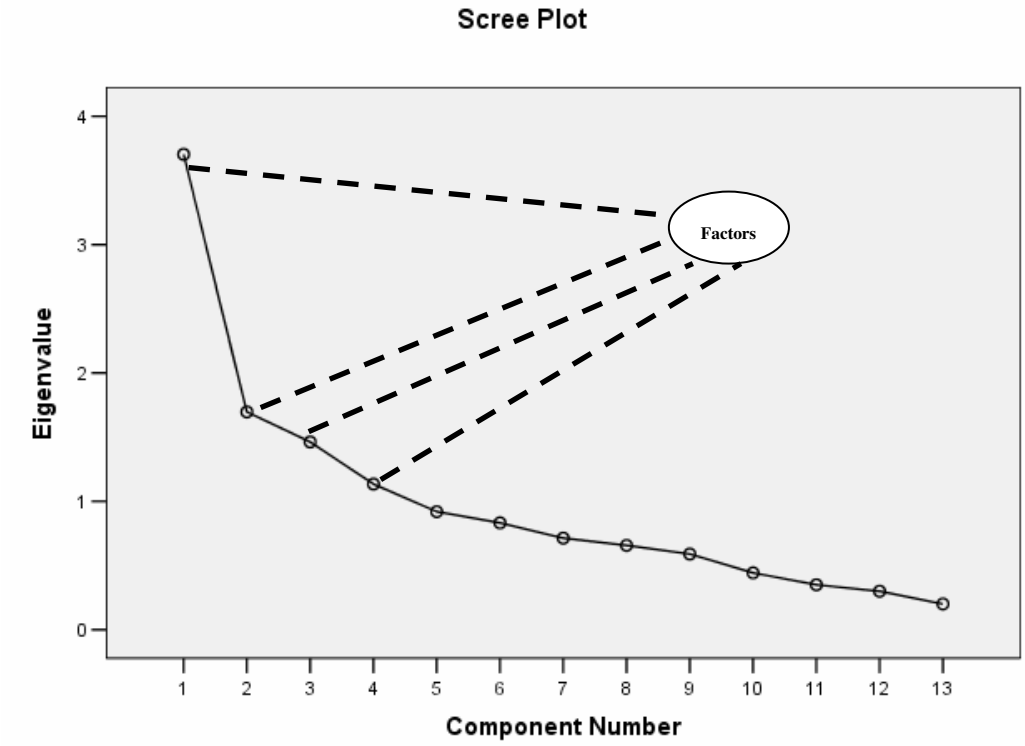


Figure 55. Eigenvalues for H_4

The rotated component matrix clearly indicates the factors extracted for H_4.

Rotated Component Matrix[a]

		Component			
		1	2	3	4
$_{H4}Factor_1$	H453	,787	-,046	-,053	,060
	H454	,772	,014	,113	-,041
	H451	,752	,170	-,211	,184
	H444	,739	-,064	,206	,018
	H455	,729	,116	,306	-,093
	H450	,422	,106	,418	,158
$_{H4}Factor_2$	H447	-,035	,765	,310	,202
	H449	,106	-,761	,383	,075
	H448	,328	,668	,270	-,011
$_{H4}Factor_3$	H443	-,024	,073	,695	-,126
	H446	,117	,031	,605	,206
$_{H4}Factor_4$	H452	-,081	-,009	,193	,879
	H445	,468	,209	-,224	,553

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 4 iterations.

Table 52 Outstanding Factors of H_4 after Rotation

This factor appears as a clear evidence of the intersecting perceptual attitudes of responding purchasing managers towards independent and dependent variables of H_4. The constituting concepts of commitment and collaboration are strongly intertwined with each other (Figure 56). The managers re-emphasize the need for investment alignment, which is also encountered as one of the factors of H_2, and its positive impact on enhancing system's overall innovation capability.

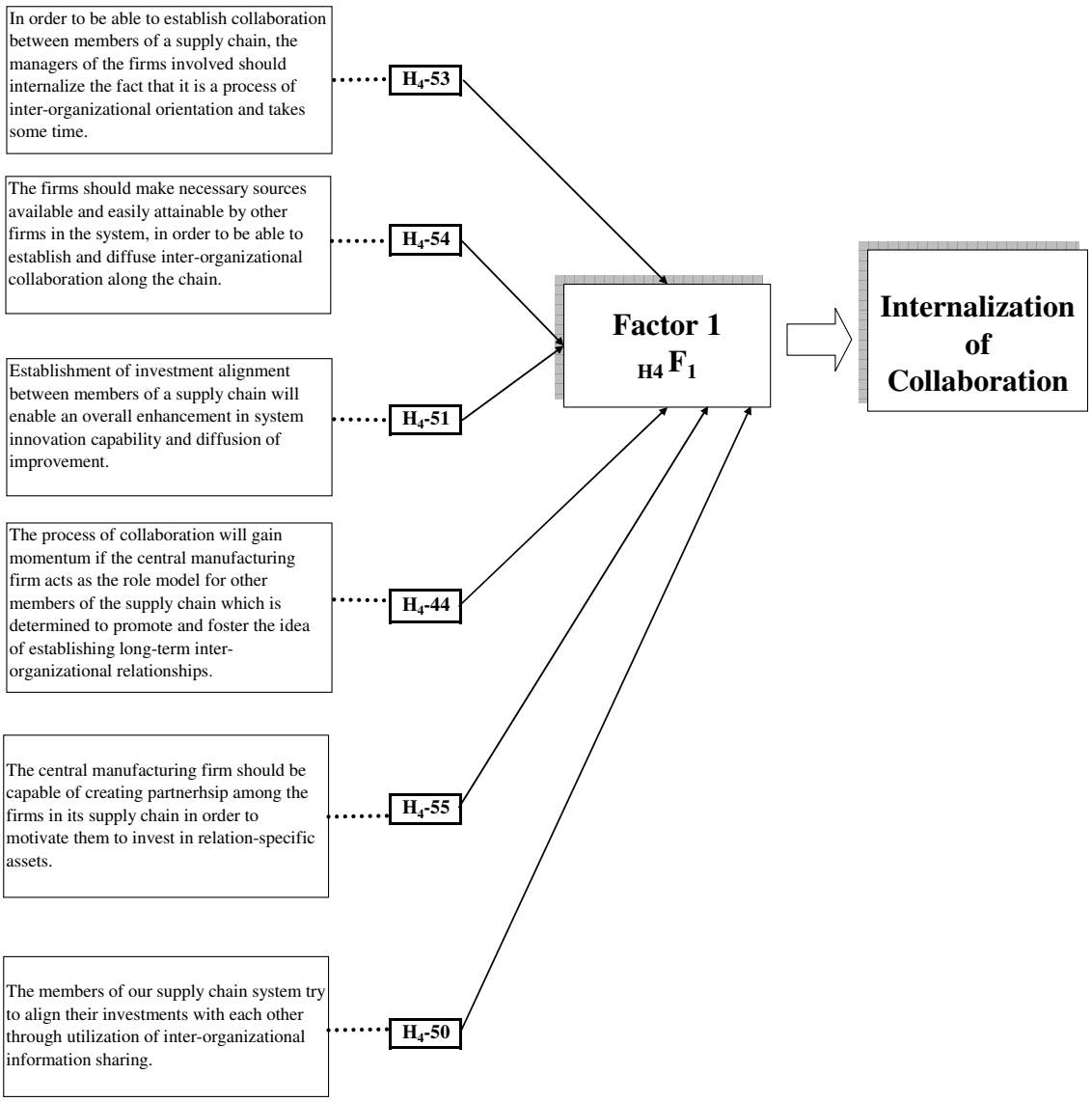


Figure 56. Factor – 1 of H_4

The managers also consider the accessibility of the sources (basically information) crucial for enabling the internalization of collaboration by the members of the supply chain. The adaptive and proactive nature of the entire system stems from inter-organizational process alignment, through which transparency and visibility will be attained as well as the consistent behavior of the dominant manufacturing firm acting as the role model and source of motivation.

Maintaining the commitment to the relationships is perceived as one of the important factors to be taken into account by responding purchasing managers, on the way to establish a collaborative supply chain (Figure 57). In addition to the great deal of sensitivity imputed on the detection of the problems before they occur, the extraction of this factor also gives us the opportunity to capture the importance of the need to pay attention to the problems that have already taken their place on the agenda and show no hesitation to deal with them swiftly. At this point, again, the role of dominant manufacturing firm is highlighted. Unless the required conditions are not fulfilled, the inter-organizational relationships will fail to go further than transaction based arms – length interactions.

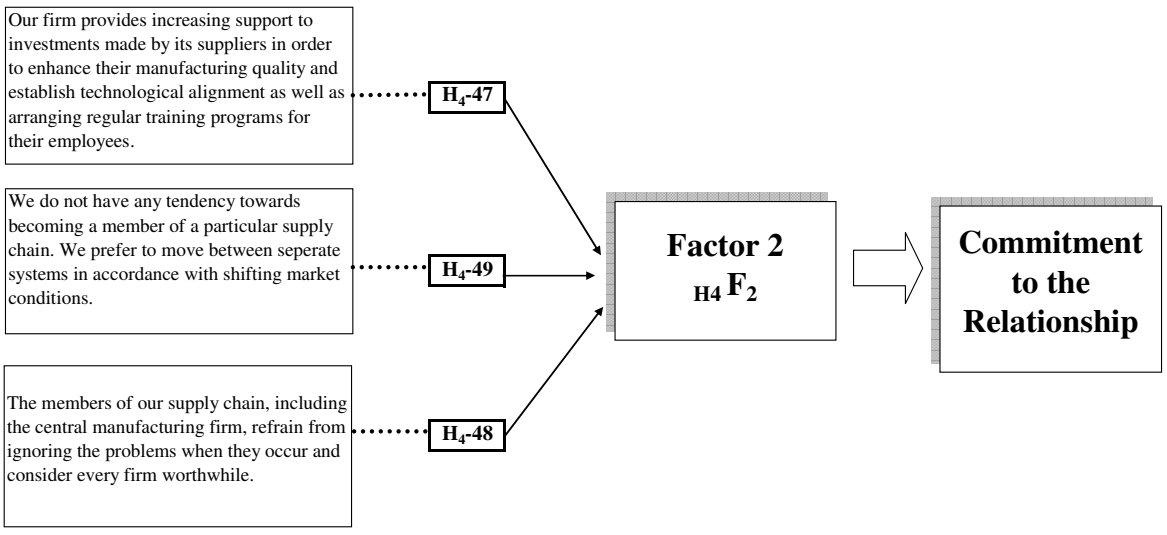


Figure 57. Factor – 2 of H_4

The managers re-emphasize their anxiety of becoming vulnerable to exploitation of the relationship by other members of the supply chain, especially by the dominant manufacturing firm, but also admit the consequences of an attempt to replace the buyers and/or suppliers they are working with, in terms of potential costs to be incurred during the period of involvement into a new chain (Figure 58). This prevailing anxiety among the managers lead us to draw such a conclusion that substitutability is perceived to be some sort of emergency exit in case of an adverse experience.

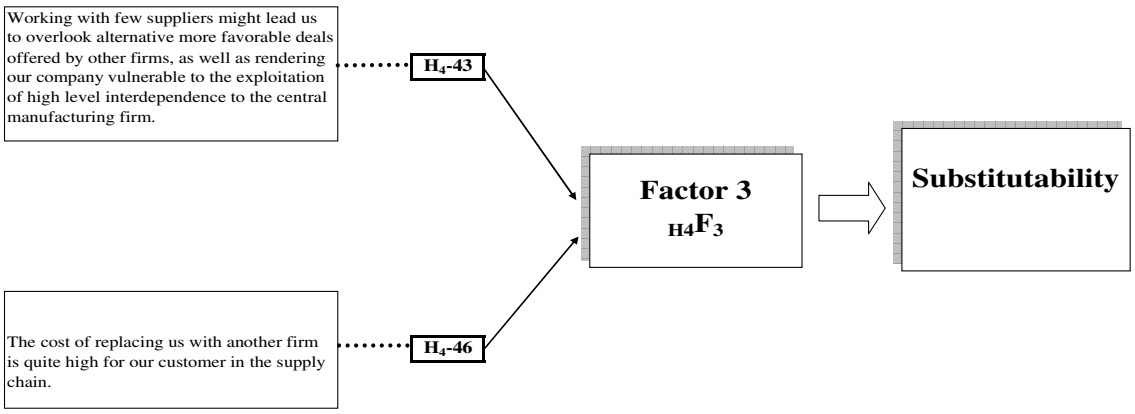


Figure 58. Factor – 3 of H_4

The extraction of the factor demonstrated in Figure 59 is quite significant when considered together with the other extractions made for H_4. There is an explicit disclosure of the managers' inclination towards putting effort into improvement of relationships. They prefer to invest in the existing relationship rather than being in search for the best deal for each transaction.

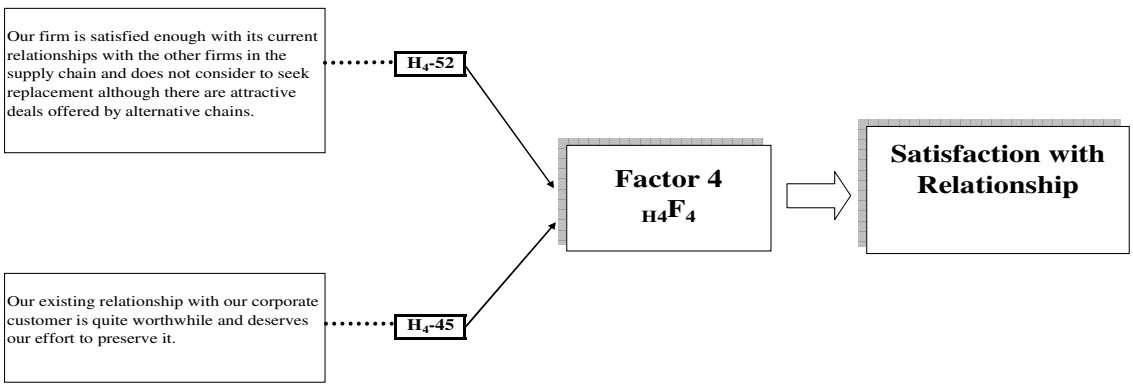


Figure 59. Factor – 4 of H_4

CHAPTER 5

CONCLUSION

5.1 Discussion of Findings

The proposed model, which is constructed as a result of a comprehensive review of relevant literature, is tested via analysis of the survey data, collected from the purchasing and supply chain managers working at the ICI – 100 enterprises. Besides mostly confirming what is previously suggested by the existing literature, the research findings also provide new insights into capturing and deciphering the attitudes of the managers in the manufacturing business towards collaboration based inter-organizational relationships in supply chains. This study is the first attempt in Turkey to unveil the way the concept of collaborative supply chain is being perceived by the managers working at the leading industrial enterprises and paves the way for further research in this area of concentration. The originality of the study stems from the compact model design, which integrates inter-organizational relationship dimensions suggested by the relevant literature into the model.

First and foremost, the reliability of the research data collected should be mentioned as the main pillar on which the validity of the entire research is built on. The satisfactory score computed for data reliability made it possible to proceed with the further steps of statistical analysis, as well as making significant extractions as a consequence of the high internal consistency of the research.

The outcomes obtained from the statistical analytical tools run for the research, not only reveal that supply chain executives (purchasing managers) recognize the true impact of supply chain operations (upstream and downstream) on the responsiveness of the entire chain, also present that they have tangible and well defined expectations, as well as the accompanying anxieties about the establishment and internalization of collaboration based inter-organizational relationships. Supply chain operations are perceived to be more than just a series of transaction based purchasing activities,

rather a managerial concept that will carry whole chain on to a next level and make it become a system, consisting of participative organic structures. The respondents believe that the specific capabilities of the chain members should be utilized in order to promote value creating contributions to be made by the members of a supply chain that will increase the overall competitiveness through incorporation of innovation into the chain system. Therefore, it is promising to observe that supply chain interactions are not only considered to be set the grounds for process control, rather a systemic organization of operations that will eventually end up with target customer (end – user) satisfaction.

Inter-organizational trust is considered as vital by the managers but covers many different dimensions. It is extremely important to be able to define the managers' attitude towards inter-organizational trust through figuring out its constituents, as trust is suggested to be determinant of two vital elements; information sharing and commitment. The factors extracted from the data with high reliability, suggest that managers need to verify that the mechanisms of inter-organizational trust will function properly and their companies will not be exposed to adverse impacts stemming from the opportunistic acts. Being vulnerable to opportunistic behavior of the buyers and/or suppliers in the chain appears as one of the major concerns for the managers who have attended to the survey. This is compliant with the basic assumptions of TCT. The purchasing managers emphasize the need for some form protection to decrease the degree of vulnerability.

However, in spite of the prevailing concerns about trusting other party, the managers are totally aware of the vitality of establishing inter-organizational information sharing channels and the need to put continuous effort for its maintenance. Information asymmetry leads to high transaction, whereas, shared information reduces uncertainty and thus reduces the need for safety stock. The respondents stress the importance of information visibility which can be attained through establishment and utilization of open communication channels by building on-line systems to connect every member of the supply chain with each other and functioning on a continuous base. Information sharing is perceived to ensure the

predictability in the supply chain, not only in terms of prediction of market conditions, also the prediction of ways that the others will act. They put special emphasis on the track record of the relationship, both, for information sharing and commitment, as prediction requires an understanding that develops over repeated interactions in multidimensional relationships, which is another finding that confirms what is being argued by the literature.

It is inevitable that inter-organizational information sharing will increase inter-dependence. The highly reliable survey data collected from the supply chain executives of the leading manufacturing firms in Turkey, underscore the drawbacks of such procedure. Expecting the existence of total trust in the early stages of the interaction appears to be highly optimistic. However, this does not mean that information flow is interrupted, but the quality of the content is limited due to the security issues. At this point, the managers seek for the existence of good intention which is supposed to keep other parties from exploiting the information received. The research also revealed that there is a perceived relationship between need for warranty and open communication and the continuity of the inter-organizational flow of information. This finding can be accepted to be reliable evidence that managers seriously hesitate to share information with their buyers and/or suppliers in the chain and believe that some form of legal protection is required during the period of interaction. There is a subtle point to be highlighted that managers do not seek for the protective shelter of a legal contract as the only source of warranty. They perceive the existence of good intention as highly crucial for the establishment of inter-organizational trust and open communication. The appearance of this outcome is quite important for the purposes of the study, as literature also suggests that contract based relationship barely create an environment for alliance like thinking.

The analysis of the survey data also allowed the assessment of commitment from the standpoint of trust. The literature suggests that the presence of both, trust and commitment, produce outcomes that promote efficiency, productivity and effectiveness in the supply chain. The commitment is defined as making relation – specific asset investment by the parties involved in supply chain interaction.

Commitment is accepted as a crucial step for the institution of collaboration in supply chains. The findings are perfectly compliant with the arguments presented in the literature as investment alignment is regarded as highly important by the purchasing managers.

The factors extracted (Appendices K – O), reveal that managers expect the other members of the supply chain pay attention to the priorities of their firms and provide support in times of market turbulence. At this point, the respondents remark the need for the existence of inter-organizational trust as a pre-requisite of allocating more relation specific resources, which will finally lead to visibility and predictability of each other's acts and reduction of transaction costs. The special emphasis put on the issue of trust can be easily observed by the importance given to the track record of the relationship, which provides the data for the verification of the buyer and/or supplier's trustworthiness. The determination of the significant relationship between the past experience and channel involvement justify this inference. Another significant relationship is computed between being supportive and fairness. This is quite meaningful when we take into account that the members in the supply chain pay attention to the fair distribution of risks and rewards only if they refrain from causing any damage to their buyers and/or suppliers in normal times and care for their priorities. The appearance of fairness as a factor gives meaningful implications to be utilized on the way to incorporate commitment into the supply chain systems.

The assessment of collaboration from the standpoint of information sharing offers very useful insights. There is a significant relationship between resilience and participation which is worth to mention. As already mentioned in Chapter 2, information sharing not only enables the members of the supply chain reduce transaction costs, but bring in resilience to the chain that enhances the 'sense and respond' capabilities through fostering innovation. The factors extracted and the relationships computed clearly indicate the need for resilience and its organic connection with participation. According to the managers, the communication channels that link the members of the chain with each other should function properly which eventually will end up with the simplification of the processes as a

consequence of the visibility attained. The member of the supply chain should have the opportunity to participate in the decision making processes of the system.

There are two major implications to be mentioned when the relationship between information sharing and collaboration is being considered within the framework of the research findings. The relationship between resilience and participation is the strongest one in the research. The analysis revealed that managers recognize the need to incorporate retailers into the decision making processes and perceive them as the one of the chains of the entire supply system. This is very promising for future designs of competitive supply chains in Turkey as retailers are perceived to be vital in sensing the changes in the preferences of the target market as well as the primary source of market data. At this point it is worth to make a reminder that survey is applied on the purchasing managers of Turkey's leading manufacturing companies and the data collected is verified to be highly reliable. According to the respondents, retailers mean more than just bunch of stores selling the goods produced and reluctantly endure keeping excess inventory under the pressures of dominant manufacturing firm. The implication of this finding unveils useful insights to be utilized on the way to remove the impediments that keep retailers from being incorporated into supply chain system. The long-established pattern of adversarial interactions between retailers and their suppliers in Turkey is a major obstacle to be overcome for the improvement of inter-organizational relationships and creating collaborative supply chains.

The second extremely important implication is the role of dominant manufacturing firm with the bargaining power and capability of making high volume purchasing. The dominant firm is perceived to be responsible for the success or failure of any attempt to create collaborative supply chain. The managers stress the prevailing discomfort caused by the unilateral actions taken by the dominant firm. Taking unilateral actions and ignoring the contributions of the other members in the supply chain trim the possibility of collaboration through distortion of trust. The significant relation between lack of recognition and unilateral attitude of central dominant firm towards the other firms allows us to make an extraction suggesting that the lack of information sharing and excluding the other members in the supply chain from the

decision making process of performance criteria selection and other strategic issues will block the way to collaboration. Dyadic relationships can no longer improve the responsiveness of the entire system.

According to the managers, the dominant manufacturing firm in the chain should refrain from locking in partners by raising their switching costs; rather facilitate the establishment of commitment through specialized investment which lock them in. The managers admit the high cost of replacing existing relationships but still hesitate to involve in long-term relationships because of the source of anxieties mentioned above. The prevailing apprehension can be utilized as a source of internal and system wide discomfort to foster the motivation towards collaboration. On the other it should not be kept out of sight that using this fear is not the only source to motivate both parties to collaborate. The internalization period of collaboration should be rendered less painful rather than increasing the fear of replacement costs. Investment alignment is an undisputable component of collaboration accelerating the flow of information and the process respond periods. The dominant firm must internalize that this is not a power game, but a trust game.

The dominant firm should no longer be in pursuit of dyadic relationships with an intention to maximize short term gains, but should concentrate on the need of a proactive supply chain system in order to be able innovative enough to develop new products and stay adaptive. This will gradually ensure the system wide resources become more accessible by all the members of the chain and create synergy. In compliant with what is suggested by the literature, collaboration enables the chain participants to resolve conflicts through procedures such as mediation or arbitration via establishment of systemic trust, thus, the emphasis on legal correctness will shift to balancing of legal logic with common sense. It is pleasing to observe that supply chain collaboration is perceived to be the ultimate source of competitiveness, but there are also perceptual barriers to be removed and creation of overall satisfaction with the existing supply chain relationship is necessary for Turkish manufacturing business.

5.2 Limitations and Suggestions for Further Studies

In spite of the noteworthy contributions of the study there are limitations to be mentioned. One of them is the sample size. The ICI – 100 enterprises are selected as the population of this study and research is run on data obtained from a sample of 55 enterprises. Due to the budget constraints and time limitation, the ICI – 500 could not be included fully. The cross-sectional nature of the study is another limitation. The research is multi-industrial and this study focuses on the leading large-scale manufacturers of Turkey.

This study offers various opportunities to conduct further studies. Such a research, for example, can be designed by focusing on the organizational attitudes towards collaboration and its constituting elements, among the members of a selected supply chain from a specific industry.

Since this study reveals major findings, especially the role of retailers, their attitudes towards supply chain collaboration can be measured from their standpoint and the way retailers perceive this concept, so that their existing priorities can be explored.

There are also ample opportunities for specific research to be conducted to reveal the deeper underlying motives of trust, information sharing and commitment. The factors extracted in this study can be enriched and increased through concentrating on bilateral interactions of these concepts.

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APPENDIX A

Turkish Version of the Questionnaire

Anket Ifade Formu

Lütfen aşağıdaki ifadelerin her birini kendi işletmeniz ve çalıştığınız tedarikçiler açısından değerlendirip, verilen seçeneklerden sadece birisini (X) ile işaretleyerek tercihinizi yapınız.

1. Kesinlikle Katılıyorum 2. Katılıyorum 3. Fikrim Yok 4. Katılmıyorum 5. Kesinlikle Katılmıyorum		1	2	3	4	5
1	Tedarik zincirindeki muhattabımla ticari sırrımı paylaşmak durumunda kaldığımda, bu sırrı üçüncü kişilere aktarmayacağına dair güvenim tamdır.					
2	Tedarik zincirindeki iş ortağımız (ortaklarımız) ihtiyaç duyduğumuz bilgileri paylaşmakta seçici davranır.					
3	Tedarik zincirindeki kurumsal müşterilerimizin, sorularımıza ilişkin yaptıkları açıklamaları firmamızı tatmin etmediğinde, bunu karşı tarafın içten pazarlıklı bir davranışı olarak algılamayız.					
4	Tedarik zincirinde kurumsal müşterilerimizin verdikleri bilgilerin sonradan eksik, hatta hatalı olması nedeniyle zarara uğradığımız oldu.					
5	Tedarik zincirinde kurumlararası bilgi paylaşımının mümkün olabilmesi için kurumların paylaştıkları bilginin aleyhlerine kullanılmayacağına ikna olmaları gerekmektedir.					
6	Tedarik zincirinde bilgi paylaşımının kesintisiz olabilmesi için birbiriyle uyumlu yazılımların kullanılmasını ve kurumsal müşteriler ile "on-line" iletişimde olmayı bir sakınca olarak görmemek gerekir.					
7	Tedarik zincirinde bilgi paylaşımının gerekliliğine inanmakla birlikte paylaşılacak bilginin sınırlarının ve içeriğinin sözleşmeler yoluyla belirlenmesi gerektiğine inanıyorum.					
8	Tedarik zincirindeki müşterilerimizin kurumsal gelişimlerine ve iş kalitelerine katkısı olan her türlü bilgiyi kendileriyle çekinmeden paylaşırız.					
9	Kurumsal iş ortaklarımızın verdiği sözleri tutmaları bilgi paylaşma eğilimimizi artırmaktadır.					
10	Yeni müşteri bulma maliyetinin yüksek olması nedeniyle, mevcut kurumsal iş ortaklarımızla bilgi paylaşımını geliştirmeyi tercih ediyoruz.					
11	Kurumsal iş ortaklarımızla paylaştığımız bilgileri, sorunları çözmek ve öngörülü bir tedarik anlayışı yaratmak yerine zaman zaman bizi denetlemek amaçlı kullandıkları hissine kapıldığımız olabiliyor.					
12	Tedarik zincirinde birebir çalışan kurumların bilgi paylaşımını kolaylaştırmak adına birbirlerinin işyerlerine iletişim noktaları kurmaları ve orada bir temsilci bulundurmaları uygun olur.					
13	Tedarik zincirindeki firmaların birbirlerinin hareketlerini tahmin etmeleri, karşılıklı bağımlılığı artıran ilişkiye özgü altyapı yatırımları ile mümkün olabilir.					
14	Kurumsal müşterilerimizle aramızdaki güven, ilişkiye özgü; insan ve teknoloji tabanlı yatırımlar yapabileceğimiz, geleceğe yönelik bir ortam oluşturur.					
15	Tedarikçimin, mal akışını kesintisiz ve anlaştığımız koşullarda sağlayacağına ilişkin güvenim tam olduğundan, biz de müşterilerimizin zaman kısıtlarına uyabilmekteyiz.					

1. Kesinlikle Katılıyorum 2. Katılıyorum 3. Fikrim Yok 4. Katılmıyorum 5. Kesinlikle Katılmıyorum		1	2	3	4	5
16	Müşterimiz ve/ veya tedarikçilerimiz, verdikleri kararların bize yönelik olumsuz etkilerini gözönüne alarak zarar vermekten çekinirler.					
17	Piyasa koşulları aleyhimize döndüğünde, tedarik zincirindeki iş ortağımız (ortaklarımız) bize yardımcı olur.					
18	Tedarik zincirindeki iş ortaklarımın geçmişteki davranışları gelecekteki yatırımlarımızı yönlendirmek için gereken güven ortamının korunması/yaratılması açısından önem taşımaktadır.					
19	Bünyesinde yer aldığım tedarik zincirinde riskler ve ödüller dengeli bir şekilde dağıtılmıştır.					
20	Ana üretici firma, tedarik zincirinde yeralan tüm firmalara adil davranmakta, kısa vadeli menfaatleri uğruna zincirdeki bir firmanın zarar görmesine izin vermemektedir.					
21	Tedarik zincirindeki kurumsal müşteri(leri)miz ile aramızdaki ilişkinin gelecekte de devam edeceğine yönelik güvenin oluşumu, kendilerini çalışanlarımızın eğitimine ve kaliteyi artırmaya yönelik kaynak harcamaya yöneltecektir.					
22	Tedarik zincirinde müşterimiz olan diğer firma(ların) gelecekteki büyüme stratejilerini temel alarak, buna uygun yatırım planlaması yaparız.					
23	Tedarik zincirindeki firma hareketlerinin, geçmişten gelen ilişkilere dayanarak önceden tahmin edilmesi, yatırım uyumunun sağlanması için gereklidir.					
24	Tedarik zincirindeki firmaların, birbirlerinin hareketlerini önceden tahmin etmeleri, ilişkinin geçmişe dayanmasına bağlıdır.					
25	Tedarik zincirinde bilgi paylaşımı ancak uzun süreli kurumsal ilişkiler sonucunda kurumların birbirlerinin sadakatini teyit etmeleri ile mümkün olabilir.					
26	Kurumsal müşterilerin arasında açık ve doğrudan iletişim kurulması, olası aksaklıkların önceden tespit edilerek giderilmesi açısından gereklidir.					
27	Ürünün son kullanıcı ile buluştuğu perakende noktaları ile ne kadar yakın ilişki kurulabilirse, hedef müşterinin (son kullanıcının) değişen istek ve ihtiyaçlarını önceden tespit etmek o kadar kolaylaşır.					
28	Tedarik zincirindeki iş ortağımızın piyasa talebi ile ilgili beklentisini bizimle paylaşması, esnek bir tedarik sistemi yaratmak açısından gereklidir.					
29	Ana üretici firma başta olmak üzere tedarik zincirindeki firmalar ne kadar sağlıklı bir iletişim kurabilirlerse, işbirliğinin oluşturulması o kadar kolay olur.					
30	Ana üretici firmanın sağladığı bilgi paylaşımı sayesinde, tedarikçilerin hareketlerini tahmin edebilmesi sistemdeki firmaların üretim maliyetlerinin azalmasını sağlayacaktır.					

1. Kesinlikle Katılıyorum 2. Katılıyorum 3. Fikrim Yok 4. Katılmıyorum 5. Kesinlikle Katılmıyorum		1	2	3	4	5
31	Tedarik zincirinde işbirliğinin kurulması, tedarikçiler arasındaki süreçlerin basitleştirilerek işlem maliyetlerinin aşağıya çekilmesine yardımcı olur.					
32	Bayiler, piyasa bilgilerini ilk elden tespit etme becerileri nedeniyle kararalma süreçlerine ne kadar dahil olursa, rekabet gücü o kadar artar.					
33	Tedarik zincirinde, firmamız dahil, tüm firmalar ana stratejinin ne olduğunu bilmekte ve sorumlulukları benimsemektedir.					
34	Tedarik zincirindeki firmalar arasında iletişim, sadece ortaya bir sorun çıktığı zaman söz konusu olmaktadır.					
35	Tedarik zincirindeki iletişim, ana üretici firmanın tekeli ve denetimi altında çoklu değil, ikili olarak ve sipariş bilgilerinin iletimi haricinde gerektiği kadar yürütülebilmektedir.					
36	Tedarik zincirindeki üyeler arasında çıkan sorunlar, büyümeden karşılıklı işleyen bir uyarı mekanizması yoluyla giderilir.					
37	Tedarik zincirinin performans değerleme kriterleri sadece ana firma tarafından diğer üyelerin katkısı alınmaksızın belirlenmiştir.					
38	Pazardaki değişimlerin, bilgi paylaşımı sayesinde önceden algılanması, ana firmaya ve sistemin geneline rekabet avantajı sağlar.					
39	Tedarik zincirindeki firmaların, ana stratejiye katkıda bulunabilmesi için ana üretici firma dahil, tüm üyeler gerekli hassasiyeti gösterir.					
40	Ana üretici firmanın piyasaya yeni ürün süreceğini, sadece anafirmadan yarı-mamul ve/veya hammadde siparişi ve miktarı talep edildiğinde öğreniyorum.					
41	Yeni ürün geliştirme safhasında, tedarik zincirindeki tüm firmalar biraraya gelir ve karşılıklı görüş alışverişinde bulunarak müşteri odaklı bir pazarlama stratejisinin oluşturulması sağlanır.					
42	Kurumsal müşterilerimizin sağladığı bilgi paylaşımı sayesinde, firmaların kurumsal hareketleri tahmin edilebilir niteliktedir.					
43	Az sayıda tedarikçiyle çalışmak, daha avantajlı imkanlar sunan olası adayların kaçırılmasına ve artan bağımlılık nedeniyle doğan gücü ana üretici firmanın aleyhine kullanmasına neden olur.					
44	Tedarik zincirindeki firmalar arasında uzun vadeli ilişkilerin kurulması için ana üretici firmanın kararlı ve tutarlı davranışlar göstermesi, işbirliğine giden süreci hızlandıracaktır.					
45	Kurumsal müşterimiz ile süregelen ilişkimiz, ilişkinin bozulmaması için özel çaba sarfetmemizi gerektirecek kadar değerlidir.					

1. Kesinlikle Katılıyorum 2. Katılıyorum 3. Fikrim Yok 4. Katılmıyorum 5. Kesinlikle Katılmıyorum		1	2	3	4	5
46	Kurumsal müşterimizin, bizim yerimize yeni bir tedarikçi bulmasının maliyeti oldukça yüksektir.					
47	Firmamız, teknolojik uyumun sağlanması ve mal üretiminde kalitenin gelişebilmesine yönelik tedarikçilerimizin yatırımlarına artan destek vermekte ve çalışanlarına yönelik düzenli eğitimler düzenlemektedir.					
48	Ana üretici firma ve tedarik sistemindeki diğer firmalar, zincirdeki bir üyenin sesini duymazlıktan gelmeyerek, sorunu olan "halkaya" gerekli duyarlılığı gösterirler.					
49	Tedarik zincirinin bir parçası olmaya yönelik özel bir eğilimimiz yok. Piyasa koşullarının gerektirdiği şekilde paralel zincirlere geçiş yapmakta firma olarak bir sakınca görmüyoruz.					
50	Tedarik zincirindeki firmalar, bilgi paylaşımının sonucunda gelecekteki yatırımlarını birbirleri ile uyumlu hale getirme çabasındadır.					
51	Tedarik zincirindeki firmalar arasında işbirliğine yönelik yatırım uyumunun kurulması, sistemin inovasyon kabiliyetini yükselterek ana firma da dahil olmak üzere sisteme yaygın bir gelişmeyi mümkün kılacaktır.					
52	Elimizde uygun imkan olsa dahi kurumsal müşterilerimizin bağlı bulunduğu zincirden ayrılmak istemeyecek kadar mevcut ilişkilerimizden memnunuz.					
53	Aynı tedarik zincirinde yeralan firmalar arasında işbirliğinin sağlanabilmesi için her firma yöneticisinin, bunun kurumlar arasında bir uyum süreci olduğunu anlaması ve bu durumu benimsemesi gerekmektedir.					
54	İşbirliğinin kurulması, zincirdeki mali gücü yüksek firmaların diğerlerini zorlamasıyla değil, aksine tüm firmaların işbirliği için gerekli kaynaklara kolayca erişebilmesinin sağlanmasıyla mümkün olacaktır.					
55	Ana üretici firma, işbirliği ve ilişkiye özel kaynak ayırması konusunda diğer firmaları motive edecek bir ortaklık hissi yaratmalıdır.					

APPENDIX B

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
H11	131,2400	345,819	,143	.	,892
H12	131,6400	343,051	,230	.	,891
H13	131,6000	344,490	,184	.	,892
H14	131,2400	357,819	-,174	.	,897
H15	132,2400	331,411	,570	.	,886
H16	132,1200	335,128	,457	.	,888
H17	132,2200	332,093	,485	.	,887
H18	132,0400	334,570	,476	.	,888
H19	132,3800	333,424	,619	.	,886
H110	131,5200	336,255	,442	.	,888
H111	131,1000	352,255	-,032	.	,895
H112	131,1600	346,709	,108	.	,893
H213	131,4800	344,867	,187	.	,891
H214	132,0400	337,958	,608	.	,887
H215	131,8800	340,638	,330	.	,890
H216	131,5000	344,051	,193	.	,891
H217	131,6000	336,694	,463	.	,888
H218	132,2000	334,612	,561	.	,887
H219	131,0800	344,483	,206	.	,891
H220	131,4200	339,024	,309	.	,890
H221	131,5800	330,167	,544	.	,886
H222	131,6400	340,807	,295	.	,890
H223	131,8200	338,477	,429	.	,888
H224	131,7200	341,144	,321	.	,890
H225	131,8600	339,633	,322	.	,890
H226	132,4000	337,673	,572	.	,887
H227	132,4800	336,214	,539	.	,887
H328	132,2600	332,319	,657	.	,886
H329	132,5000	336,051	,612	.	,887
H330	132,1600	338,831	,403	.	,889
H331	132,2600	335,339	,644	.	,887
H332	131,8600	334,286	,513	.	,887
H333	131,5400	330,825	,576	.	,886
H334	130,4800	354,622	-,097	.	,895
H335	131,1000	348,704	,083	.	,892
H336	131,7400	335,870	,587	.	,887
H337	131,2200	350,951	,003	.	,894
H338	132,2400	333,941	,683	.	,886
H339	131,7800	338,257	,463	.	,888
H340	131,0400	349,386	,055	.	,893
H341	131,2200	336,747	,428	.	,888
H342	131,5400	341,886	,331	.	,890
H443	131,4000	343,878	,150	.	,893
H444	132,3000	329,439	,697	.	,885
H445	131,9000	338,908	,330	.	,890
H446	131,2200	342,012	,227	.	,891
H447	131,5000	344,459	,187	.	,891
H448	131,4000	337,102	,418	.	,888
H449	131,0800	350,034	,023	.	,894
H450	131,5000	339,194	,414	.	,889
H451	131,8800	338,149	,582	.	,887
H452	131,2000	348,286	,102	.	,892
H453	131,9600	339,549	,524	.	,888
H454	131,9800	338,102	,540	.	,888
H455	132,1000	337,765	,594	.	,887

APPENDIX C

Correlation Matrix

		H11	H13	H14	H15	H17	H19	H111
Correlation	H11	1,000	,247	-,386	,140	-,065	,227	-,035
	H13	,247	1,000	-,269	,191	,180	,276	-,062
	H14	-,386	-,269	1,000	-,072	,067	-,153	,041
	H15	,140	,191	-,072	1,000	,434	,425	,208
	H17	-,065	,180	,067	,434	1,000	,361	-,107
	H19	,227	,276	-,153	,425	,361	1,000	,085
	H111	-,035	-,062	,041	,208	-,107	,085	1,000
Sig. (1-tailed)	H11		,042	,003	,166	,326	,057	,404
	H13	,042		,029	,091	,105	,026	,336
	H14	,003	,029		,309	,323	,144	,388
	H15	,166	,091	,309		,001	,001	,073
	H17	,326	,105	,323	,001		,005	,231
	H19	,057	,026	,144	,001	,005		,279
	H111	,404	,336	,388	,073	,231	,279	

Correlation Matrix Obtained From the Factor Analysis of H_1 – Trust

APPENDIX D

Correlation Matrix

		H12	H16	H18	H110	H112
Correlation	H12	1,000	,123	,348	,081	,172
	H16	,123	1,000	,244	,378	,121
	H18	,348	,244	1,000	,183	,164
	H110	,081	,378	,183	1,000	-,029
	H112	,172	,121	,164	-,029	1,000
Sig. (1-tailed)	H12		,198	,007	,288	,116
	H16	,198		,044	,003	,201
	H18	,007	,044		,101	,128
	H110	,288	,003	,101		,421
	H112	,116	,201	,128	,421	

Correlation Matrix Obtained From the Factor Analysis of H_1 – Information Sharing

APPENDIX E

Correlation Matrix

		H215	H216	H217	H218	H223	H224	H225
Correlation	H215	1,000	,111	,135	,392	,280	,313	,009
	H216	,111	1,000	,426	,074	-,031	,134	,193
	H217	,135	,426	1,000	,365	,270	,128	,255
	H218	,392	,074	,365	1,000	,425	,327	,356
	H223	,280	-,031	,270	,425	1,000	,472	,322
	H224	,313	,134	,128	,327	,472	1,000	,370
	H225	,009	,193	,255	,356	,322	,370	1,000
Sig. (1-tailed)	H215		,222	,176	,002	,025	,013	,476
	H216	,222		,001	,305	,414	,177	,089
	H217	,176	,001		,005	,029	,187	,037
	H218	,002	,305	,005		,001	,010	,006
	H223	,025	,414	,029	,001		,000	,011
	H224	,013	,177	,187	,010	,000		,004
	H225	,476	,089	,037	,006	,011	,004	

Correlation Matrix Obtained From the Factor Analysis of H_2 – Trust

APPENDIX F

Correlation Matrix

		H215	H216	H217	H218	H223	H224	H225
Correlation	H215	1,000	,111	,135	,392	,280	,313	,009
	H216	,111	1,000	,426	,074	-,031	,134	,193
	H217	,135	,426	1,000	,365	,270	,128	,255
	H218	,392	,074	,365	1,000	,425	,327	,356
	H223	,280	-,031	,270	,425	1,000	,472	,322
	H224	,313	,134	,128	,327	,472	1,000	,370
	H225	,009	,193	,255	,356	,322	,370	1,000
Sig. (1-tailed)	H215		,222	,176	,002	,025	,013	,476
	H216	,222		,001	,305	,414	,177	,089
	H217	,176	,001		,005	,029	,187	,037
	H218	,002	,305	,005		,001	,010	,006
	H223	,025	,414	,029	,001		,000	,011
	H224	,013	,177	,187	,010	,000		,004
	H225	,476	,089	,037	,006	,011	,004	

Correlation Matrix Obtained From the Factor Analysis of H_2 – Trust

APPENDIX G

Correlation Matrix

		H213	H214	H219	H220	H221	H222	H226	H227
Correlation	H213	1,000	,134	,100	,238	,349	,175	,019	,179
	H214	,134	1,000	,325	,392	,416	,331	,415	,245
	H219	,100	,325	1,000	,651	,399	,205	,061	,090
	H220	,238	,392	,651	1,000	,569	,530	,040	,258
	H221	,349	,416	,399	,569	1,000	,549	,183	,415
	H222	,175	,331	,205	,530	,549	1,000	-,016	,347
	H226	,019	,415	,061	,040	,183	-,016	1,000	,302
	H227	,179	,245	,090	,258	,415	,347	,302	1,000
Sig. (1-tailed)	H213		,177	,244	,048	,006	,112	,447	,106
	H214	,177		,011	,002	,001	,009	,001	,043
	H219	,244	,011		,000	,002	,077	,336	,268
	H220	,048	,002	,000		,000	,000	,392	,035
	H221	,006	,001	,002	,000		,000	,101	,001
	H222	,112	,009	,077	,000	,000		,456	,007
	H226	,447	,001	,336	,392	,101	,456		,017
	H227	,106	,043	,268	,035	,001	,007	,017	

Correlation Matrix Obtained From the Factor Analysis of H_2 – Commitment

APPENDIX H

Correlation Matrix

		H328	H330	H333	H336	H338	H340	H342
Correlation	H328	1,000	,601	,332	,470	,701	,017	,020
	H330	,601	1,000	,239	,378	,406	-,157	,080
	H333	,332	,239	1,000	,434	,238	,093	,296
	H336	,470	,378	,434	1,000	,396	,000	,322
	H338	,701	,406	,238	,396	1,000	-,016	,148
	H340	,017	-,157	,093	,000	-,016	1,000	-,057
	H342	,020	,080	,296	,322	,148	-,057	1,000
Sig. (1-tailed)	H328		,000	,009	,000	,000	,454	,446
	H330	,000		,047	,003	,002	,138	,290
	H333	,009	,047		,001	,048	,261	,018
	H336	,000	,003	,001		,002	,500	,011
	H338	,000	,002	,048	,002		,456	,153
	H340	,454	,138	,261	,500	,456		,346
	H342	,446	,290	,018	,011	,153	,346	

Correlation Matrix Obtained From the Factor Analysis of H_3 – Information Sharing

APPENDIX I

Correlation Matrix

		H329	H331	H332	H334	H335	H337	H339	H341
Correlation	H329	1,000	,762	,425	-,192	,059	,075	,170	,082
	H331	,762	1,000	,513	-,096	,043	-,073	,311	,081
	H332	,425	,513	1,000	-,102	,170	,204	,202	,345
	H334	-,192	-,096	-,102	1,000	,322	,057	-,165	-,008
	H335	,059	,043	,170	,322	1,000	,430	-,114	,082
	H337	,075	-,073	,204	,057	,430	1,000	-,328	,147
	H339	,170	,311	,202	-,165	-,114	-,328	1,000	,412
	H341	,082	,081	,345	-,008	,082	,147	,412	1,000
Sig. (1-tailed)	H329		,000	,001	,091	,342	,303	,119	,286
	H331	,000		,000	,254	,384	,307	,014	,288
	H332	,001	,000		,241	,119	,077	,079	,007
	H334	,091	,254	,241		,011	,347	,127	,477
	H335	,342	,384	,119	,011		,001	,215	,286
	H337	,303	,307	,077	,347	,001		,010	,155
	H339	,119	,014	,079	,127	,215	,010		,001
	H341	,286	,288	,007	,477	,286	,155	,001	

Correlation Matrix Obtained From the Factor Analysis of H_3 – Collaboration

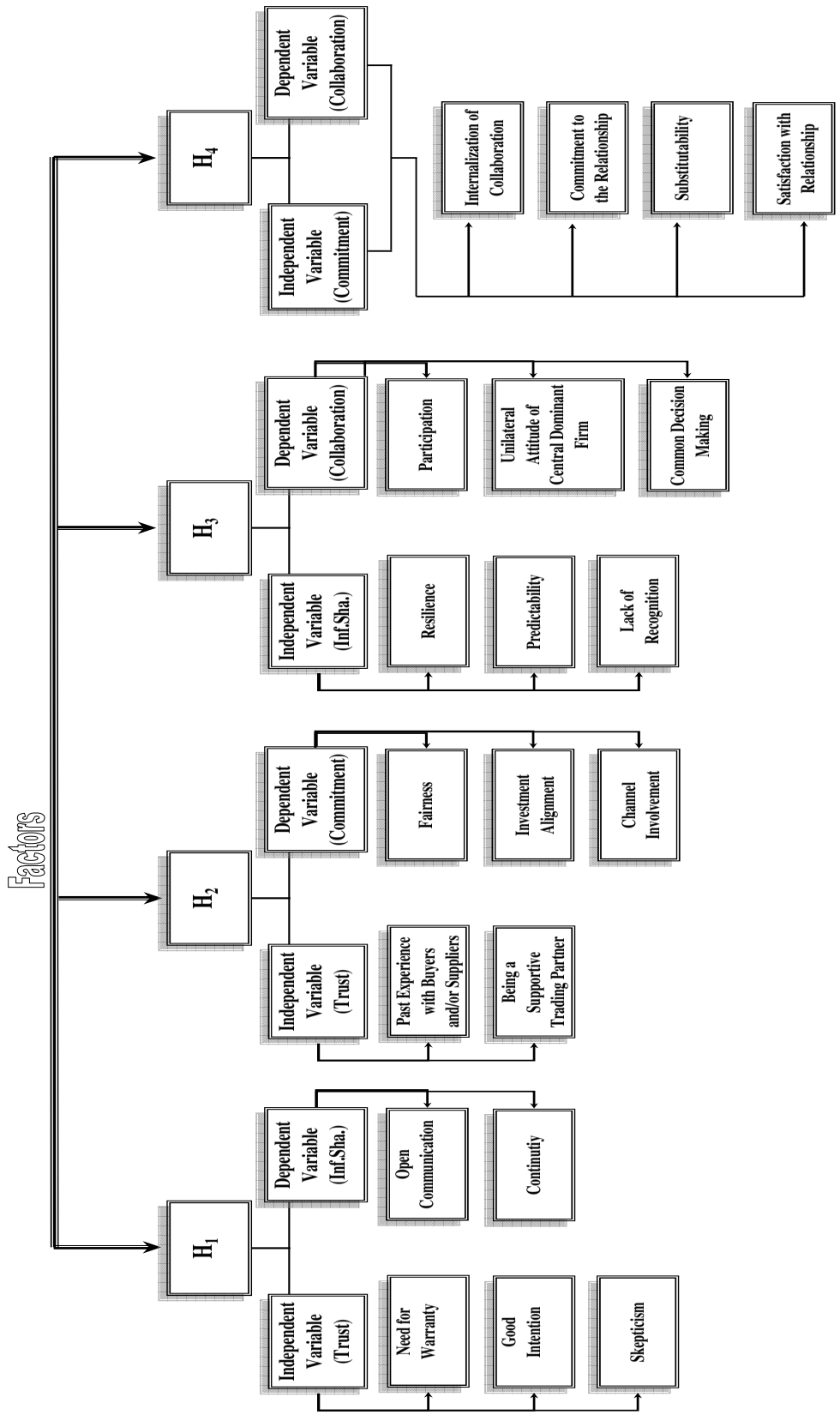
APPENDIX J

Correlation Matrix

		H443	H445	H446	H447	H449	H452	H454	H455	H450	H451	H453	H444	H448
Correlation	H443	1,000	-,116	,126	,181	,092	,087	,002	,146	,217	-,097	,090	,096	,121
	H445	-,116	1,000	,018	,134	-,052	,217	,302	,144	,211	,350	,384	,304	,334
	H446	,126	,018	1,000	,190	,167	,158	,102	,245	,180	,062	,113	,163	,228
	H447	,181	,134	,190	1,000	-,339	,205	,121	,090	,172	,056	-,026	,027	,444
	H449	,092	-,052	,167	-,339	1,000	,051	,156	,027	,074	-,176	,045	,211	-,193
	H452	,087	,217	,158	,205	,051	1,000	-,056	,044	,122	,110	-,018	,015	-,021
	H454	,002	,302	,102	,121	,156	-,056	1,000	,502	,369	,422	,551	,494	,263
	H455	,146	,144	,245	,090	,027	,044	,502	1,000	,348	,480	,491	,566	,365
	H450	,217	,211	,180	,172	,074	,122	,369	,348	1,000	,269	,252	,268	,230
	H451	-,097	,350	,062	,056	-,176	,110	,422	,480	,269	1,000	,598	,487	,223
	H453	,090	,384	,113	-,026	,045	-,018	,551	,491	,252	,598	1,000	,391	,118
	H444	,096	,304	,163	,027	,211	,015	,494	,566	,268	,487	,391	1,000	,279
	H448	,121	,334	,228	,444	-,193	-,021	,263	,365	,230	,223	,118	,279	1,000
Sig. (1-tailed)	H443		,211	,192	,105	,262	,274	,495	,156	,065	,252	,268	,254	,201
	H445	,211		,450	,177	,359	,065	,017	,158	,070	,006	,003	,016	,009
	H446	,192	,450		,093	,123	,136	,240	,043	,105	,335	,217	,129	,056
	H447	,105	,177	,093		,008	,077	,202	,266	,116	,349	,430	,425	,001
	H449	,262	,359	,123	,008		,361	,139	,427	,305	,110	,379	,070	,090
	H452	,274	,065	,136	,077	,361		,351	,381	,200	,224	,450	,459	,442
	H454	,495	,017	,240	,202	,139	,351		,000	,004	,001	,000	,000	,033
	H455	,156	,158	,043	,266	,427	,381	,000		,007	,000	,000	,000	,005
	H450	,065	,070	,105	,116	,305	,200	,004	,007		,030	,038	,030	,054
	H451	,252	,006	,335	,349	,110	,224	,001	,000	,030		,000	,000	,060
	H453	,268	,003	,217	,430	,379	,450	,000	,000	,038	,000		,002	,208
	H444	,254	,016	,129	,425	,070	,459	,000	,000	,030	,000	,002		,025
	H448	,201	,009	,056	,001	,090	,442	,033	,005	,054	,060	,208	,025	

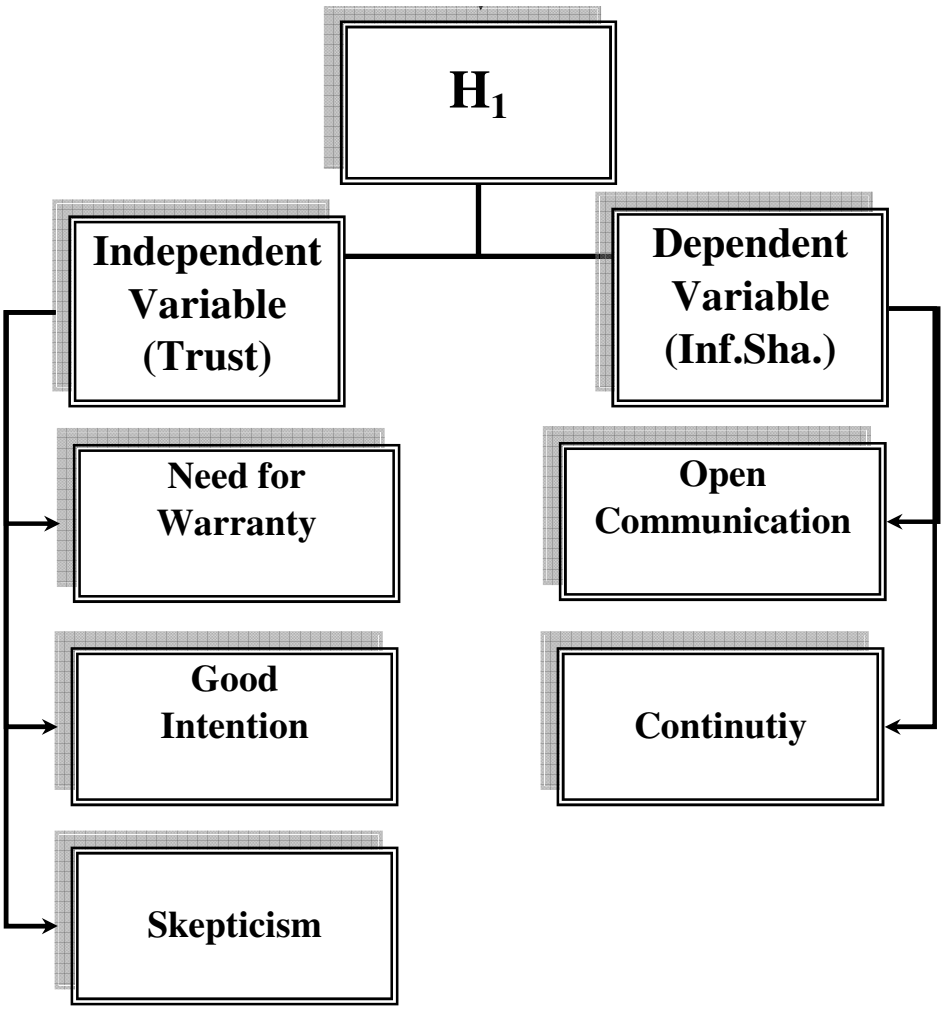
Correlation Matrix Obtained From the Factor Analysis of H_4

APPENDIX K



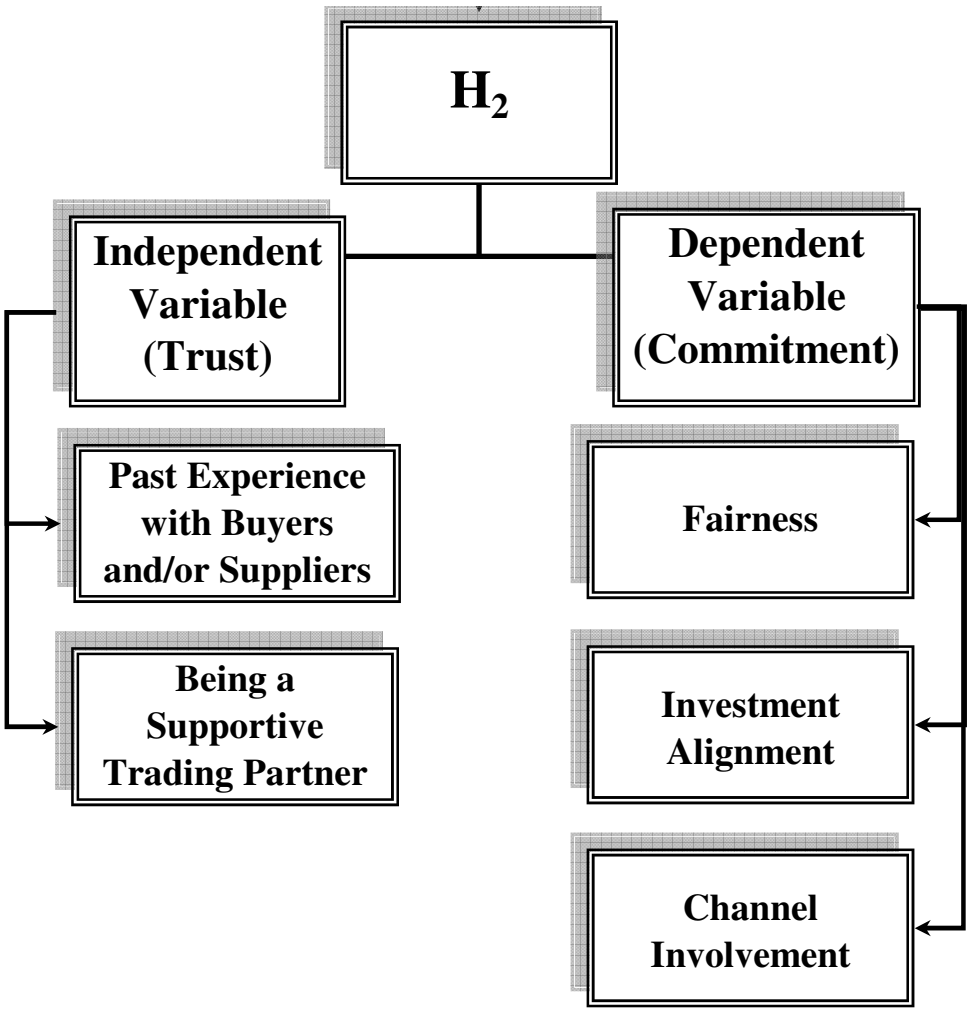
Breakdown of Factors

APPENDIX L



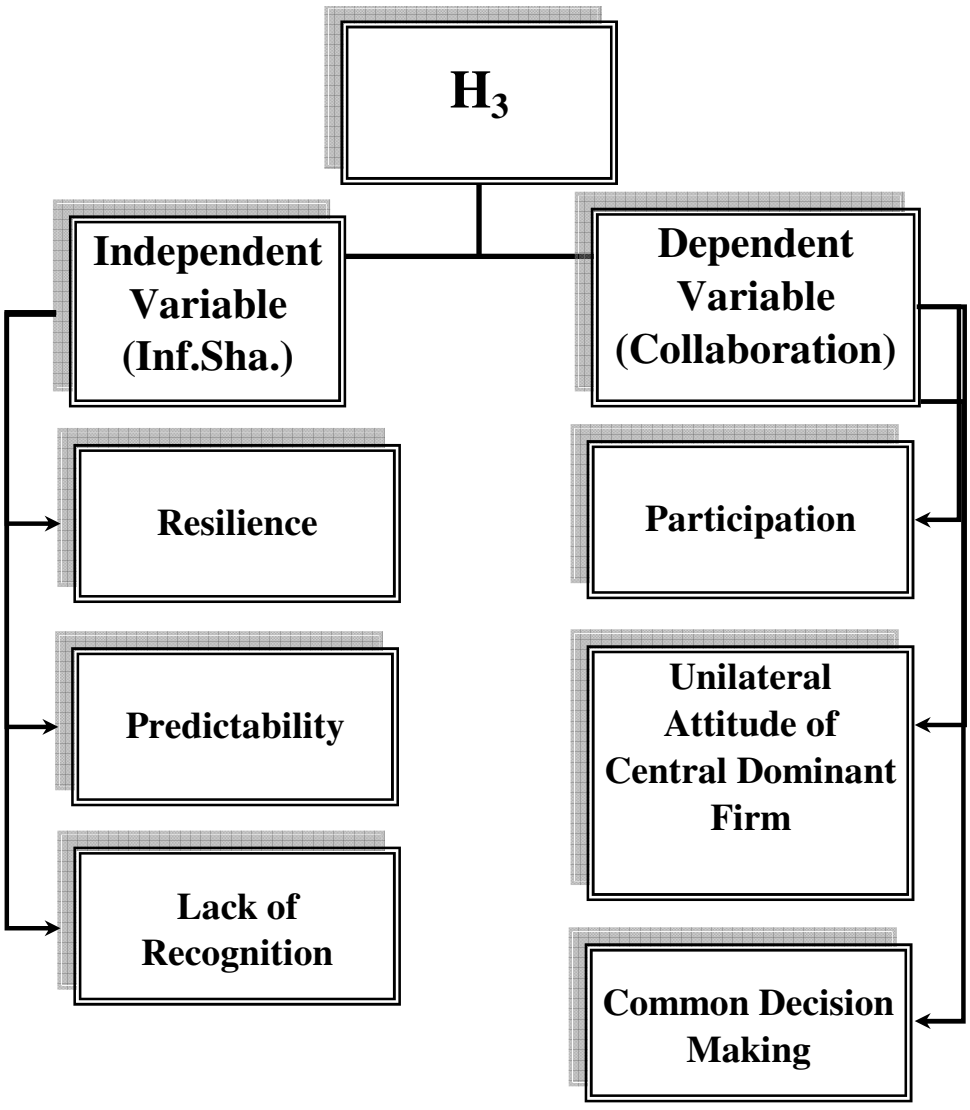
Factors of H_1

APPENDIX M



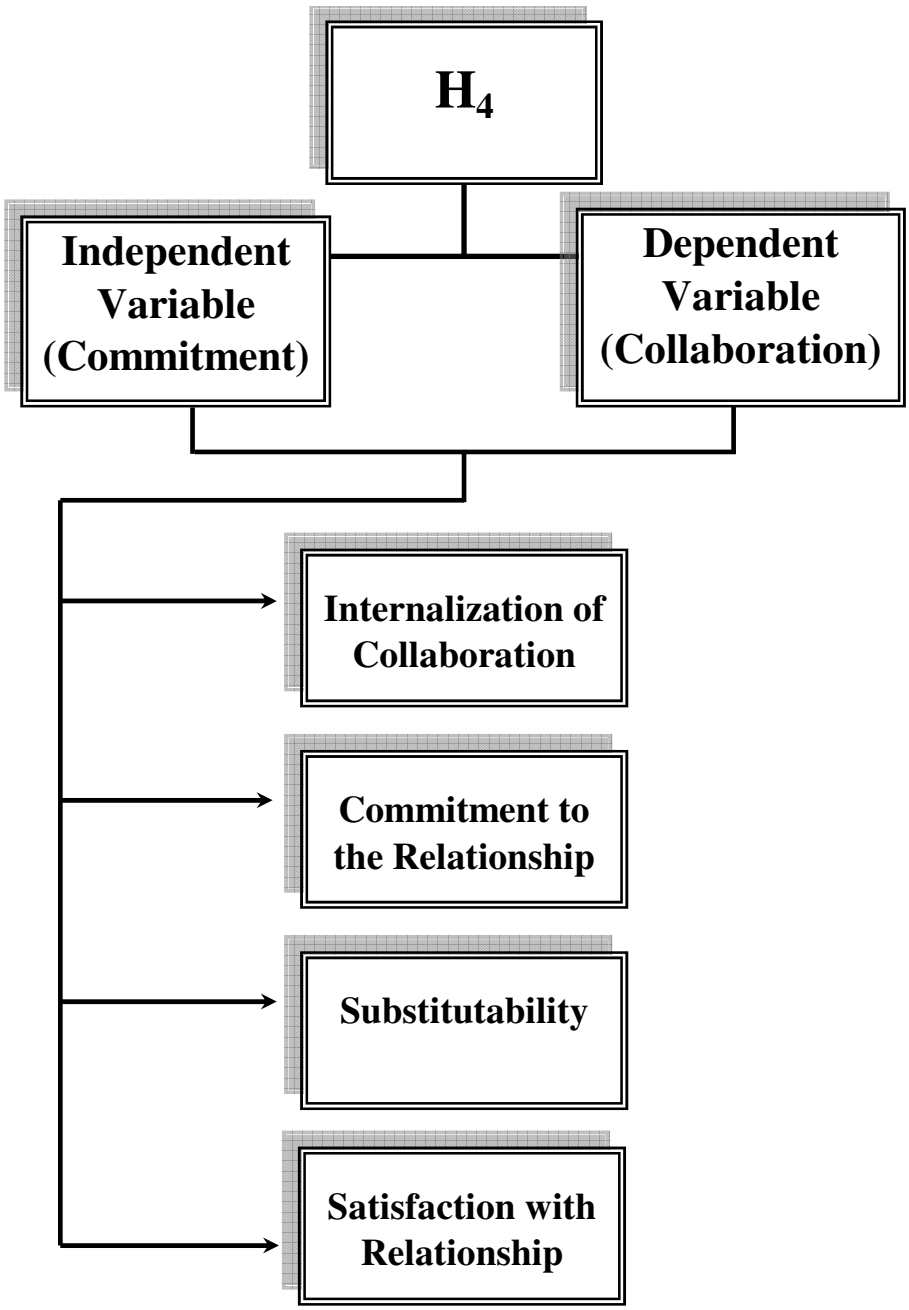
Factors of H_2

APPENDIX N



Factors of H_3

APPENDIX O



Factors of H_4

APPENDIX P

English Version of the Questionnaire

	1. I totally agree 2. I agree 3. I have no idea 4. I disagree 5. I totally disagree	1	2	3	4	5
1	We are confident that our supply chain partners will not attempt to share our commercial secrets with other parties without our consent.					
2	Our supply chain partners are selective when it comes to share information that are necessary for our operations.					
3	When our corporate customers in the supply chain fail to give satisfactory answers to our questions, it is unlikely that we perceive it as a hypocritical attitude.					
4	We have been incurred to losses in the past, as a consequence of the incomplete or defective information given by our chain partners.					
5	In order to be able to create an eligible environment for the inter-organizational flow of information, the firms involved in the supply chain should be convinced that the shared information will not be used against them.					
6	The firms involved in the supply chain should refrain from considering to have "on-line" access with each other and aligning their software infrastructure as drawbacks, because these enable an environment for continuous information sharing.					
7	Although I am aware of the importance of information sharing between the members of a supply chain, I believe that its limits and contents should be well designated via contracts.					
8	We share relevant information with our customers in the supply chain, that will enhance their process quality and contribute to their corporate improvement, without any hesitation.					
9	The more we observe that our corporate customers stick to their promises, the more information we share with them.					
10	Since undertaking cost of finding new corporate customers is far from being feasible, we prefer to improve the existing channels of information sharing with our supply chain business partners.					
11	Sometimes we get an impression that our corporate customers use the information we share with to check on our activities instead of utilizing them to solve problems and create a proactive supply chain system.					
12	It would be feasible if the immediate customers and buyers in the supply chain could establish contact points and assign a representative, both, at each other's facilities in order to facilitate the inter-organizational flow of information.					

	1. I totally agree 2. I agree 3. I have no idea 4. I disagree 5. I totally disagree	1	2	3	4	5
14	The prevailing environment of trust in our relationships with our customers in the supply chain, encourages us to make relation specific (human and technology based) investments					
15	We can offer timely delivery of order fulfillment to our customers as we are fully confident that the service we receive and material flow from our supplier will not be delayed.					
16	Our customers and/or suppliers avoid causing us financial loss and take our priorities into account before making any decisions concerning our firm.					
17	Our business partner(s) in the supply chain will stand by our firm under the circumstances of adverse market conditions.					
18	The track record of our relationship with our suppliers and buyers play an important role in creating an eligible environment for inter-organizational trust, which we consider as a pre-requisite for making future investments.					
19	The risk and rewards are distributed fairly along the supply chain system in which our firm is involved.					
20	The central manufacturing firm offers every other firm in the chain fair deals and avoids to distort its relationships with the members of its supply chain system and refrain from opportunism in the favor of short term profits.					
21	The formation sustainable trust based relationship with our firm will certainly lead our customer to allocate more financial resources to train our employees and improve our quality standards.					
22	We plan our future investments according to the growth strategies of the firms in our supply chain system.					
23	Establishment of predictability is necessary in order to be able to attain investments alignment between the members of the supply chain.					
24	Predictability of the firms in the supply chain stems from their trustworthy track records.					
25	Creating an eligible environment for inter-organizational information sharing in the supply chain system can only be possible when the firms are convinced that mutual loyalty is established.					
26	Establishment of open and properly functioning communication channels between the members of a supply chain will enable the buyers and suppliers to act proactively on the way to detect and solve problems.					
27	The higher the level of relationships of the firms in the supply chain with the retailing points, where the products meet the final consumer, easier it becomes to make accurate forecasts about the changes in the consumer preferences.					
28	In order to be able to create a resilient supply chain, our business partners (suppliers and buyers) should share the market information they possess with our company.					
29	Operationalization of properly functioning communication channels, facilitates the foundation of collaboration in a supply chain system.					
30	The manufacturing costs of the members of a supply chain decline, when the central manufacturing firm becomes predictable through operationalization of inter-organizational information sharing.					
31	Foundation of collaboration in a supply chain system facilitates the simplification of the inter-organizational processes and creates cost advantages for both of the member organizations.					
32	When retailers are more involved in decision making processes of a supply chain system, overall competitive advantage of the system increases accordingly.					
33	Every member of the supply chain, including our company, internalized the core elements and responsibilities regarding the grand strategy.					
34	Inter-organizational communication in our supply chain occurs when a problem arises.					
35	The inter-organizational communication in our supply chain is operated under the surveillance of the central manufacturing firm in a dyadic way with limited information covered, which are mostly consisting of order data.					

	1. I totally agree 2. I agree 3. I have no idea 4. I disagree 5. I totally disagree	1	2	3	4	5
40	We learn that the central firm will launch a new product only when it makes new orders for semi-finished goods or raw materials regarding that new product.					
41	Whenever the central firm runs a new product development project, all the members of our supply chain system come together to contribute to the formulation of a consumer-centered marketing strategyfor that new product.					
42	The members of our supply chain system are predictable as a consequence of the operationalization of the inter-organizational information sharing.					
43	Working with few suppliers might lead us to overlook alternative more favorable deals offered by other firms, as well as rendering our company vulnerable to the exploitation of high level interdependence to the central manufacturing firm.					
44	In order to be able to facilitate the process of collaboration, long-term inter-organizational relationships should be established and be fostered by the consistent.					
45	Our existing relationship with our corporate customer is quite worthwhile and deserves our effort to preserve it.					
46	The cost of replacing us with another firm is quite high for our customer in the supply chain.					
47	Our firm provides increasing support to investments made by its suppliers in order to enhance their manufacturing quality and establish technological alignment as well as arranging regular training programs for their employees.					
48	The members of our supply chain, including the central manufacturing firm, refrain from ignoring the problems when they occur and consider every firm worthwhile.					
49	We do not have any tendency towards becoming a member of a particular supply chain. We prefer to move between seperate systems in accordance with shifting market conditions.					
50	The members of our supply chain system try to align their investments with each other through utilization of inter-organizational information sharing.					
51	Establishment of investment alignment between members of a supply chain will enable an overall enhancement in system innovation capability and diffusion of improvement.					
52	Our firm is satisfied enough with its current relationships with the other firms in the supply chain and does not consider to seek replacement although there are attractive deals offered by alternative chains.					
53	In order to be able to establish collaboration between members of a supply chain, the managers of the firms involved should internalize the fact that it is a process of inter-organizational orientation and takes some time.					
54	The firms should make necessary sources available and easily attainable by other firms in the system, in order to be able to establish and diffuse inter-organizational collaboration along the chain.					
55	The central manufacturing firm should be capable of creating a sense partnerhsip among the firms in its supply chain in order to motivate them to invest in relation-specific assets.					

VITA

Ahmet Hakan Yüksel was born in 1974 in İstanbul. Following his graduation from Beşiktaş Atatürk Anadolu Lisesi (high school) he began his undergraduate studies at the Economics Department of İstanbul University Faculty of Economics. He started to work as a research intern in capital markets while he was a sophomore. Following completion of the undergraduate education, he received his Bachelor of Science degree in Economics and continued with his graduate education at the Institute of Business Administration of İstanbul University, where he completed the Certificate Program in International Management. Ahmet Hakan Yüksel started his professional career and Master of Arts in Organizational Behavior at the Institute of Social Sciences of İstanbul University, simultaneously. He worked in the area of investment banking for one year in research of department of Toprakbank and continued to build up his professional career as a corporate finance expert for two years and director for another two years for Işıklar Investment Inc., which was an affiliation of Işıklar Holding Inc. There he actively undertook and managed initial public offering projects, attended the debt restructuring project of the Holding company and provided portfolio management consultancy for the foreign investors. Following receiving his M.A. Degree in Organizational Behavior, with an attempt to become an academician, he started over and began to work as a teaching assistant at the College of Economics and Administrative Sciences of Feyziye Mektepleri Vakfı (1885) Işık University where he also attended the doctoral program. He has received his Ph.D. degree in Contemporary Business Studies from the same university in fall 2007.