B2B E-Commerce
Attributes and adoption

Bijan Khiabani
B2B E-Commerce: Attributes & Adoption

Supervisors: Prof. Limayem
Prof. Albadvi

Referees: Prof. Persson
Prof. Sepehri

Prepared by: Bijan Khiabani

Tarbiat Modarres University, Faculty of Engineering
Department Industrial Engineering

Lulea University of Technology
Division of Industrial Marketing and E-Commerce

Joint MSc PROGRAM IN MARKETING AND ELECTRONIC COMMERCE
List of Figures

FIGURE 1: STAGES OF E-COMMERCE ADOPTION ................................................................. 11
FIGURE 2: CLASSIFICATION OF E-MARKETPLACES ......................................................... 19
FIGURE 3: E-MARKETPLACE ARCHITECTURE ................................................................. 20
FIGURE 4: E-READINESS ASSESSMENT FRAMEWORK .................................................... 30
FIGURE 5: E-READINESS ASSESSMENT MODEL ............................................................ 30
FIGURE 6: INTERACTION MODEL ...................................................................................... 38
FIGURE 7: CRITERION FUNCTIONS ................................................................................... 58
FIGURE 8: DISTRIBUTION OF RESPONDENTS’ OPINION ON IMPORTANCE OF ATTRIBUTES ......................................................... 88
FIGURE 9: PROFILE OF RELATIONSHIP 1 ................................................................. 92
FIGURE 10: PROFILE OF RELATIONSHIP 2 ............................................................... 93
FIGURE 11: PROFILE OF RELATIONSHIP 3 ............................................................... 94
FIGURE 12: COMPLETE RANKING, PRE-E-COMMERCE .............................................. 95
FIGURE 13: PARTIAL RANKING, PRE-E-COMMERCE .................................................. 95
FIGURE 14: GAIA PLAN, PRE-E-COMMERCE .............................................................. 96
FIGURE 15: COMPLETE RANKING, IMPACTED ........................................................... 98
FIGURE 16: PARTIAL RANKING, IMPACTED ............................................................... 98
FIGURE 17: GAIA PLAN, IMPACTED .............................................................................. 99
List of Tables

TABLE 1: ESTIMATED SAVINGS FROM B2B E-COMMERCE ................................................................. 9
TABLE 2: EVOLUTION IN RELATIONSHIPS ...................................................................................... 52
TABLE 3: ATTRIBUTES OF B2B RELATIONSHIPS .......................................................................... 54
TABLE 4: RESEARCH STRATEGIES .................................................................................................. 64
TABLE 5: DATA COLLECTION METHODS ......................................................................................... 65
TABLE 6: MEAN, STANDARD DEVIATION AND MEDIAN OF ATTRIBUTES ........................................ 84
TABLE 7: CORRELATION BETWEEN ATTRIBUTES ........................................................................... 86
TABLE 8: ASSESSMENT OF ATTRIBUTES IN THE SCALE OF 1 TO 100 ................................................ 86
TABLE 9: WEIGHT OF ATTRIBUTES ............................................................................................... 87
TABLE 10: MEAN, STANDARD DEVIATION AND MEDIAN OF ATTRIBUTES, AFTER E-COMMERCE .... 88
TABLE 12: COMPARISON OF WEIGHTS .......................................................................................... 89
TABLE 13: APPROPRIATE CRITERION FUNCTIONS ........................................................................ 90
TABLE 14: THRESHOLD SETTINGS OF ATTRIBUTES, GAUSSIAN ................................................ 91
TABLE 15: THRESHOLD SETTINGS OF ATTRIBUTES, LINEAR ...................................................... 91
TABLE 16: ASSESSMENT OF SAMPLE RELATIONSHIPS .................................................................... 92
ABSTRACT

Understanding intention of businesses to adopt e-commerce is important for researchers and firms. This can be studied with different research strategies and from different perspectives. The current study has been conducted on business-to-business (B2B) e-commerce adoption at firm level from the business-to-business relationship point of view. The respondents were asked to validate and assess the importance of attributes identified for B2B relationships. The second part of this study investigates the impacts of adoption of e-commerce on B2B relationships. Three different relationships were validated the findings of the collected data by using PROMETHEE. The results are showing that B2B e-commerce will have certain impacts, with different magnitudes, on the relationship of businesses with each other. It also could guide businesses on how to prioritize their e-commerce projects roll out in the B2B context. This will help businesses to maximize their investments on their relationships, deploy an effective B2B e-commerce and increase their B2B relationships efficiency by enabling electronic aspects in their relationships.
CHAPTER ONE
INTRODUCTION

1. Introduction

In this chapter, an overview on thesis is presented that includes a brief introduction of E-Commerce, its evolution, adoption stages and Business-to-Business (B2B) E-commerce adoption in B2B relationships context. The problem which is the subject of this dissertation is also defined in this chapter.

1.1. Electronic commerce

“Electronic commerce is often thought to simply refer to buying and selling using the Internet; people immediately think of consumer retail purchases from companies such as Amazon.com. But e-commerce involves much more than electronically mediated financial transactions between organizations and customers. Many commentators refer to e-commerce as all electronically mediated transactions between an organization and any third part it deals with” (Chaffey, 200). Kalakota and Whinston (1997) refer to a range of different perspective of e-commerce:
1. A communication perspective - the delivery of information, product / service or payment by electronic means.

2. A business process perspective – the application of technology towards the automation of business transactions and workflows.

3. A service perspective - enabling cost cutting at the same time as increasing the speed and quality of service delivery.

4. An online perspective – the buying and selling of products and information online.

There are two broad categories of e-commerce buyers: consumers and businesses (Assael, 1998; Peter and Olson, 1996; Bonoma and Zaltman, 1978; Vasu, Stewart, and Garson, 1998). Both groups exhibit similar behavior: the urge to buy, with satisfaction, some products or services via a secured computer network connection. However, the buying decision, the manner of buying, the amount spent, and the frequency that each group is buying are markedly different. These differences can often be attributed to the psychological thinking of the buyer, the budget constraints, the objectives of buying, etc.

By most measures, barely over a decade old, the Internet is having a profound impact on every aspect of business marketing practice. Enterprises are competing based on relationships, not just the basic products and services buyers have essentially come to expect (Kanter 1994) and most commerce on the Internet remains business-to-business (Reibstein, 2000). A Forrester report estimates a rapid growth, from half a trillion dollar in 2000 to anywhere between 3 to 6 trillion dollar by 2005 (Sostorm, 2001). Forrester also forecasts that by the end of 2004 almost 80% of the global e-commerce is in the form of B2B e-commerce.

On the other hand, competitive pressures are forcing companies to consider strategies that reduce costs and compress time between each stage of the value chain (Batchelor, 1997). This involves searching for ways of streamlining the entire value chain - from the ordering of materials to the delivery of the product to the final customer. Benjamin et al. (1986) have argued that electronic commerce can reduce
the costs of integrating customers and their suppliers and through electronic networks companies can achieve integration by tightly coupling processes at the interfaces between each stage of the value chain. Table 1 shows an estimation of savings in different industries in Europe (Timmers, 2000).

Table 1: Estimated savings from B2B e-commerce

<table>
<thead>
<tr>
<th>Industry</th>
<th>Estimated savings from B2B e-commerce</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aerospace machining</td>
<td>11%</td>
</tr>
<tr>
<td>Chemicals</td>
<td>16%</td>
</tr>
<tr>
<td>Coal</td>
<td>2%</td>
</tr>
<tr>
<td>Communications</td>
<td>5-15%</td>
</tr>
<tr>
<td>Computing</td>
<td>11-20%</td>
</tr>
<tr>
<td>Electronic components</td>
<td>25-35%</td>
</tr>
<tr>
<td>Food ingredients</td>
<td>5-5%</td>
</tr>
<tr>
<td>Forest products</td>
<td>15-25%</td>
</tr>
<tr>
<td>Freight transport</td>
<td>15-20%</td>
</tr>
<tr>
<td>Health care</td>
<td>5%</td>
</tr>
<tr>
<td>Life Sciences</td>
<td>12-15%</td>
</tr>
<tr>
<td>Machining (metals)</td>
<td>22%</td>
</tr>
<tr>
<td>Media and advertising</td>
<td>10-11%</td>
</tr>
<tr>
<td>Oil and gas</td>
<td>5-15%</td>
</tr>
<tr>
<td>Paper</td>
<td>10%</td>
</tr>
<tr>
<td>Steel</td>
<td>11%</td>
</tr>
</tbody>
</table>

Source: EDIRA, 30 October 2000, Brussels, Paul Timmers, European Commission, Information Society

Kalakota and Robinson (2000) identified three catalysts for driving e-procurement, as an application of B2B e-commerce, as follow:

- Cost saving
- Improved efficiency
- Control

Companies using e-procurement report savings up to 42% in purchasing transaction costs with less paperwork that is translated into fewer mistakes and a more efficient purchasing process. GE (General Electric) experienced costs drop of 30% in transaction cost per purchase (Kalakota and Robinson, 2000)

1.2. B2B e-commerce evolution

B2B e-commerce has progressed through several generations (Sawney 2001). The first, electronic data exchange (EDI), involved one-to-one interactions by companies transacting with strategic partners and channels. EDI was proprietary,
inflexible, rigid and therefore limited to largest sellers and buyers. The second, one-to-many interactions, was epitomized by Dell and Cisco selling directly to buyers. Consequently, anyone could transact with the company. The third generation saw the advent of many-to-many public marketplaces or “hubs” like Transora or Covisint connecting sellers and buyers, while the fourth brought the advent of private networks, facilitating buy-side and sell-side interactions with strategic suppliers and channel partners.

The fifth generation, any-to-any architecture, is a “superset” that includes all previous mechanisms. This is peer-to-peer, where enterprises use Web services to interact dynamically with any other entity facilitated by a central web registry—the Napster model applied to B2B—allowing for real-time construction of modular shared business processes across enterprises. The shift to work flows over transactions will continue as B2B e-commerce is conducted fundamentally through interactions in the context of collaboration (Sawney 2001) among relationship-oriented businesses.

1.3. E-commerce adoption stages

Cooper and Burgess (1998) defined different stages, as depths, of involving electronic means in businesses. At stage one, promotion, businesses are mainly using electronic channels to promote their products and service. During stage two, provision, the interaction between the business and its customer will increase as well as the depth of knowledge that is interacted with third parties such as customers. Stage three; processing is about full ennoblement of communication and information channels between parties involved in buyer-supplier relationship. Stage 3 brings more integration into the perspective of business relationships. Figure 1 is showing Cooper and Burgess (2000) model.
Barua et al. (2001) suggest that before implementing e-business, senior managers must understand well the nature of information technology (IT), business processes, and e-business readiness along their business value chain. E-commerce as a subset of e-business (Chaffey, 2002) needs the same attention to be paid to.

Further, they should clearly identify e-business drivers in their companies, which include business processes, IT applications (customer orientation, supplier orientation and internal orientation), and systems integration.

1.4. **B2B e-commerce in the context of B2B relationship**

Zwass (1998) used a broad definition of e-commerce, which is showing that e-commerce is beyond transaction, technology and processes. He refers to it as:

“The sharing of business information, maintaining business relationships, and conduct the business transactions by means of telecommunications network.”

This study is focused on business-to-business relationships and its attributes and studying the impact of e-commerce adoption on each attribute, as e-commerce in general needs to suits the existing relationships best.

The geographical territory for this study is Iran and all of the data is collected within Iranian decision makers. The main reasons for that are 1) low growth rate of e-
commerce, both forms of B2B and B2C, in a developing country like Iran and 2) the immature formation of supply chains in Iran.

On the other hand due to the lack of competition, external pressures are hardly pressurizing businesses to adopt B2B e-commerce, as it is an important motivation for some other countries. In the other words, B2B e-commerce adoption seems to be an autonomous decision to be made by businesses in the lack of external and internal pressures.

1.5. Problem definition

B2B e-commerce adoption is growing exponentially. It is possible to study B2B e-commerce adoption from different perspectives. Most of the previous studies researches are mainly focused on e-readiness of adopters, adoption of B2B e-commerce under internal and external pressures and industrial marketing approaches for adopting B2B e-commerce.

As a matter of fact understanding the adaptation of e-commerce with the current B2B relationships could be a key to success for deploying it. In the other words, there is always a relationship exists which can be influenced, either positively or negatively, by adoption of e-commerce.

Furthermore, in situations such as some developing countries which the external pressures for adoption of B2B e-commerce is low there has to be internal pressures i.e. improvement of firm’s relationship with it counterparts and mainly buyers, to motivate it to pave the way towards adoption of B2B e-commerce.

On the other hand, if firms identify the positive impacts of adoption of B2B e-commerce there will be internal stimuli for adopting it. It also helps firms to better prioritize their deployment plans for B2B e-commerce adoption according to the attributes of their relationships and the expected impacts of adoption of B2B e-commerce on these attributes.
1.6. Research questions

Through this study, B2B relationships are going to be assessed by their attributes. The set of attributes are adopted from a similar research, which has been conducted by Morgan, Naudé and Baxter (2000) and is mainly derived from the class of thought of IMP group.

**RQ-1: What attributes are important to users in assessing relationships?**

By answering to this question, the set of attributes is going to be reviewed by the respondents in order to validate them.

**RQ-2: How do these attributes vary in importance?**

The second research question is investigating the difference in the weight of all attributes. It is required for understanding B2B relationship situation better.

**RQ-3: How B2B e-commerce adoption is going to impact the each attribute in the same set of attributes?**

This is important to understand the expected impact of B2B e-commerce on attributes as it could give a guideline to firms for adoption of B2B e-commerce.

1.7. Thesis outline

This thesis consists of five different chapters. The first chapter introduces the reader to the subject and gives an understanding of what will be researched. Then the literature review will presents the findings in other researches by different authors. In the third chapter, the research used for this research will be outlined. This will be followed by presentation of data and analysis in chapter four. Finally the conclusions drawn, the recommendations and the future researches suggestions will be covered in chapter five.
CHAPTER TWO

LITERATURE REVIEW

1.1. Literature review

This chapter brings up relevant literature required to find answers and connect to this research questions. Vital literature about e-commerce and B2B relationships are presented first. Then, interaction model is presented. Finally, PROMETHEE as the multicriteria decision-making methodology used in this research is explained.

2.1. E-commerce

Electronic commerce (Cunningham, 2001; Romm and Sudweeks, 1998; Kauffman and Walden, 2001) is the use of electronic computers connected in a network to facilitate commercial transactions between a buyer and a seller. In this environment, specific software and hardware are set up to provide adequate support for a faster pace of transaction flow.
There are two broad categories of e-commerce buyers: consumers and businesses (Assael, 1998; Peter and Olson, 1996; Bonoma and Zaltman, 1978; Vasu, Stewart, and Garson, 1998). One simplified definition of Business-to-Business (B2B) and Business-to-Consumer (B2C) can be as follows: B2B covers the flow of products from suppliers to manufacturers to wholesalers to retailers, while B2C covers the flow of products from the retailers to the end customers.

B2B transactions represent the greater portion of total business activity. According to some projections, these transactions will exceed $16 trillion in the USA alone (Jupiter Communications, 2001). The process of B2B transactions is a lot more complex than business-to-consumer transactions, simply because of the large amount of money involved. The administrative overheads incurred for B2B transactions are excessive: for example, General Electric estimates that it may save $10 billion by 2003 by using B2B procurement methods.

E-commerce (in the form of trading through Internet) is a phenomenon of the Internet. However, in EDI applications is found also e-commerce. So, e-commerce is also a phenomenon of EDI, which is a type of IT. Although there have been several failures in the e-business arena, whether it is B2B or B2C e-commerce, there is no doubt that the Internet has changed the way that business is done in several ways.

### 2.2. B2B e-commerce

E-commerce is the process of doing business electronically and involves the automation of various business-to-business and business-to-consumer transactions (Laudon and Laudon, 1997). By reducing clerical procedures and eliminating paper handling, electronic commerce can accelerate ordering, delivery, and payment for goods and services while reducing operating and inventory costs. Electronic commerce is not just a single technology but a combination of technologies, applications, processes, business strategies and practices necessary to do business electronically (Taylor and Berg, 1995).

Applications of e-commerce, which involves the automation of commercial transactions using computer and communications technologies, began in the early 1970’s with innovations such as the electronic transfer of funds. The introduction of electronic data interchange (EDI) expanded the scope of e-commerce from financial
institutions to manufacturers, retailers and others in the service sector. Electronic data interchange (EDI) is an important component of B2B e-commerce. EDI is the electronic transmission of information and documents such as invoices or purchase orders between computer systems in different organizations based on a standard, structure and machine-retrievable format (Emmelhainz, 1993). The use of EDI has the natural effect of increasing interorganisational co-ordination activities, as well as increasing the integration that occurs between supply chain members (Hill and Scudder, 2002). However, a line of research that has received little attention in the literature of EDI is the influence that the company's level of co-operation in the supply chain has on the adoption/use of EDI, and the relationship between the use of EDI and the co-ordination activities of the supply chain members. Despite the fact that EDI was really one of the two foundation blocks for electronic commerce at the business-to-business level (the other was electronic payments), its diffusion rate has been disappointingly slow (Angeles, 2000). EDI was generally limited to large corporations. 95% of Fortune 1000 firms have implemented EDI. Only 2% of the remaining 6 million businesses, including both hubs (i.e. firms initiating the EDI network) and spokes (i.e. firms responding to the hubs' efforts) in the U.S. have done so (Densmore 1998). Though the largest firms have aggressively encouraged EDI adoption, they have, on average, been able to motivate only 20% of their partners to adopt. The remainder often comprised of small- and medium sized enterprises (SMEs), have resisted adopting EDI for reasons that are not fully understood (Bouchard 1993, Hart and Saunders 1997). Barriers to its widespread acceptance and usage were due to cost, demanding technical requirements (with specific data formats such as EDIFACT or X12), and the control exercised by individual providers over the value-added networks on which it is based (Angeles, 2000).

Internet EDI also allows the automation of the entire supply chain (i.e. the synchronization of the demand, supply, and production from the raw material supplier to the ultimate product consumer) and extends the boundaries of intranets so that they may transform themselves into extranets. Intranets are closed-loop networks involving only the internal organizations and personnel of a corporate entity. Extranets go beyond the intranet boundaries by including customers, suppliers, and other strategic partners as well. The Internet is addressing the weakest link in supply chain management: information sharing and timely communication across systems (White,
1996). Covered in this network of activities are business-to-business, business-to-supplier, business-to-customer, business-to-payment system, and business-to-fulfillment system transactions (Baum, 1997b). The Internet has the potential to accomplish a key goal of supply chain management, which is to cut "cycle time", not in incremental steps, but in broad swaths, by completely cutting out queue time, move time, and other aspects of costs and waste. The Internet broadcasts simultaneously and not serially to all points in the supply chain, thus speeding up coordination among trading partners directly involved in specific transactions (White, 1996). The Internet also expands a company's universe of potential trading partners to all firms conducting business via the Net and there is great ease in adding or subtracting trading partners in real time (Mohta, 1997; Smith, 1996). The usual requirements in setting up such partnerships are an agreement among trading partners on the nature of the information to be exchanged, the business procedures to be followed, technical arrangements governing the transactions, certification authority for users, and the means of securing both the platform and applications (Mohta, 1997; Smith, 1996). EDI is expected to be the default standard for the corporate extranet (Tucker, 1997).

As B2B e-commerce gains prominence, electronic data interchange (EDI), either in the form of I-EDI or EDI, will remain an important enabling technology. To illustrate, the market for EDI software, products, and consulting services is predicted to grow from $800 million in 1997 to $2 billion annually in 2001 (Densmore 1998).

2.3. E-marketplaces

E-marketplaces (also known as net marketplaces, trading hubs or exchanges) are just one of the many new business phenomena that are changing the way companies do business worldwide, especially with regard to the buyer-supplier relationship.

In the area of supply chain management, much attention has been focused on e-marketplaces and their potential benefit to an organization's supply chain capabilities. However, many e-marketplaces have failed to deliver on promises that were made. Although they have been well publicized and promoted, most e-marketplaces have not able to attract the numbers of buyers and sellers that their business model required. A Forrester Research report predicted that of the 1,000-plus
exchanges that were in existence in 2000, only about 180 would survive until 2003 (Kafka et al., 2000).

In an e-marketplace, buyers and sellers are brought together for the purposes of information exchange, the buying and selling of products and services, and financial transactions. All of these exchanges take place through a Web site instead of a physical space. These e-marketplaces result in benefits for both buyers and sellers.

From the perspective of sellers, an e-market opens up their services and products to a larger number of customers as compared to traditional businesses. Further, through better communication with potential buyers, which maximizes input in design decisions, a seller can supply a better product and can reduce inventory levels across the entire supply chain. As far as the buyer is concerned, a much greater choice of products is available than before, and it is easier to find the best value at the lowest price. An e-market can fulfill a portion of the traditional procurement process from need identification and supplier selection through to final transaction (Bakos, 1998). According to Forrester Research predictions, about $1.4 trillion of trade will occur through e-marketplaces by 2004 (Luening, 2001).

In an e-marketplace, a partner can participate in any stage of the supply chain, and is able to remove some of the inefficiency traditionally associated with supply chains. This allows partners to streamline their supply chains and supplier relationships and improve coordination with suppliers, and allows users to share information instantaneously. They also have the power to create "real time" manufacturing based on demand; eliminating unnecessary inventory costs and helping manufacturers turn over their inventory at a much quicker rate. However, the ultimate goal, and the main driver for e-marketplace integration, is to reduce supply chain management costs. Companies are clearly aware of the significant savings that are possible when taking their supply chains online, and are generally supportive of the evolution of the e-marketplace. Many companies that are leaders in their respective industries have gone as far as creating their own e-marketplaces.

There are several criteria for classifying e-marketplaces. Laudon and Traver (2002), for example, offered a classification based on business functionality. An e-marketplace can either provide indirect goods that support the production process or the direct goods used in production. The way the buying process occurs can also fall
into two categories: long-term contractual buying between two entities, or a one-time (spot) purchase with no long-term relationship between the two parties. Based on these two criteria, Laudon and Traver (2002) classified e-marketplaces into four categories, as shown in Figure 2. These categories are not mutually exclusive, and an e-marketplace may fall into more than one class. Direct materials are purchased in "vertical" e-marketplaces, and indirect materials are purchased in "horizontal" e-marketplaces. The chemical site Chemdex and the electronics component industry exchange e2open are good examples of vertical e-marketplaces, while MRO.com and Bizbuyer.com are horizontal e-marketplaces. The setting up of an e-marketplace requires buy-side procurement capabilities, sell-side electronic commerce and order management capabilities, and a centralized portal or network. Most e-marketplaces were driven first by the implementation of a buy-side e-procurement solution by buying organizations. So although a buy-side procurement application is essential for an e-marketplace, sell-side electronic commerce and order management functionality is equally important. It is important for buyers who are looking to turn their internal e-procurement implementations into revenue-generating opportunities as well as for suppliers who are looking to connect with the various emerging e-marketplaces.

![Figure 2: Classification of e-marketplaces](image)

In addition to buy-side and sell-side electronic commerce functionality, another important component of e-marketplaces is a centralized portal. The e-marketplace portal serves as the hub connecting buyers and suppliers, and is used for catalog hosting and management as well as transaction services such as auctions, logistics and payments (Weller, 2000). For small and medium-sized businesses, software applications and functionality can be hosted on the portal itself (Figure 3).
2.3.1. E-marketplaces Challenges

A major challenge to e-marketplaces is the realization of expectations versus reality. Many analysts predicted rapid growth in B2B buying through the Internet, but this growth has been slower than anticipated. With the economic slowdown, venture capitalists have begun to doubt the return on investing in e-marketplaces, and many companies have been reluctant to bring their precious buyer-supplier relationships online. The reality is that e-marketplaces are not really as much business as was originally predicted. It has been estimated that of the 1,500 or so e-marketplaces that were set up during the late 1990s, only 200-300 are actually doing any business now. The slowing economy has forced companies to cut costs, and that means cutting spending on technology. This could mean that the adoption of e-marketplaces takes even longer than expected. E-marketplaces have also put themselves in a very difficult position by over-crowding the industries that they service.

Although taking supply chains online can reap significant benefits, there are some executives who are still reluctant to embrace e-marketplaces fully. Their reasons for this choice are well warranted, and more often than not reflect a general concern for security, as well as other relevant concerns. Additionally, confidentiality is an enormous issue even among those who have embraced the movement because of the fears of competitors gaining access to highly confidential, business-critical and company-specific information. Companies are also concerned about sharing sensitive data such as engineering information, demand forecasts and production schedules.
Other e-marketplace concerns deal with industry-wide standards. Agreements on items like common supplier qualification criteria, consistent item coding schemes and XML-based integration guidelines need to be established to ensure quick and easy use of these e-marketplaces. The integration of a company's systems with an e-marketplace is also an area of major concern. Because of the uncertainty of the future of many e-marketplaces, integration is a very risky endeavor. Statistics show that there will be a sharp decline in the number of e-marketplaces within each industry, and there could be a tremendously negative impact on a company if it chooses to integrate with an endangered e-marketplace. The most difficult part for both buyers and sellers is identifying which e-marketplaces are most endangered. Using integration brokers will eliminate this risk and increase a company's chances of selecting the appropriate e-marketplace. Among the major challenges, those related to antitrust, technological integration and security warrant special consideration.

2.4. Studies on EDI Adoption

EDI promises many benefits, ranging from modest (reduced communication and administration costs and improved accuracy) to transformative (enabling business process reengineering or supporting industry value chain integration initiatives such as just-in-time inventory, continuous replenishment, and quick response retailing). Because of these potential benefits, EDI has been extensively studied using several theoretical perspectives.

A fundamental approach for the study of the adoption of new technologies is the diffusion of innovations (DOI) (Tornatzky and Klein 1982, Rogers 1995), which has been, either explicitly or implicitly, a foundation for much of EDI research (e.g., O’Callaghan et al. 1992, Premkumar et al. 1994, Teo et al. 1995). The focus of DOI research is on the “perceived characteristics of the innovation” that either encourage (e.g., relative advantage) or inhibit (e.g., complexity) adoption. For example, O’Callaghan et al. (1992) examined independent property and casualty insurance agents and found that relative advantage was a predictor of intent to adopt, as well as a differentiator between adopters and non-adopters. Likewise, in a survey of EDI adopters, Premkumar et al. (1994) found that relative advantage and compatibility are predictors of the extent of “adaptation” the degree of EDI usage in its first application (operationalized as either purchase orders or invoices). Teo et al. (1995) used
innovation diffusion theory to predict intent to adopt financial EDI in Singapore. Their findings show that complexity is a strong inhibitor of intent to adopt, as is their measure of the perceived risks of adopting.

Because the DOI-based research is focused on the perceived characteristics of the particular technology, this perspective could be labeled as “technological.” While the technological perspective afforded by DOI undoubtedly explains a portion of the EDI adoption decision, it is primarily based on individual-level adoption decisions. However, EDI adoption is almost always an organizational-level decision executed in an interorganizational context; therefore, there are clearly aspects of the EDI adoption decision that are not captured by looking solely at (perceptions of) the technology of EDI. Thus, much of the research on EDI has taken an “organizational” approach, focusing on organizational characteristics as well as the inherent attributes of EDI technology. Although there is obvious overlap between the technological and the organizational perspectives, in light of the fact that perceived attributes of the technology are considered relative to the adopting organization, these two approaches are conceptually distinct in that they focus on different units of analysis: technologies versus organizations.

Organizational adoption of a technological innovation can be positioned within a much larger body of innovation research conducted by economists, technologists, and sociologists (see Gopalakrishnan and Damanpour 1997 for a comprehensive literature review). Within the sociologists group, the process view of innovation (or adoption of innovations) treats all innovations as equivalent units of analysis, and thus does not differentiate among different innovations with different attributes. Conversely, IS research can largely be classified into the variance sociologists group, and has focused on the innovation level of analysis and the development of “middle-range” theories of innovation (Gopalakrishnan and Damanpour 1997). Such theories focus on the attributes of the innovation and propose relationships between these attributes and the antecedents and consequences of adoption, acknowledging that some attributes of a particular technology will vary across organizations (such as compatibility).

Grover (1993), taking a comprehensive “bottom-up” approach, empirically identified five factors that statistically discriminated between firms that have and have
not adopted EDI: (i) proactive technological organization, (ii) internal push, (iii) market assessment, (iv) competitive need, and (v) impediments. Reich and Benbasat (1990) examined the adoption of customer-oriented strategic systems, finding that adoption was related to customer awareness of need and support. Rogers (1995) examines the factors leading to organizational innovativeness, which include, among others, organizational slack and size. (Because this model focuses on the overall innovativeness of an organization—i.e., the process approach to innovation—rather than the adoption of a particular technology, it does not provide a testable model of EDI adoption.) The size and slack factors are one possible explanation for the greater rate of EDI adoption among very large (e.g., Fortune 1000) firms, as organization size has consistently been recognized as a driver of organizational innovation (Damanpour, 1992).

Because adoption of EDI requires coordination between at least two organizations, the relationship between the organization and its prospective trading partner(s) becomes salient. In the best-case scenario, both firms agree that adoption is in their best interest.

EDI is an example of a technology with positive externalities or network effects; thus, the actions of one firm will depend on (its perception of) the collective actions of other firms (i.e., are there enough firms adopting this technology to make our adoption worthwhile?).

Collective actions and technology have been studied within a number of disciplines; Bouchard (1993) labels this collected work “critical mass theory.” However, the positive benefits of having a critical mass of firms adopting the same technology are only one aspect of interorganizational relationships and EDI adoption. Another significant factor is enacted power, such as when one organization “encourages” or coerces its trading partners to adopt EDI. In the context of EDI adoption, the factors relating to the actions of other organizations as belonging to the “interorganizational” level need to be characterized.

Recent EDI research has incorporated both interorganizational and organizational factors with somewhat mixed findings. Saunders and Clark (1992) examined the impact of perceived benefits and perceived costs (both technological factors), as well as dependency and trust interorganizational factors) on intent to adopt
EDI. They find that perceived costs reduce intent to adopt as does, somewhat surprisingly, trust. Bouchard (1993) found that DOI factors were insignificant in the EDI adoption decision, whereas the use or requirement of EDI by major business partners were the key drivers of the adoption decision. Premkumar and Ramamurthy (1995) found that the technological factor internal need (akin to perceived benefits) and the organizational factor top-management support, as well as the interorganizational factors competitive pressure and exercised power, influence whether a firm’s EDI adoption decisions proactive or reactive. Iacovou et al. (1995) hypothesized a model that includes three factors as determinants of EDI adoption and impact in SMEs: perceived benefits (technological), organizational readiness (organizational), and external pressure (interorganizational). Premkumar et al. (1997) examined EDI adoption in the European trucking industry, finding that firm size and top-management support (organizational factors), as well as competitive pressure and customer support (interorganizational), were significant in predicting adoption of EDI. Hart and Saunders (1997) developed a theoretical framework, positing relative power and trust between trading partners as determinants of EDI adoption and usage. This framework was illustrated with the case study of an office supplies retailer. Hart and Saunders (1998) examine the impact of customer power and supplier trust on the use of EDI (transaction volume) and diversity of EDI (number of transaction sets) for the customers of two firms (an office supplies retailer and a chemical company). Their overall empirical findings are mixed, showing that: (i) increased supplier trust leads to increased diversity of EDI use; and (ii) increased customer power leads to reduced diversity of EDI use (opposite to hypothesized effect).

The factors influencing the integration of EDI within adopter firms and the subsequent impact has been studied in the motor carrier industry (Ramamurthy et al. 1999). Both technological/organizational factors (internal support, EDI’s benefits potential, EDI-compatibility, and resource intensity) as well as interorganizational factors (customer support and competitive pressure) were shown to influence EDI integration. Crook and Kumar (1998) examined EDI use in four diverse industries, using a grounded theory approach to explain types of use in different contexts, strategies for encouraging EDI, and its consequences. They derived a model that includes factors that are part of perceived benefits, external pressure, and readiness as described in the Iacovou et al. (1995) model.
EDI has also been studied using the perspective of microeconomics, and some of this work has provided direct estimates of the financial impact of adopting EDI (see, for example, Mukhopadhyay 1993, Wang and Seidmann 1995, Mukhopadhyay et al. 1995, Barua and Lee 1997). A framework of interorganizational coordination by Bensaou and Venkatraman (1996) posits that “performance” is determined by the degree of fit between the information-processing needs and information-processing capabilities of an organization.

More recently, Son et al. (1999) use transaction cost theory and social cost theory to propose a model of the extent of EDI use, defined as volume and diversity of transactions, between trading partners that have already adopted EDI. Factors hypothesized to influence EDI use are asset specificity, uncertainty, reciprocal investments, trust, and power. In summary, the adoption of EDI has been studied using several approaches and operationalizations.

Currently, there are a number of overlapping, divergent models that have been shown to partially explain the EDI adoption decision by examining different factors. These factors can be categorized as addressing three levels: the technological, the organizational, and the interorganizational. While each has contributed to the cumulative knowledge of researchers, and explained a part of the adoption decision, no single study has tested a model of EDI adoption that incorporates constructs that comprehensively address all three.

2.5. Adoption of E-Commerce in Supply Chains

As the use of IT in supply chains is a high priority, it is prudent for managers to identify important enablers. Suitable strategies may then be developed to use these enablers towards the IT enablement of supply chains.

Shaw (2000) has noted that security and access privilege are two important issues in implementing Internet and extranet technologies in supply chains. In this regard, Warren and Hutchinson (2000) have stressed the need of trust and security aspects when using IT in supply chains. To counter security problems, many researchers (Bender, 2000; Kilpatrick and Factor, 2000; LaLonde, 2000) have stressed
the need for a reliable IT infrastructure in supply chains. Forge (1994) has stated that low-cost and high-power computing techniques will catalyze new thinking about the core business processes of the value chain.

However, such a reliable IT infrastructure is not achievable without funds being available (Bender, 2000; Kilpatrick and Factor, 2000). Sometimes, for effective supply chain management (SCM), the organizational hierarchy also needs to be changed (Hines et al., 1998; Oleson, 1998; Marien, 2000). Under these situations, the role of top management assumes significance (Andraski, 1998; Akkermans et al., 1999; Kilpatrick and Factor, 2000; LaLonde, 2000).

As the IT enablement of a supply chain is a strategic and capital-intensive issue, many researchers have highlighted the importance of mutual trust for long-term relationships and the confidentiality of information among partners (Kilpatrick and Factor, 2000; Agarwal and Shankar, 2003). Further, the implementation of a cross-organizational information system in a supply chain is costly, time-consuming and risky. Partners may not have a consensus on the specifications and adoption of a technical system to be used in a supply chain (Lee and Whang, 2000).

In order to achieve the above-mentioned objective, there is a need for proper planning and collaboration in the supply chain (Lummus et al., 1998; Cox, 1999; Bender, 2000). Regarding collaborative planning in a supply chain, Cigolini et al. (2004) have stated that integrated databases regarding sell-outs, forecasts, inventories and production orders are a means to provide each firm in the chain with information originating in the other nodes of the system. A supply chain-wide IT strategy (Anderson et al., 1997) with strategic vision (Fawcett and Smith, 1997; Bovet and Sheffi, 1998; Lummus et al., 1998; Bender, 2000) may help to sort out many supply chain-related problems. Profit-sharing among partners due to supply chain integration is also an issue which has been referred to in the literature (Poirier and Reiter, 1996; Tyndall et al., 1998; Kilpatrick and Factor, 2000). Russell and Hoag (2004) have observed that the most significant challenges in implementing IT are not technical in nature, but human. IT implementations have faltered because of a lack of user awareness or because of a firm's culture.
2.6. E-Readiness

Although, e-business may help an organization gain competitive advantages over their competitors, it unfortunately incurs high level of implementation risk. Companies, therefore, need to know whether they are really ready for implementing e-business before they jump onto the e-business bandwagon. If they are not ready, they may want to know where they should improve themselves so that they will be ready for implementing e-business later on.

Some prior research studied e-business in terms of evaluating commercial websites. Various assessment frameworks and measuring instruments for evaluating commercial websites were proposed from different perspectives (e.g., Aladwani and Palvia, 2002; Barnes and Vidgen, 2001; Lin and Lu, 2000; Liu and Arnett, 2000; Zhang and von Dran, 2002), such as assessing website quality (Barnes and Vidgen, 2001; Loiacono, 2000), end-user computing satisfaction (Harry, 1998), content types used in commercial websites (Cheung and Huang, 2002; Liu et al., 1997; Robbins and Stylianou, 2003), the usability of website design (Nielsen, 1999), and service quality (Xie and Wang, 1998). All these studies do not directly measure the e-readiness for e-business implementation.

A few e-readiness assessment models are used as a commercial consultation tool in practice. Those models are largely used to evaluate the e-readiness of a country or community, rather than a commercial company in e-business implementation. Further, these e-readiness assessment models, in practice, are constructed based largely upon the experience of e-business implementation in developed countries. Key differences exist between developed and developing countries (Dooley, 2002; UNCTAD, 2002), such as in the availability, cost and quality of information and communication technology (ICT) networks, services and equipment. Hence, e-business implementation in developing countries could be different from that in developed countries.

Barua et al. (2001) suggest that before implementing e-business, senior managers must understand well the nature of information technology (IT), business processes, and e-business readiness along their business value chain. Further, they should clearly identify e-business drivers in their companies, which include business
processes, IT applications (customer orientation, supplier orientation and internal orientation), and systems integration.

Larsen, Tonge, and Roberts (2001) posit that a proper implementation plan is the key factor for successfully implementing e-business. A good plan should cover the following important aspects: the identification of the opportunities for e-business, the identification of the weaknesses in current information systems (IS) applications, working out an effective e-business budget, monitoring an e-business project, evaluating e-business investment, analyzing e-business trends within the industry and the identification of e-business skills training and development. The e-business implementation plan is an indispensable part of a company’s e-business development strategy.

Research by Gulati and Garino (2000) indicates that companies should consider their own strengths and weaknesses before making decisions about whether to merely extend their product/service to the Internet, or to build up a completely new e-business on the Internet.

Further, companies must consider different reactions of managers, staff, and customers to e-business implementation. A successful e-business implementation should leverage the advantages of traditional marketing channels, without weakening the existing channels. Maruca (1999) claims that whether or not to implement e-business is a question of whether the implementation can strengthen the relationship between firms and their customers, and whether it can explore new markets. The implementation is proper and effective only when it can help a company better serve and maintain its customers.

Feeny (2001) identifies three e-opportunities as key issues in e-business implementation: (1) e-operations, (2) e-marketing, and (3) e-services. All businesses should know how to develop themselves in the three e-opportunity domains before implementing e-business. Willcocks and Plant (2001) propose an e-business framework with four crucial strategic quadrants: (1) technology, (2) brand, (3) service, and (4) market. In practice, a laggard company never makes it past the technology quadrant. On the other hand, leading organizations quickly move beyond the first quadrant. Implementing e-business in the other three quadrants generates to obtain benefits.
Four readiness models used commercially were found. They were developed by:

5. Harvard University
6. Cisco
7. MIT
8. PricewaterhouseCoopers

Some prior e-business assessment models were proposed to evaluate readiness for a region, or a country, or a community, rather than a business company. Because this paper focuses on assessing e-readiness for individual companies, the Net-ready model of CISCO and the emm@ model of PricewaterhouseCoopers are more relevant to the current study. However, these two e-readiness assessment models contain two major limitations.

- Some indicators in an e-readiness assessment framework are usually more important than others in terms of influencing e-business implementation. But the two models do not consider this issue in their models.

- The e-readiness assessment models are proposed mainly based upon the e-business experience in developed rather than developing countries. An e-business model in a developed country may not be directly applicable to a developing country.

Huang et. Al. (2000) proposed a new e-business assessment model that addresses the two major limitations of the prior models for developing countries. (Figure 4 and figure 5)
2.7. Business-to-Business Relationship

There is, conversely, a large body of research on buyer-supplier relationships. This highlights different approaches to supply chain management and its widening focus beyond the traditional concerns with cost/price and delivery times to include other facets which may play an important part in building effective trading networks. Two contrasting approaches to managing buyer-supplier relationships are defined in the literature, namely adversarial and partnership. On the one hand, the adversarial approach is characterized as being at arm's length, where either the supplier or the buyer "wins". The partnership approach, on the other, depends on the development
over time of strong bonds based on trust with the aim of securing a “win” for both supplier and buyer (Tucker and Jones, 2000; Ford et al., 2002).

The adversarial approach to the buyer-supplier relationship reflects the pre-1980’s view of the purchasing function as non-strategic and mainly carried out as a buying activity at an operational and clerical level (Harland et al., 1999). Price was the dominant driver of this activity and the wider context of the business was not considered. More recent moves towards partnership approaches have been driven by the need for both buyers and suppliers to remain competitive (Lamming, 1993). Shorter product life cycles, global competition, pressure from shareholders for profit and increased business complexity, among other factors, have encouraged supplier base reduction and relationship management (Holmlund and Kock, 1996). Alongside these changes, the importance of non-price factors in purchasing and supply decisions is increasingly recognized.

A partnership approach will not be appropriate in every situation, and the buy class framework developed by Robinson et al. (1967) still helps to determine the type of buyer-supplier relationship that is likely to be most suitable. The strategic significance of the item being purchased (straight rebuy, modified rebuy or new task) influences the nature of the relationship, as well as the original make vs. buy decision. Hence frequent purchases at the center of a firm’s operations may call for a partnership approach, whereas single purchases of low value items in plentiful supply may be viewed as an adversarial opportunity (Iyer, 1996).

Trust is important in both adversarial and partnership buyer-supplier relationships, although the nature of trust differs in the two approaches (Cannon and Perreault, 1999).

The significance of trust in relationships has been explored by Sako (1992), who categorized trust into three distinct types. These are contractual trust, where both buyer and supplier fulfill their contractual obligations; competence trust, where both parties act competently within the relationship, and goodwill trust, where there is a tendency to exceed what is required in the formal contract and a willingness to share information.
Adversarial relationships involve contractual and competence trust, whereas goodwill trust is more likely to develop in the partnership approach (Tucker and Jones, 2000).

2.7.1. Inter-organizational Theory and Marketing Literature

Much of the work in Inter-organizational Theory involves attempts to apply theory and concepts from intra-organizational studies to problems where several organizational units are involved. Here the focus of attention is on relationships between those organizations rather than within each individual organization.

Works in this area can be classified into three groups, based upon differences in the relation between the organization and its environment as proposed by Van de Ven et al. (1975). It is also possible to classify marketing literature along similar lines, again depending on the perspective of researchers when dealing with organization–environmental relationships. Sweeney (1972) presented such a categorization of the marketing literature. In this chapter inter-organizational literature and the marketing literature will be considered in parallel according to IMP group project (1982).

4.2.1.1. Organization based studies

The environment is seen as an external limitation for the organization in this group of studies. Inter-organizational studies, which can be included in this group, are those, which examine the internal organization based on an open systems approach. Here, the organization is seen as being dependent on its environment, for example in obtaining access to certain inputs. At the same time the organization seeks to manipulate or control parts of its environment. Because of this, the characteristics of the environment will influence the shape of the internal organization structure. This organization–environment connection is central and is analyzed in many studies. The predominant current viewpoint in marketing shares this perspective. It is characterized by Sweeney as the ‘organizational system perspective’, and is exemplified in the so-called ‘managerial approach’ to the study of marketing. In this, marketing researchers are concerned with techniques for the development and management of product, price, distribution, and promotional strategies to optimize desired market response. The boundaries of marketing are defined as those ‘publics’ that have a ‘... potential impact on the resource converting efficiency of the organization (Kotler and Levy, 1969). It is implicit in this approach that buyers are passive and only react to the stimuli of the
seller by buying or not buying. The selling firm is the active partner in the buyer–seller relationship. Further, this relationship is largely seen to be between the seller, and some generic ‘market’, rather than with individual customers.' It is worth noting at this stage that a side effect of this approach to the study of marketing has been that the study of buyers has developed along somewhat separate lines from the study of sellers. Here, researchers have analyzed the factors which affect both the individual and company buying processes, e.g. previous purchase experience, the importance of ‘task’ and ‘non-task' variables, the effect of different organizational forms and the degree of formality in hypothesized decision-making processes. These analyses have concentrated on the stages in a discrete purchase. Thus, there has been an emphasis in the industrial buyer behavior literature on single rather than continuing purchases from a particular supplier. Additionally, the study of the buying process has taken place with relatively scant regard to the influence of the selling firm in that process.'

Thus, the first group of studies includes two distinct and separate approaches to the study of what occurs in industrial markets. On the one hand, there is an analysis of the manipulation of marketing variables by the seller to achieve a desired market response. On the other hand, there is the separate analysis of a single buying process and the factors that affect that process, from which lessons can be drawn for marketing.

4.2.1.2. Studies based on several organizations

In this second group of inter-organization studies, the organization is seen as part of a group of interacting units. Studies within this category are often based on the dependence between the particular organization and its environment as defined by studies from category 1. In order to obtain necessary resources, the organization is seen to develop relations with a number of other organizational units and thus it enters into a network of relationships.

Two aspects of this network have mainly been studied. Firstly, the characteristics of the different organizations have been investigated as they relate to the other organizations within the same network. Secondly, the links between the units have been analyzed in terms of, for example, formalization, intensity, and standardization.
The parallel to these studies in the marketing area are those from a 'distribution system perspective'. In this, the field is viewed as a system of interconnected institutions performing the economic functions required to bring about exchange of goods or services. This perspective is, of course broader than the organizational system perspective. The boundaries of marketing at this level of aggregation include those institutions involved in the distribution of goods within the society. The focus is on the nature of the functions being performed by the system and on the structure, performance and inter-relationships of the institutions that comprise the system.

Aspects of these areas which have received study are the division of roles and responsibilities between different members of a manufacturing–distribution channel, the conflicts between different levels and within levels in the channel as well as the patterns of power and communication which exist between them.' During recent years, a number of works on more general aspects of marketing and purchasing have appeared which fit within this group.'

4.2.1.3. Studies of the organization in a societal context

In this third category, the organization is seen as an integrated part in a larger social system. In order to describe and understand how a certain organization functions it is necessary, according to this approach, to see the organization in relation to the larger system.

The organization is part of what some authors call 'inter-organization collectivities' and these groups influence to a large extent the actions of the organization.' The view of marketing from a 'social system perspective' sees it as a social process that evolves to facilitate the society's needs for efficient and effective exchange of values. There is a clear distinction between this approach and its emphasis on analysis of the exchange process, and the organizational system approach that is concerned with the technology employed to execute that exchange process.

The view of marketing from a social system perspective is little developed. The majority of the marketing literature can be classified into group 1 above, while IMP group (1982) approach belongs to group 2. There are also some minor attempts in IMP group study (1982) study to go in the direction of the works in group 3.
However, the major focus of IMP group (1982) attention is on the units (the buying and selling firms) and the link between them (the process of interaction).

### 4.2.1.4. The New Institutionalists

The second theoretical area outside the marketing literature that IMP group (1982) have built upon has been characterized by Williamson (1975) as 'the new institutionalists'. This line of thought within micro-economic theory is based on a criticism of certain aspects of traditional economic theory. Williamson discerns two alternative ways in which the exchange (transaction) may be handled between technologically separable units in a production or transformation process. Firstly, the transaction can take place within a market setting. On the other hand it can be internalized in one organizational unit (a hierarchy), i.e. two successive stages in the production process are vertically integrated in a hierarchically built organization.

There are certain deficiencies in markets that favor the internalization of transactions. Similarly, there are also deficiencies in the way organizations function that operate in favor of keeping the transactions in the market, i.e. keeping the successive production stages under separate control and reaching agreements on buying and selling, through, for example, negotiated contracts.

Williamson (1975) argues that many transactions that are internalized in one organization could be carried out by separate organizations, from the point of view of technological separability. However, the co-ordination of these units by means of market relations involves disadvantages. Markets may be considered to operate inefficiently in certain instances, due to human and environmental factors. When the environment is characterized by complexity and uncertainty, then the bounded rationality of man makes it very costly to design and negotiate viable contracts. An example would be between two subsequent stages in a steel mill. Furthermore, the parties to such transaction may become very dependent on each other. This evolves into a small-numbers bargaining relation. Although the parties in a formal sense retain the option of selecting partners in the market, this is not a viable alternative due to transaction costs. Thus it will be very costly to design and negotiate contracts with new partners. This is because it is often difficult for one party to achieve information parity with the other party, which is necessary for a 'fair' deal. Man is not just characterized by bounded rationality but also by opportunism ('self-seeking interest
with guile'), and this makes markets operate inefficiently when there is an imbalanced
dependence between the parties.

The high transaction costs that would be associated with operations in markets
of the atomistic kind provide incentives for the internalization of such expensive
transactions in vertically integrated units. Conflicts are considered to be settled in a
more efficient and less costly way within an organization (by fiat rather than by
haggling), and sequential, adaptive decision-making is facilitated. Opportunism is
checked by control and audit.

However, there are also conditions counteracting the internalization of
transactions.

Firstly markets often do not operate as rigidly, and organizations do not
operate as smoothly as depicted in the idealized extreme models (internal control is
made more difficult as organizations grow in size), and thus transaction costs
increase. Also there are checks on the opportunism in markets, e.g. courtesy, the
interest in establishing conditions for future business and the effects of the firm's
reputation on business deals with others. Imbalances are not always exploited in the
short term in a way that increases transaction costs. Secondly, transactions do not take
place in an attitudinally neutral setting. The establishment of satisfying exchange
relations (an 'atmosphere') modifies and is modified by the transactions.

Thus there are several factors that influence transaction costs and there are
also intermediary settings for the exchange relations. Many industrial markets can be
seen as such intermediary forms. Here we find such market characteristics as
established small-numbers bargaining relations and lack of information parity to
established social relationships. Often a specific atmosphere has evolved that is
characterized both by environmental and human factors.

IMP group (1982) theoretical framework is closely related to both 'inter-
organizational theory' and the 'new institutionalists'. At the same time it is directly
related to evolutions in the literature of marketing, and particularly to the emphasis on
inter-company relationships. This has emerged from those studies having a
distribution system perspective and more recently from those empirically based
studies that have emphasized the importance of inter-company relations.
4.2.1.5. Outline of the model

IMP group (1982) approach to industrial markets – The Interaction Approach – is based on the theoretical idea described earlier. It is also built on a number of factors which IMP group’s earlier empirical studies indicate are important in industrial markets and which appear to have been largely neglected in previous research:

Firstly, that both buyer and seller are active participants in the market. Each may engage in search to find a suitable buyer or seller, to prepare specifications of requirements or offerings and to manipulate or attempt to control the transaction process.

Secondly, the relationship between buyer and seller is frequently long term, close and involving a complex pattern of interaction between and within each company.

The marketers' and buyers' task in this case may have more to do with maintaining these relationships than with making a straightforward sale or purchase.

Thirdly, the links between buyer and seller often become institutionalized into a set of roles that each party expects the other to perform, for example the division of product development responsibility, or the decision as to who should carry inventory and test products. These processes may require significant adaptations in organization or operation by either or both companies. Clearly, these relationships can involve both conflict as well as co-operation.

Fourthly, close relationships are often considered in the context of continuous raw material or component supply. However, we would emphasize the importance of previous purchases, mutual evaluation and the associated relationship between the companies in the case of infrequently purchased products. Further, IMP group (1982) is concerned in this research with the nature of the relationship between a buying and selling company, which may be built up during the course of a single major transaction.
IMP group (1982) focus is generally on a two party relationship, but the approach can be applied also to a several party relationship. This, indeed, may be necessary to accommodate the study of the simultaneous interactions between several buying and selling companies in a particular industry. The main components of IMP group (1982) approach are illustrated in Figure 6.

![Figure 6: Interaction model](image)

Source: IMP project group, (1982)

In the figure IMP group (1982) identified four groups of variables that describe and influence the interaction between buying and selling companies:

1. Variables describing the parties involved, both as organizations and as individuals;
2. Variables describing the elements and process of interaction;
3. Variables describing the environment within which the interaction takes place;
4. Variables describing the atmosphere affecting and affected by the interaction.

The approach does not only involve an analysis of these groups of variables but it also includes the relations between them.
4.2.1.6. The interaction model

The marketing and purchasing of industrial goods is seen as an interaction process between two parties within a certain environment. IMP group (1982) way of analyzing industrial marketing and purchasing has four basic elements, which in turn are sub-divided. These are:

9. The interaction process.
10. The participants in the interaction process
11. The environment within which interaction takes place
12. The atmosphere affecting and affected by the interaction.

In this section each of these four basic elements will be described more extensively according to IMP group (1982). The major focus here is on description of buyer–seller relationships and interactions. Only secondary emphasis is placed here on the interplay between the separate elements, which IMP group (1982) discusses. These interrelationships are developed in International Marketing and Purchasing of Industrial Goods (IMP project group, 1982).

4.2.1.7. The Interaction Process

IMP group (1982) has already noted that the relationships between buying and selling companies in industrial markets are frequently long term. Thus, it is important to distinguish between the individual 'Episodes' in a relationship, e.g. the placing or delivering of a particular order, and the longer-term aspects of that relationship which both affects and may be affected by each episode. IMP group (1982) considers these individual episodes, first:

(a) Episodes

The episodes that occur in an industrial market relationship involve exchange between two parties. According to IMP group (1982), there are four elements that are exchanged:

1. Product or service exchange
The exchange of product or service is often the core of the exchange. As a result, the characteristics of the product or service involved are likely to have a significant effect on the relationship as a whole. For example, one major aspect of the product or service that seems important is the uncertainty with which they are associated. The exchange process will be quite different depending on whether or not the product is able to fulfill a buyer need that is easy to identify, and for which the characteristics of an appropriate product are easy to specify. It will also be important whether either buyer or seller is uncertain as to the requirements or resources of their opposite number.

2. Information exchange

Several aspects of information exchange are of interest. The content of information is, of course, important. This can, for example, be characterized by the degree to which technical, economic, or organizational questions dominate the exchange. Furthermore, the width and depth of the information for each of these groups of questions should also be of importance.

Information can be transferred between the parties by either personal or impersonal means. Impersonal communication is often used to transfer basic technical and/or commercial data. Personal channels are more likely to be used for the transfer of 'soft data' concerning, for example, the use of a product, the conditions of an agreement between the parties, or supportive or general information about either party. Finally, the formality of the information exchange is important. The degree of formality may depend on wider organizational characteristics which can affect the nature of the interaction process and the relationship between the companies as a whole.

3. Financial exchange

Money is the third element. The quantity of money exchange is an indicator of the economic importance of the relationship. Another important aspect is connected with the need to exchange money from one currency to another and the uncertainties in these exchanges over time.

4. Social exchange
Social exchange has an important function in reducing uncertainties between the two parties (Hakansson and Ostberg, 1975). This is particularly significant when there exists spatial or cultural distance between the two parties or where the experience of the two parties is limited. Social exchange episodes may be important in themselves in avoiding short-term difficulties between the two parties and in maintaining a relationship in the periods between transactions.

However, perhaps the most important function of social exchange is in the long-term process by which successive social exchange episodes gradually interlock the two firms with each other. Many aspects of the agreements between the buying and selling firms are not fully formalized nor based on legal criteria. Instead the relationship is based on mutual trust. Building up this trust is a social process which takes time and must be based on personal experience, and on the successful execution of the three other elements of exchange. Furthermore, the need for mutual trust and the requirement of social exchange varies with differences in the elements exchanged in different relationships. Examples are variations in the amount of money exchanged, in the need for large amounts of informational exchange or in the complexity of the product exchanged. However, the development of trust is also dependent upon experience in exchange of the other three elements.

(b) Relationships

Social exchange episodes are, as has been described above, critical in the build up of long-term relationships. Exchanges of product and service (which can be in both directions) and of the other elements of money and information can also lead to the build up of long-term relations. The routinization of these exchange episodes over a period of time leads to clear expectations in both parties of the roles or responsibilities of their opposite numbers. Eventually these expectations become institutionalized to such an extent that they may not be questioned by either party and may have more in common with the traditions of an industry or a market than rational decision making by either of the parties (Ford, 1978).

The communication or exchange of information, in the episodes successively builds up inter-organizational contact patterns and role relationships. These contact patterns can consist of individuals and groups of people filling different roles, operating in different functional departments and transmitting different messages of a
technical, commercial, or reputational nature. These patterns can interlock the two parties to a greater or lesser extent and they are therefore an important variable to consider in analyzing buyer–seller relationships. It is important to note that information and social exchange between parties can continue for a considerable time without there being an exchange of product or money. Thus, literature, specification development, and visits between companies can occur before the first order is placed or between widely spaced individual' orders.

According to IMP group (1982) another important aspect of the relationship is the adaptations which one or other party may make in either the elements exchanged or the process of exchange.

Examples of this are adaptations in product, in financial arrangements, in information routines or social relations. These adaptations can occur during the process of a single, major transaction or over the time of a relationship involving many individual transactions. The benefits of these adaptations can be in cost reduction, increased revenue, or differential control over the exchange. Adaptations in specific episodes may also be made in order to modify the overall relationship.

Thus one party may make a decision not to offer special products to a customer out of a wish to be more distantly involved with that customer, rather than being closely involved and/or heavily dependent on it.

The manipulation of different aspects of adaptation is of course a critical marketing and purchasing issue. Although adaptations by either party can occur in an unconscious manner as a relationship develops, it is important to emphasize the conscious strategy which is involved in many of these adaptations. Thus, modifications to product, delivery, pricing, information routines and even the organization itself are part of the seller's marketing strategy. Similarly, the buying organization will consider adaptations in its own product requirements, its production methods, the price it is prepared to accept, its information needs and the modification of its own delivery or stocking policies in order to accommodate the selling organization.
4.2.1.8. The Interacting Parties

The process of interaction and the relationship between the organizations will depend not only on the elements of the interaction but also on the characteristics of the parties involved (IMP group, 1982). This includes both the characteristics of the two organizations and the individuals who represent them. The organization factors include the companies' position in the market as manufacturer, wholesaler, etc. It also includes the products which the selling company offers, the production and application technologies of the two parties and their relative expertise in these areas. Below, some of the major factors will be discussed in more detail as per IMP group (1982).

(a) Technology

Technical issues are often critical in buyer—seller interaction in industrial markets. The aims of the interaction process can be interpreted as tying the production technology of the seller to the application technology of the buyer. Thus the characteristics of the two technological systems and the differences between them give the basic conditions for the interaction. These basic conditions influence all the dimensions of the interaction processes; for example, the requirements for adaptations, mutual trust and contact patterns. Similarly, if the two organizations are separated by a wide gulf of technical expertise then the relationship between them can be expected to be quite different from a situation where the two companies are close in their level of expertise.

(b) Organizational size, structure, and strategy

The size and the power of the parties give them basic positions from which to interact. In general, a large firm with considerable resources has a greater possibility of dominating its customers or suppliers than has a small firm. The structure of each organization and the extent of centralization, specialization and formalization influence the interaction process in several ways; this influence is seen in the number and categories of persons who are involved. It also affects the procedures of the exchange, the communications media used, the formalization of the interaction and the substance of what is exchanged – the nature of product or service and the finance which is involved. In the short term, organizational structures can be considered as the
frameworks within which interaction takes place. In the longer term, it is possible that these organizational structures may be modified by the emerging interaction process or indeed by individual episodes.

The strategies of the parties are, of course, important influencing variables on the relationships.

(c) Organizational experience

A further factor is the company's experience not only in this relationship but also its experience and activities outside it. This experience may be the result of many other similar relationships and will equip the company with knowledge about the management of these kinds of relationships. It may also affect the level of importance attached to any one relationship, and hence the company's commitment to that relationship.

The variables which IMP group (1982) discusses under the title of Interaction Environment will be mediated by the experience of specific individuals in a company as well as by the more generalized 'experience' of a company. Thus the company's experience in particular markets will enable it to be more or less fitted for dealing in that market. Similarly, its experience of international operations will affect its willingness and ability to establish international relationships.

(d) Individuals

At least two individuals, one from each organization, are involved in a relationship. These are usually a buyer and a salesman. More commonly, several individuals from different functional areas, at different levels in the hierarchy and fulfilling different roles become involved in inter-company personal interactions. They exchange information, develop relationships and build up strong social bonds which influence the decisions of each company in the business relationship.

The varied personalities, experience, and motivations of each company's representatives will mean that they will take part in the social exchange differently.

Their reactions in individual episodes could condition the ways in which the overall relationship builds up. Further, the role, level, and function of central persons
in the interaction may affect the chances of future development occurring in the relationship.

Individual experience may result in preconceptions concerning certain suppliers or customers, for example those in a certain country. These will affect attitudes and behavior towards those buyers or suppliers. The process of learning from experience on both an individual and corporate level is communicated to and affects detailed 'Episodes' in interaction. Additionally, the experience gained in individual episodes aggregates to a total experience. Indeed, the experience of a single episode can radically change attitudes that may then be held over a long period of time.

4.2.1.9. The Interaction Environment

IMP group (1982) believes that the interaction between a buying and selling firm cannot be analyzed in isolation, but must be considered in a wider context. This wider context has several aspects.

(a) Market structure

Firstly, a relationship must be considered as one of a number of similar relationships existing either nationally or internationally within the same market. The structure of this market depends in part on the concentration of both buyers and sellers and the stability or rate of change of the market and its constituent members. It also consists of the extent to which the market can be viewed as strictly national or needs to be thought of in wider international terms. The extent of buyer or seller concentration determines the number of alter-natives available to any firm.

This has a clear bearing on the pressure to interact with a certain counterpart within the market.

(b) Dynamism

The degree of dynamism within a relationship and in the wider market affects the relationship in two ways that are opposite to each other. Firstly, a close relationship increases the knowledge of one party of the likely actions of the other party and hence its ability to make forecasts based on this inside information.
Secondly and conversely, in a dynamic environment the opportunity cost of reliance on a single or small number of relationships can be very high when expressed in terms of the developments of other market members.

(c) *Internationalization*

The internationalization of the buying or selling market is of interest as it affects either firm's motivations in developing international relationships. This in turn may affect the company's organization, in needing sales subsidiaries or overseas buying units, the special knowledge it may require, e.g. in languages and international trade and its more general attitudes.

(d) *Position in the manufacturing channel*

A further aspect of the environment that must be brought into consideration is the position of an individual relationship in an extended 'channel' stretching from primary producer to final consumer. Thus, for example manufacturer A may sell electric components to manufacturer B, who then incorporates these components into actuators that are sold to manufacturer C, who adds them to valves. These valves, with many other products, may form the stock of distributor D and so on. The marketing strategy of A may thus be influenced by and directed at several markets at different stages in the channel. Clearly his relationship with buying company B will be affected by both A's and B's relationship with C and other subsequent organizations.

(e) *The social system*

As well as the effects of both horizontal market and vertical channel influences on a relationship, we must also consider the characteristics of the wider environment surrounding a particular relationship – the social system. This is particularly relevant in the international context where attitudes and perceptions on a generalized level can be important obstacles when trying to establish an exchange process with a certain counterpart. An example of this is nationalistic buying practices or generalized attitudes to the reliability of buyers or customers from a particular country. Other aspects of these general influences concern regulations and constraints on business, for example exchange rates and trade regulations. There are other, more narrow social system variables which will surround a particular industry or market. For example, a supplier who has not previously delivered to a certain type of
customer, e.g. in the automobile industry, has to learn both the 'language' and the rules before it will be accepted in that industry.

### 4.2.1.10. The Atmosphere

According to IMP group (1982), the relationships between buying and selling firms are dynamic in being affected by the individual episodes which take place within them. At the same time they have the stability which derives from the length of the relationship, its routinization and the clear expectations which become held by both parties. The relationship is influenced by the characteristics of the parties involved and the nature of the interaction itself. This in turn is a function of the technology involved and the environment within which the interaction takes place. Organizational strategy can also affect both the short-term episodes and the long-term relationship between the parties. One of the main aspects of the relationship which may be affected by conscious planning is the overall atmosphere of the relationship. This atmosphere

Can be described in terms of the power–dependence relationship that exists between the companies, the state of conflict or co-operation and overall closeness or distance of the relationship as well as by the companies' mutual expectations. These variables are not measured in a direct way in this study. Instead the atmosphere is considered as a group of intervening variables, defined by various combinations of environmental, company specific, and interaction process characteristics. The atmosphere is a product of the relationship, and it also mediates the influence of the groups of variables. There are reasons for the buying and selling firm to both develop a high degree of closeness with their counterpart as well as to avoid such closeness. There are both advantages and disadvantages connected with different atmospheres. We can analyze the reasons involved with regard to an economic (cost–benefit) dimension and a control dimension.

(a) **The economic dimension**

There are several types of cost that can be reduced for a firm by a closer interaction with a buying or selling firm. One of these costs is that which Williamson (1975) describes as the transaction cost. A closer connection means that it may be possible to handle distribution, negotiations, and administration more efficiently.
Another type of cost which may be reduced is the production cost. A close relationship gives opportunities to find a more optimal division of the production process between the supplier and the customer. The supplier and buyer may reallocate some production processes between each other or co-operate in the design so as to make the product easier to produce or for the customer to develop further. There are also increased revenues which can be gained by a closer interaction. Both sides may achieve positive gains by better use of the other's competence, facilities, and other resources. New products can be developed together or old products may be redesigned. Furthermore, the parties can also often give each other valuable technical and commercial information.

(b) The control dimension

Another important reason for closer connection with a counterpart can be to reduce the uncertainty associated with that input or output by increasing its control over the other company. Such an increase in control improves the firm's chances of forecasting and determining that part of its environment. The ability to control a relationship is related to the perceived power of the two parties.

Perceptions of power are likely to be unclear in the early stages of a relationship and one of the key functions of initial exchange episodes will be to enable each party to come to an understanding of each other's power. Even so, perceptions of power may change over the life of a relationship. They will, in turn be related to the resources perceived to be possessed by each party as well as to their relative dependence on this individual relationship. Inter-organizational power will depend on the ability of either party to reward or coerce each other through exchange, or their relative expertise and access to information, as well as on their referent power, i.e., the value which one party places on association with another because of its wish to learn from and act similarly to the other.

The power of organization A over B is directly related to the dependence of B on A. The dependence on any one relationship by an organization is a major element in the wish to restrict interaction. Investment of time and resources in one relationship has an opportunity cost related to the value of those investments in another relationship. Also, the level of dependence on one relationship affects the vulnerability of an organization to the exercise of power by its opposite number. In
everyday terms this is exemplified by a selling company which has a large proportion of its sales to one single buying company. It is the management of the closeness of the relationship, with its associated power and dependence which is perhaps a crucial aspect of many industrial marketing and purchasing strategies.

Summing up this discussion of the reasons for a close interaction, IMP group (1982) concludes that relationships are established and used in order to gain economic benefits, lower costs, higher profits, and/or improving the organization's control of some part of its environment. A critical aspect of the management of these relationships is the extent to which the firm can balance its inter-dependence with others. The firm must seek to balance the advantages of a close relationship, perhaps in terms of cost reduction and ease and speed of interaction, against the opportunity costs of that single relationship and the dependence which it involves.

2.8. E-commerce from B2B relationship perspective

The use of e-commerce in business-to-business relationships, mainly supplier-buyer, raises a further issue concerning trust, namely the trust in the transaction medium, which is related to data privacy and integrity. This is an on-going problem that is currently being addressed by digital signatures and data encryption, but is left aside in this discussion (Tucker and Jones, 2000).

An appreciation of the role of non-price factors in the purchasing and supply decision, and the nature of the buyer-supplier relationship, together with the possible effects of the introduction of e-commerce on these, is important for individual firms seeking to adopt e-commerce. Early EDI was typically used by large automotive firms to gain competitive advantage by making the use of their individual systems a prerequisite for continuing business, so locking-in suppliers and customers and locking out competitors (Min and Galle, 1999; Ratnasingham, 2000). Internet e-commerce has lower entry barriers than traditional EDI, and the application of open networks and standards brings lower switching costs, so the traditional "lock-in" of the proprietary EDI link is less likely to occur (Graham and Hardaker, 2000). Integration of business processes may be simplified, resulting in improved information flows across the supply chain.
It has been suggested that e-commerce may lead to more adversarial relationships, as the use of electronic intelligent search agents and reverse auctions give organizations a greater choice of supplier (Emiliani and Stec, 2002; Spekman et al., 2002). In addition, there may be less chance for relationships which began as adversarial, to mature into partnerships because of the lack of frequent face-to-face communication in the development stage of the relationship. For firms already within well developed buyer-supplier networks characterized by goodwill trust and subjective loyalty, this tendency towards more adversarial relationships may be offset, however, by managers continuing to deal with suppliers they have dealt with successfully in the past. In this situation, buyers and suppliers are already selectively committed to doing business with each other. Indeed, the introduction of e-commerce may lead to a new form of "lock-in" as greater integration of business processes increases the need for shared information and resources (Tucker and Jones, 2000).

On the other hand, business seller-buyer relationships have traditionally stroved to be long-term rather than transaction oriented (Hutt and Speh 2001; Kanter 1994). Early on, the predominant company focus was on finding new buyers and closing a sale, a practice that has given way to keeping current buyers and building lasting relationships. The primary shift is in the temporal goal, i.e., from making a profit on each sale per se to long term profits through managing the fluctuating net present value of a business buyer's purchases into a longer-term horizon. The Internet typically provides lower contact and transaction costs with greater access for maintaining each business buyer relationship over a much larger customer base.

Enterprises are competing based on relationships, not just the basic products and services buyers have essentially come to expect (Kanter 1994) and most commerce on the Internet remains business-to-business (Reibstein, 2000). Much of this commerce represents a shift in the manner of purchasing: businesses are purchasing from the same vendor, but using the Internet rather than the phone or fax to achieve cost efficiencies. For example, IBM now requires that all purchases be made electronically.

In the near term, e-commerce will not be as disruptive to many traditional buyer-supplier relationships as originally thought, since, companies find that offline communication is almost always needed to complete online transactions. Suppliers
will continue to send sales staff to court buyers, and buyers will continue to demand personal commitments from their suppliers. However, ongoing relationship management is likely better coordinated on the Internet.

Buyer relationship management is really not so new as the technology that is allowing all firms to do what only the smallest business marketers have always done–know their buyers and associated requirements fully (Morrow 2001, p. 14). For large business marketers, having enough brainpower to keep track of everyone’s preferences can now be done to almost any scale. In the past, cost economies were such that account management calculations required that accounts be larger. In the present era, for many business marketers, there is a greater ability to reach many small as well as large business buyers and serve them well.

Businesses are learning to compete in the hybrid physical and electronic business market environment, while leveraging the potential of the Internet into all aspects of business buyer acquisition and retention.

A growing number of firms are discovering that the potential of the Internet is best exploited by creating seller-buyer partnerships where both parties benefit. The long-term viability of many businesses stems from value-stream robustness which directly influences revenue streams (Mahadevan 2000).

B2B e-commerce in supplier-buyer relationships has progressed through several generations (Sawney 2001). The first, electronic data exchange (EDI), involved one-to-one interactions by companies transacting with strategic partners and channels. EDI was proprietary, inflexible, rigid and therefore limited to largest sellers and buyers. The second, one-to-many interactions, was epitomized by Dell and Cisco selling directly to buyers. Consequently, anyone could transact with these company. The third generation saw the advent of many-to-many public marketplaces or “hubs” like Transora or Covisint connecting sellers and buyers, while the fourth brought the advent of private networks, facilitating buy-side and sell-side interactions with strategic suppliers and channel partners.

The fifth generation, any-to-any architecture, is a “superset” that includes all previous mechanisms. This is peer-to-peer, where enterprises use Web services to interact dynamically with any other entity facilitated by a central web registry—the
Napster model applied to B2B—allowing for real-time construction of modular shared business processes across enterprises. The shift to work flows over transactions will continue as B2B e-commerce is conducted fundamentally through interactions in the context of collaboration (Sawney 2001) among relationship-oriented businesses.

These business phenomena must be seen as evolutionary yet integrative processes spanning several decades (Table 2). Contemporary analysis suggests three broad eras in approach to e-commerce at the macro-economic level. The genesis for one era starts in the prior era.

Table 2: Evolution in relationships

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Transactional Exchange</th>
<th>Collaborative Exchange</th>
<th>Continuous Exchange</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purchase Focus</td>
<td>purchase incidents</td>
<td>repetitive purchasing</td>
<td>alliance</td>
</tr>
<tr>
<td>Purchase Importance</td>
<td>lower purchase</td>
<td>moderate purchase</td>
<td>higher purchase</td>
</tr>
<tr>
<td>Purchase Time-Frame</td>
<td>negotiated term</td>
<td>Intermediate term</td>
<td>seemingly indefinite</td>
</tr>
<tr>
<td>Consideration of</td>
<td>many brand alternatives</td>
<td>focused brand</td>
<td></td>
</tr>
<tr>
<td>Alternatives</td>
<td></td>
<td>selection</td>
<td></td>
</tr>
<tr>
<td>Informational Links</td>
<td>minimal information</td>
<td>ongoing information</td>
<td>exponential</td>
</tr>
<tr>
<td></td>
<td>exchange</td>
<td>exchange</td>
<td>information links</td>
</tr>
<tr>
<td>Operational Contacts</td>
<td>temporary operational</td>
<td>temporarily permanent</td>
<td>coupled operations</td>
</tr>
<tr>
<td></td>
<td>links</td>
<td>links</td>
<td></td>
</tr>
<tr>
<td>Commitment</td>
<td>minimal commitment</td>
<td>considerable commitment</td>
<td>commitment</td>
</tr>
</tbody>
</table>

Sources: Based on an integration of concepts adapted from Narus and Anderson (1991), Webster (1992) and Cannon and Perrault (1999), and Hutt and Speh (2001).

In the past, there was a short-term focus with transactional exchanges marked by recurring negotiations, consideration and use of many brands as well as minimal information exchange and commitment.

The purchase decision was neither complex nor of strategic importance, and supply markets were viewed as stable. Subsequently, an intermediate term focus called collaborative exchange recognized the value to both sides for repeat business, limited brand consideration and usage, restricted alternatives with less restrictive information exchange and a sense of enduring commitment.

The current era and beyond, continuous exchange has a cooperative systems focus, recognizes the almost infinite mutual interdependence with strong coupling and fosters commitments for multi-level information exchanges and operational linkages. Indeed, to implement a decision to cease doing business might take months or even
years. The time frames and costs to uncouple are very high for both sides. For example, this would likely be the case between chemical companies whose linkages include pipelines as well as computer systems and many interfaces of operations staff. Special assets (economic and social), which are costly to recreate, reduce a propensity toward variety and alternative seeking behavior. For some business sellers and buyers, the foreseeable future includes focused, if not unique brand usage given the very high level of commitment.

With a long-term focus permeating business buyer relations, tactical implications for firms will continue to manifest. Contractual arrangements are common to help ensure both sides of the business seller-buyer dyad fully articulate their needs to each other as well as unto themselves.

2.9. Business to business relationship attributes

Morgan, Naudé and Baxter (2003) defined a set of attributes for any business-to-business relationship. These attributes are mainly derive from the class of thought of interaction model that has been developed by IMP group.

In fact, they identified 24 second-level attributes during their studies, which in turn were amalgamated into 6 first-level attributes, namely delivery, financial terms, image, interrelationships, product, and service performance. This attribute set was similar to those used in earlier studies (Hipkin and Naudé, 1999) and is well grounded in broader decision attributes used by managers (see Nilsson and Host, 1987). Table 3 shows these attributes and sub-attributes:
<table>
<thead>
<tr>
<th>Attributes</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Delivery</strong></td>
<td></td>
</tr>
<tr>
<td>d1 Reliability</td>
<td>Offering products on time, making and keeping the agreement</td>
</tr>
<tr>
<td>d2 Production process</td>
<td>Degree of impact of the company’s processes on our business</td>
</tr>
<tr>
<td>d3 Information</td>
<td>Clarity and correctness of information and documentation</td>
</tr>
<tr>
<td>d4 Lead times</td>
<td>Time elapsed between making and receiving orders</td>
</tr>
<tr>
<td>d5 Delivery quality</td>
<td>The extent to which orders are delivered on time and in full</td>
</tr>
<tr>
<td><strong>Financial terms</strong></td>
<td></td>
</tr>
<tr>
<td>f1 Value</td>
<td>The extent to which price and quality combine to give value</td>
</tr>
<tr>
<td>f2 Payment</td>
<td>Extent of the company’s flexibility in payment terms</td>
</tr>
<tr>
<td>f3 Prompt quotes</td>
<td>The extent to which quotations are given on time</td>
</tr>
<tr>
<td>f4 Flexibility</td>
<td>The extent to which price negotiations are flexible</td>
</tr>
<tr>
<td><strong>Image</strong></td>
<td></td>
</tr>
<tr>
<td>i1 Strategy</td>
<td>Vision and coherence of the company’s strategy</td>
</tr>
<tr>
<td>i2 Customer focus</td>
<td>The extent to which the company puts the customer first</td>
</tr>
<tr>
<td>i3 Reputation</td>
<td>Covers both innovation and being a caring company</td>
</tr>
<tr>
<td>i4 Market position</td>
<td>The extent to which they are globalised and committed to the future</td>
</tr>
<tr>
<td><strong>Interrelationships</strong></td>
<td></td>
</tr>
<tr>
<td>r1 Ease of contact</td>
<td>Supply of information and support for problem solving</td>
</tr>
<tr>
<td>r2 Access</td>
<td>Ease of contact with other functions within the company</td>
</tr>
<tr>
<td>r3 Information</td>
<td>Information flow about potential problems and market trends</td>
</tr>
<tr>
<td>r4 Company representative</td>
<td>Knowledge and professionalism</td>
</tr>
<tr>
<td><strong>Product</strong></td>
<td></td>
</tr>
<tr>
<td>p1 Stable range</td>
<td>The extent to which the product range is stable over time</td>
</tr>
<tr>
<td>p2 Quality levels</td>
<td>Absolute quality of the product</td>
</tr>
<tr>
<td>p3 Consistent quality</td>
<td>Consistent quality and consistent specification</td>
</tr>
<tr>
<td>p4 New product development (NPD)</td>
<td>Extent of NPD and willingness to work with customers</td>
</tr>
<tr>
<td><strong>Service performance</strong></td>
<td></td>
</tr>
<tr>
<td>s1 Technical issues</td>
<td>Covers both rapidity and effectiveness of service</td>
</tr>
<tr>
<td>s2 Literature</td>
<td>Quality of technical literature</td>
</tr>
<tr>
<td>s3 Facilities</td>
<td>The extent to which the company’s facilities are available for our use</td>
</tr>
</tbody>
</table>

2.10. Multi-criteria decision analysis

Multi-criteria decision analysis (MCDA) is a methodology commonly used to assist complex decision-making situations, as it facilitates stakeholder participation and collaborative decisionmaking, does not generally require the assignment of monetary values to environmental and social criteria, and allows the consideration of multiple criteria in incommensurable units (i.e. combination of quantitative and qualitative criteria).

Numerous MCDA techniques have been developed to aid decision makers (DMs) and are commonly divided into four groups: multi-objective optimization, value-focused approaches, outranking methods and disaggregation methods (Jacquet-Lagreze and Siskos, 2001; Ulengin et al., 2001). The preference ranking organization method of enrichment evaluation (PROMETHEE) MCDA technique developed by Brans et al. (1986) belongs to the class of outranking approaches and is one of the best known and most widely applied outranking methods because it follows a transparent computational procedure and can be easily understood by actors and DMs (Georgopoulou et al., 1998; Ozelkan and Duckstein, 1996). This is evident by its widespread use in decision-making situations such as assessing water resource management problems (Abu-Taleb and Mareschal, 1995; Al-Kloub et al., 1997; Al-Rashdan et al., 1999; Al-Shemmeri et al., 1997; Martin et al., 1999; Ozelkan and Duckstein, 1996; Raju et al., 2000; Raju and Pillai, 1999), energy planning (Georgopoulou et al., 1998; Haralambopoulos and Polatidis, 2003), waste management (Hokkanen and Salminen, 1997) and construction (Ulengin et al., 2001).

The MCDA process, utilizing the PROMETHEE technique, generally follows the sequence of: (i) identifying DMs (final decision makers), actors (people involved in the decision analysis process) and stakeholders (anyone who might be affected by the decision), (ii) selecting criteria, (iii) formulating alternatives, (iv) weighting the criteria, (v) assessing the performance of alternatives against the criteria, (vi) selecting a generalized criterion function and associated indifference and preference values for each criterion, where required, (vii) applying PROMETHEE, (viii) performing sensitivity analysis, and (ix) making the final decision. The foremost difference between the PROMETHEE method and other outranking MCDA techniques is the utilization of the generalized criterion functions. The purpose of the functions is to
facilitate the inclusion of the inherent uncertainty in the criteria performance values (PVs) in the decision analysis process.

However, the selection of the function for each criterion is a complex and ambiguous task for DMs and actors and therefore adds another element of uncertainty into the decision analysis process. In addition, the generalized criterion functions do not take into account the subjectivity and ambiguity in the assignment of the criteria preference values (i.e. criteria weights, CWs) by the actors. The impact that the uncertainty in the CWs has on the ranking of the alternatives is generally assessed using sensitivity analysis at the conclusion of the decision analysis and the combined impact with the criteria PVs is not considered. Therefore, despite the inclusion of the generalized criterion functions, potential sources of considerable uncertainty remain when utilizing PROMETHEE to analyze decision problems, which may result in a lack of consensus between the actors and reduced confidence in the outcomes of the decision analysis by the DMs. In the following section a more detailed overview of PROMETHEE is covered.

2.10.1. PROMETHEE

The PROMETHEE method is based upon developing a preference function $P_j(a,b)$ which is a function of the difference ($d_j$) between the ratings of two alternatives for every criterion ($j$) (i.e. $d_j = f(a, j) - f(b, j)$, where $f(a, j)$ and $f(b, j)$ are PVs of criterion $j$ of two alternatives $a$ and $b$). For each criterion a specific preference function must be defined which is used to compute the degree of preference associated with the best alternative in the case of pairwise comparisons. Six types of generalized criterion functions (Figure 7) have been suggested by Brans et al. (1986) for delimiting the indifference and preference area, as well as intermediate preference states. Indifference ($q$) and preference ($p$) threshold values may also have to be defined depending on the type of generalized criterion function selected. The multicriterion preference index, $P(a,b)$, is defined as the weighted average of the preference functions $P_j(a,b)$ for all the criteria:

$$
P(a, b) = \frac{\sum_{j=1}^{J} w_j \cdot p_j(a, b)}{\sum_{j=1}^{J} w_j}
$$
Where \( w_j \) is the weight assigned to the criterion \( j \). The outranking index of \( a \) in the alternative set \( A \) (i.e. how much an alternative is dominating the other ones) is defined as:

\[
\phi^+(a) = \sum_{A} \Pi(a, b) \quad \text{(positive)}
\]

Symmetrically, the outranked index of \( a \) in the alternative set \( A \) (i.e. how much the alternative is dominated by the other alternatives) is defined as:

\[
\phi^-(a) = \sum_{A} \Pi(b, a) \quad \text{(negative)}
\]

The total outranking value, or net flow, is then determined by:

\[
\phi(a) = \phi^+(a) - \phi^-(a)
\]

The alternative having the largest value of \( \phi(a) \) is considered as the ‘best’ alternative (i.e. \( a \) outranks \( b \) iff \( \phi(a) > \phi(b) \), \( a \) is indifferent to \( b \) iff \( \phi(a) = \phi(b) \)).

A number of variations of the PROMETHEE method have been developed including PROMETHEE I, PROMETHEE II and PROMETHEE V. PROMETHEE I provides a partial ranking, including possible incomparabilities, while PROMETHEE II shows a complete ranking of alternatives. PROMETHEE V extends the application of the PROMETHEE II method to the problem of selection of several options, given a set of constraints. The geometrical analysis for interactive aid (GAIA) program provides a geometrical presentation of the results obtained by PROMETHEE and was developed by Mareschal and Brans (1988). GAIA is based on reducing the multi-dimensional criteria space to a two-dimensional criteria plane to allow direct visual presentation of the results.
Figure 7: Criterion functions

Source: Brans and Vincke, (1985)
2.10.2. Limitations of PROMETHEE

The input data required by the majority of MCDA techniques, including PROMETHEE, are the assignment of criteria PVs by experts and the elicitation of CWs from actors. Criteria PVs are assigned to each decision criterion for each alternative, which indicates its relative performance and is determined by expert judgment and/or mathematical models (Kheireldin and Fahmy, 2001; Prato, 2000). Providing precise figures for the criteria PVs is often difficult, as the alternatives being assessed are generally predicted future events. There may therefore be some imprecision, contradiction, arbitrariness and/or lack of consensus concerning the criteria PVs used in the analysis (Mousseau et al., 2003). PROMETHEE has attempted to take this form of uncertainty into account by incorporating generalized criterion functions into the analysis. The functions aim to realistically model the DM’s preference, which gradually increases from indifference to strict preference (Haralambopoulos and Polatidis, 2003). However, it is recognized that DMs encounter difficulty in selecting the generalized criterion functions and defining the preference and indifference thresholds (Salminen et al., 1998).

This may be due to the limited availability of guidelines on how to select the functions, in addition to the difficulty in conceptualizing the uncertainty in each of the criteria in this form.

Therefore, although the criterion preference functions have been introduced with the aim of incorporating uncertainty into the decision analysis process, it is evident that significant subjective input from the DMs is still required which results in an additional source of uncertainty.

CWs are the other main input parameters which indicate a criterion’s relative importance and allow actors’ views and their impact on the ranking of alternatives to be expressed explicitly. It should be noted that the inclusion of the generalized criterion functions does not address the inherent imprecision and subjectiveness of the CWs, which are elicited by the decision analyst from the actors for each criterion using one of a variety of available techniques. In addition, when multiple actors are involved in the decision analysis, generally, either an average of the actor’s preference
values is used or a separate analysis is undertaken for individual actor’s preference values. It is therefore inevitable that difficulty may be encountered in obtaining a decision that achieves consensus between the actors. A considerable amount of valuable information is also disregarded when an average value is utilized.

The limitations of using the generalized criterion functions and deterministic CWs, discussed above, imply that considerable uncertainty remains in the ranking of the alternatives following the completion of the MCDA process using the PROMETHEE method. Sensitivity analysis is an approach that is commonly undertaken as the final stage of the decision analysis process to assess the impact that the assumptions made has on the ranking of the alternatives. This procedure, which generally involves altering the CWs or changing the generalized criterion functions or threshold values, is often incomplete and unsatisfactory, with values often altered arbitrarily depending on the desired outcome. Furthermore, the correlation of the CWs is not taken into consideration while varying these values and the combined impact that alterations of the PVs and CWs have on the ranking of the alternatives is not considered.

The PROMETHEE method has been extended by Goumas and Lygerou (2000) to incorporate the uncertainty in the criterion PVs by using fuzzy numbers. However, this methodology also does not take into account uncertainty in the assignment of the CWs or in the selection of the generalized criterion functions.
CHAPTER THREE

RESEARCH METHODOLOGY

3. Research methodology

The preceding chapter will cover the research methods used in this study. This chapter will describe the chosen methods, research purpose, research strategy, and data collection method and analysis approach.

3.1. Research purpose

A research strategy can be formulated in certain ways depending on what the author want to achieve. By analyzing the research purpose, the reader shall understand what direction the study will take. Yin (2003) stated that the purpose of the research is to state what is to be accomplished by conducting the research and how the results of the research can be used. Scientific research has three investigation purposes (Reynolds, 1971; Yin, 2003): Exploratory, descriptive or explanatory.
Exploratory studies aim for basic knowledge within the research purpose. According to Bengtsson and Bengtsson (1995), the purpose of this type of study is to decide and demonstrate the character of a problem by collecting information through exploration. These types of studies are conducted in order to create a basic understanding of conditions, events, courses of events and actions.

Reynolds (1971) stated that the goal with the descriptive study is to develop careful descriptions of different patterns that are expected during the exploratory stage. The purpose could be to develop empirical generalizations and to explain these. This might lead to theory development.

Explanatory research is useful when studies involve relations between causes and symptoms (Eriksson and Wiedersheim, 1997). The researcher investigates how a certain stimuli or factor effects one another. The identification of these factors together will then cause a phenomenon. Yin (1994) believes that an explanatory research approach could also be used when the study aim to explain certain phenomena from different perspectives or situations with given set of events.

The nature of the current research is explanatory. This study tries to investigate how adoption of B2B ecommerce can effect B2B relationships and their attributes.

The best technique for gathering the information in the context of the research is identified as interviews. Therefore a number of ten interviews with decision makers in different firms is arranged in order to gain a better understanding of B2B relationships. And the impacts of possible adoption of e-commerce at firm level.

3.2. Research approach

When conducting a research there are different ways to address the matter. There are two main research approaches to choose from when conducting a research in social science: qualitative and quantitative method (Yin, 1993; Holme and Slovang, 1991).

The qualitative and quantitative methods refer to the way the researcher chooses to treat and analyze the selected data. Selectivity and distance to the object of
research characterize a quantitative approach, whereas a qualitative approach is characterized by nearness to the object of research. Both approaches have their own strengths and weaknesses. There is one significant difference between these two approaches. The results of a quantitative approach are based on numbers and statistics that are presented in figures, while, in qualitative approach, the focus lies on describing an event with the use of words.

The quantitative approach is also characterized by studying few variables on a large number of entities. To find answers to its research problem, this is normally done in a broad sense by using surveys with already set answering alternatives. (Holme and Solvang, 1997)

Characteristics of qualitative studies are that they are based largely on the researcher’s own description, emotions and reactions (Yin, 2003). The qualitative approach also includes a great closeness to the resonant or to the source that the data is being collected from (Holme and Solvang, 1997). It is characterized by gathering abundant information and to investigate several variables from few numbers of entities.

According to Yin (2003) the best research method to use for a study depends on that the study’s research purpose and the accompanying research questions.

The qualitative approach was found to be more suitable for the purpose of this research. The rationale behind this selection is to gain better understanding of how Iranian firms intend to adopt e-commerce in the context of B2B relationship and its attributes. On the other hand, uncertainty about the knowledge of respondents about B2B relationships, B2B e-commerce and impacts of adopting it urged the researcher to choose interviews in order to explain more, address the issues and explore the real belief of each respondent.

3.3. Research strategy

There are five primary research strategies in social sciences to collect empirical data (Yin, 2003). Depending on the character of research questions, to which extent the researcher has control over behavioral events and to what degree the focus is on contemporary event, the researcher can choose between an experiment, a
survey, history, an analysis of archival records and a case study. Different research strategies are shown in table 4.

Table 4: Research strategies

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Form of research question</th>
<th>Requires control over behavioral events?</th>
<th>Focuses on contemporary events?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experiment</td>
<td>How, why</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Survey</td>
<td>Who, what, where, how many, how much</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Archival analysis</td>
<td>Who, what, where, how many, how much</td>
<td>No</td>
<td>Yes/no</td>
</tr>
<tr>
<td>History</td>
<td>How, why</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Case study</td>
<td>How, why</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Source: Yin, (1994)

*Experiments:* experimentation allows investigation of changes in one variable, such as sale, while manipulating one or two other variables, perhaps price or advertising, under controlled conditions. Ideally experimental control provides a basis for isolating casual factors by eliminating outside, or exogenous, influences (Zikmund, 1994).

*Surveys:* a survey is a research technique in which information is gathered from sample of people through a questionnaire. The task of writing a questionnaire, determining the list of questions, and designing the format of the printed or written questionnaire is an essential aspect of the development of a survey research design (Yin, 2003).

*Case study:* the essence of a case study, the central tendency among all types of case study, is that it tries to illuminate a decision or set of decisions: why they were taken, how they were implemented, and with what result (Schramm, 1971).

*History:* the historical method deals with past, and is used when no relevant persons are alive to report (Yin, 1994).

*Archival analysis:* archival information holds that the goals are to describe the incidence or prevalence of a phenomenon (Yin, 1994).
Due to the structure of this research, either case study or survey could be suit best. In the case of this research, the survey strategy has been chosen.

3.4. Data collection

According to Yin (1994) there are six available forms of collecting qualitative empirical data as documentation, archival records, interviews, direct observation, practical observation and physical artifacts. A summary of different methods and their strengths and weaknesses is shown in table 5.

Table 5: data collection methods

<table>
<thead>
<tr>
<th>Sources of evidence</th>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Documentation</td>
<td>- stable – can be reviewed repeatedly</td>
<td>- retrievability – can be low</td>
</tr>
<tr>
<td></td>
<td>- unobtrusive – not created as a result of the case study</td>
<td>- biased selectivity, if collection is incomplete</td>
</tr>
<tr>
<td></td>
<td>- exact – contains exact names, references and details of an event</td>
<td>- reporting bias – reflects (unknown) bias of the author</td>
</tr>
<tr>
<td></td>
<td>- broad coverage – long span of time, many events, and many settings</td>
<td>- access – may be deliberately blocked</td>
</tr>
<tr>
<td>Archival records</td>
<td>- (same as above for documentation)</td>
<td>- (same as above for documentation)</td>
</tr>
<tr>
<td></td>
<td>- precise and quantitative</td>
<td>- accessibility due to privacy reasons</td>
</tr>
<tr>
<td>Interviews</td>
<td>- targeted – focuses directly on case study topic</td>
<td>- bias due to poorly constructed questions</td>
</tr>
<tr>
<td></td>
<td>- Insightful – provides perceived causal inferences</td>
<td>- response bias</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- inaccuracies due to poor recall</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- reflexivity – interviewee gives what interviewer wants to hear</td>
</tr>
<tr>
<td>Direct observations</td>
<td>- reality – covers events in real time</td>
<td>- time consuming</td>
</tr>
<tr>
<td></td>
<td>- contextual – covers context of events</td>
<td>- selectivity – unless broad coverage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- reflexivity – event may proceed differently because it is being observed</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- cost – hours needed by human observers</td>
</tr>
<tr>
<td>Participant observation</td>
<td>- (same as above for direct observation)</td>
<td>- (same as above for direct observation)</td>
</tr>
<tr>
<td></td>
<td>- Insightful into interpersonal behavior and motives</td>
<td>- bias due to investigator’s manipulation of events</td>
</tr>
<tr>
<td>Physical artifacts</td>
<td>- Insightful into cultural features</td>
<td>- selectivity</td>
</tr>
<tr>
<td></td>
<td>- Insightful into technical operations</td>
<td>- availability</td>
</tr>
</tbody>
</table>

Source: Yin, (1994)

The data collection methods that will be used for this research are interviews and documentation. The interview is chosen as the major primary data collection
method because of its strength in focusing directly on the topic of this research. Interviews are strong ways of collecting targeted and insightful data. Interviews conducted personally.

Some potential disadvantages with an interview are that it can be biased on poorly constructed questions, there is a risk for reflexivity, i.e. the interviewee tells the interviewer only what he or she wants to hear (Yin, 2003). Yin (2003) describes three different types of interview as open-ended, focused and structured. During the open-ended interview, the researcher asks unstructured questions. When a focused interview takes place, the respondent is interviewed during a brief period of time and the character of the interview is still open. Survey, is a combination of an interview and a survey. The interview is structured and based on predetermined questions (Yin, 2003). In order to overcome this disadvantage, a questionnaire has been designed to slightly structure the flow of interview.

An interview guide was sent out to interviewees’ prior to interview in order to enable them to think about the issues properly.

A recording device was used throughout the interview to accurately register the data.

3.5. Sample selection

It is often impossible, impractical or too expensive to collect data for the whole population while conducting a research. Therefore, a sample needs to be selected to collect the data.

McDaniel and Gates (1999), state that the basic issue when defining the population of interest is to specify the characteristics of those individuals from whom information is needed.

There are two sampling methods that can be used; probability sampling methods and non-probability sampling ones. Probability samples must be selected in such a ways that every element of the population has a known non-zero probability of selection and every member of the population has equal chance of being selected (McDaniel and Gates, 1999). Any sample that does not meet the requirements of a probability sample is a non-probability sample (McDaniel and Gates, 1999).
For the purpose of this research, a sample of 10 non-randomly selected professionals who are currently in relationship with other businesses have been selected and interviewed. This sample has been selected from different industries in order to reduce the bias toward any specific industry in the research. Selecting the respondents with the right knowledge about the research area is crucial for qualitative research (Holme and Solvang, 1991).

After coming to the conclusion that this study intends to exercise non-probability sample selection, there are different methods that can be used (Cooper and Schindler, 2003). Convenience sampling is about when the researcher has the freedom to choose whomever they find. Judgment sampling occurs when a researcher selects sample members to conform to some criterion. Quota sampling is the second type of purposive sampling. It is used to improve representativeness. The logic behind quota sampling is that certain relevant characteristics describe the dimension of population. If a sample has the same distribution on these characteristics, then is likely to be representative of the population regarding the variables that are not under control of the researcher. Snowball sampling is used in applications where respondents are difficult to identify and are best located through referral networks (Cooper and Schindler, 2003). A judgment sampling is used for the purpose of this study.

### 3.6. Data analysis

Data analysis consists of three concurrent flows of activities. These three are data reduction, data display and conclusion drawing and verification. Data reduction should not be separated from analysis, but a part of it. This reduction allows researcher to sharpen, sort, focus, discard and organize the data in a way that final conclusions to be drawn and verified. (Miles and Huberman, 1994) during the current research the data gathered during each interview reduced and the major parts related to the context of the research remained in hand of researcher.

Data display, as the second major activity, is about displaying the reduced data in an organized, compressed way so that conclusions can be more easily drawn. PROMETHEE and GAIA plans are mainly used to display the collected data.

Conclusion drawing and verification is the final analytical activity for the qualitative researcher. This research drew the conclusion based on applying the findings in the context of two other B2B relationships. In order to verify the findings,
three different B2B relationships were chosen to be examined under the situation after finding the important data.

### 3.7. Validity and reliability

Validity and reliability helps to measure the research and add strength to the findings. According to Yin (2003), three forms of validity need to be considered as construct validity, internal validity and external validity.

Sending an interview guide to each interviewee prior to interviews had increased the validity of the current research. Also no verification was done on the collected data or no feedback has been taken into account from interviewees after the interviews.

Reliability is the extent to which research results would be stable or consistent if the same techniques were used repeatedly. Also the role of reliability is to minimize the errors and biases in a study. Yin (2003) recommends having more than one observer during interviews can increase the reliability. Due to the structure of interviews this did not happen during the interviews. However, during each interview the observer took notes containing both answers and reflections from interviewees. To increase the reliability even more, a tape recorder was used. The recorded tapes and the notes were used to minimize the probability of misunderstanding and leaving something vital out of consideration.

The interviews were conducted with avoidance of leading and asking subjective questions. The questionnaire was used effectively to explain and gather the answers in the structured and homogenous manner from different interviewees.
Chapter Four
Research data description, findings, conclusions

4. Research data description, findings, conclusions

In this chapter the empirical data that had been collected during ten interviews are presented first. Then the result of these interviews are analyzed and the findings are presented. Eventually the conclusions of the current research based on the findings are explained.

4.1. Data collection

The data used in this study has been collected in interviews. Total number of ten interviews conducted with decision makers in top level of different organizations. Ten respondents had different educational background, from high school diploma up to PhD. The fields of their business activities were also diversified in order to cover a wider span of business activities. Summary of all ten interviews are followed in this chapter.
4.1.1. Interview one

The father of the respondent has established this company in 1971. They have established their office in Dubai in 1981 and are working as an exclusive distributor for some consumer electronics and air conditioning products. Their mobile telecom business started their activity almost 7 years ago. They are traders who supply number of wholesalers in their telecom industry while distributing their other products to big retailers as well. They try to differentiate themselves by differentiating their after sales services from competitors.

Currently the respondent is acting as the general manager of mobile line of business. He is a 36 years old male individual who is holding MBA from one of Canadian universities.

Their business counterparts know the general manager as “trustworthy”, “honest” and “very well disciplined” character. However, he posses a very conservative management style and normally makes his decision based on his own risk assessment criteria with minimum risk as his objective.

He confirms the attributes of B2B relationship and can hardly add any other to the list either on the main attributes or sub-attributes. He believes that “product” is the most important in any B2B relationship when saying, “if the product is not good nobody is going to buy it”. When the interviewer asked him to elaborate more on this, he added, “today, we never waste our time to make a brand hero in the local market if it is not one of them globally” and added” we normally choose a well-known product and promote it in the local market along with our superb after sales services. This will be the perfect match”. At this point the interviewer argued that they maybe focus on the “image” category of attributes. Then the respondent stated that it was very hard for him to rank “image” and “product” as they are very much interrelated in his opinion. However, he concluded that the product itself is the most important attribute as consumers make the final decision based on the product itself.

In the spite of their focus on after sales services, he believes that service performance is the least important attribute in their B2B relationships. The rationale behind his opinion was” as far as we can get documentation, guidelines and spare parts, we can manage our after sales services easily and even better than the supplier
because it is more or less is a matter of understanding the customer expectations of after sales services in the local market”

He is very well aware of e-commerce and it’s impacts on global business and firms. However, he never tried to consider e-commerce impact on B2B relationships. After a relatively short discussion, due to his level of knowledge about e-commerce, he anticipated the impact of e-commerce adoption on B2B relationship.

In his opinion e-commerce will impact “interrelationship” most. He referred to what he could remember of his father time, almost 15 years ago when the only ways of communication were person-to-person, telephone, telex and facsimile. He compared the quick access to information and people by using websites and email with the “old time” as his rationale. He also believes that “product” and “service performance” will have the least impact from e-commerce deployment.

Even though his rationale for “product” is very much in line with other respondents, interviewer argued the “service performance”. He then justified his point of view by referring to the “independence” in more than 90% of cases. He believes that e-commerce adoption will only improve B2B relationships in 10% of cases which is very low impact.

4.1.2. Interview two

Although this company has been established a year ago in Iran, it is a member of a group of companies that is involved in mobile telecom business for over 8 year in 13 different markets in Middle East. The local presence of the group of companies is acting as a distributor for a very well known European vendor in Iran. The respondent, General Manger, is a 26 years old male who has been educated in Western Europe on marketing. He is extremely good on sales and marketing while he needs significant improvements in the areas of financial management and strategy. His management style could be summarized as “short term vision”, “quick” and “emotional”. The respondent created a distribution channel consisting of 530 key retailers and 15 own showrooms in less than one year. He managed to increase his sales drastically while gaining a healthy margin during this time.
He confirms that the attribute set is gathered correctly and it is not possible for him to add any other to the set. The respondent believes that “product” is the most important attribute in their B2B relationship with their vendors and buyers. He stated” whenever the product of my vendor is not as much good as it is today, my distribution channel is not willing to buy from me anymore and I have to switch to another good product to cover my investments on distribution channel”. In his opinion, the product is the tie-up belt in the value chain that he is a part of it.

The interviewer argued him on his ranking on “image”, as number 4 out of 6. The rationale behind this argument was the importance of company image, strategy, reputation and customer focus in the perceived value by customers. In his opinion the buyers, at least the ones in his downward value chain, do not have such a broad view and are reflecting to the demand from the consumers. In the other words, he believes that the image of the vendor is creating a derived demand while not all of the offered products by the same vendor could be successful in the market.

“Delivery” is the second ranked attribute in his opinion. He stated that” assume you have the right product but your time to market is too long and not reliable, do you really think that the retailers can trust your supply? The answer is negative. The other side of the coin is that the life cycle of mobile phones is not too long. So, if you create delay and uncertainty in your supply, you are not able to catch the growth in your business as a market leader. You could only be a me-too player in this case”. This is very much similar to what he has chosen for differentiating his company from other distributors of the same vendor as “availability”. He normally orders most of the products in vendor’s portfolio and refresh his inventory on weekly basis. For instance, he is the only distributor in the region who is ordering a certain product and has it available all the time.

After a short discussion about e-commerce and its possible impacts on B2B relationships he shared his idea about the impact level on each attribute. He believes that “ delivery”, “interrelationship” and “financial terms” will impact highest by adoption of e-commerce in business-to-business relationships. He also believes that “product” and “image” will be least impacted by adoption of e-commerce. “Image” has bee argued by interviewer. Although he could hardly justify his evaluation on this attribute, he stated, “In the Iranian market with a low Internet penetration image is
not something to be affected by B2B e-commerce adoption. It is mainly coming from other channels of advertising”.

4.1.3. Interview three

Respondent three is a 35 years old civil engineer who continued his education in Insead by achieving MBA. His colleagues know him as a “visionary” and “trustworthy” leader. He is now heading a company that is distributes products and solutions of an office equipment giant in Iran. He employed around 400 individual in Tehran and 17 other cities and providing sales, marketing and after sales services to the market. The company product portfolio is containing few hundred dollars equipment up to multi million dollar solutions. Five years ago, when he has been appointed to this position, the company was suffering from non-satisfactory cash projection. Today, according to him, the company is a cash rich company and is heavily investing in other line businesses like IT.

The set of attributes seemed appropriate for explaining a typical B2B relationship in his opinion. He has “absolutely no doubt” that “product” is the main attribute in a B2B relationship similar to one he is involved in. He ranks “financial terms” as the second important attribute. When the interviewer reminded his dilemmas in his first years of appointment as a possible bias to his idea, he positively argued that “if I could not manage to persuade my vendor for more flexible financial terms, I would have been to jail” he then continued “my vendor understood my situation at that time and I did not really ask for better financial terms for the benefit of my company directly. I just passed any financial facility to the other tier, either a middleman or the end user, in the value chain and redefined my value proposition. This increased my sales by creating an advantage in compare to competition. On the other side, I used these on high value and high margin solutions rather than high volume products with no margins”.

After explaining e-commerce and the possible impact of it on businesses he shared his expectation of e-commerce adoption. He believes apart from “interrelationship” e-commerce impact on other attributes will be either low or very low. Interviewer tried to argue on his judgment on “delivery” and “financial terms”. Although he confirmed that there are impacts on these two attributes as well, he believes that most of the issues in these two attributes are addressed by the very high
impact of e-commerce adoption on “interrelationship”. In his opinion all processes in these two attributes are strongly interrelated with “interrelationship”.

4.1.4. Interview four

Respondent four is a 45 years old male. He educated in USA and held a master degree in software engineering. He is heading a company involve in sales, marketing and after sales services of fixed line telecom equipment; i.e. PABX, advanced telephone centers; from known vendors. He has been appointed to his position 8 years ago in order evaluate the business. At that time the board of directors was decided to lay off their 27 personnel and close this line of business for starting another business activities. After six months, he decided to continue the business. Today the have more 150 personnel and having more than 90% market share. His colleagues describe him as “very detail oriented”, “wise” and “long term visionary”. Currently they are expanding their business into Middle East region.

In his opinion, the emotional factor of B2B relationship is missing in the current set of attributes. He could not identify what type of attributes can be added to the current set but he clearly mentioned attributes like “mutual trust” which is missing in this set.

He believes that “product” is the most important area in any B2B relationship. He explains his success as:” I never had the chance to witness any success if I did not have a good product in hand” in his opinion the only task he accomplished was” understanding what a great range of product they are representing and cascading it to the market”. He also believes that “financial terms” is the second important attribute in B2B relationships. He justifies his evaluation by referring to their customer investment on their solutions that requires more flexibility to build and maintain the relationship. Based on this, he always provide after sales services to its customers free of charge as a matter of being flexible to them and reduce the total cost of ownership of their solutions.

He believes that “image” is also very important as he spent some time on making his final decision on raking “image” or “financial terms” as the second. He believes that a vendor without the right image is not suitable for long-term business relationship. He refers to the changes in the industry and quoting “6 years ago our job
was finding the right equipment, hardware, for connecting different departments or people together whereas today the soft part of solutions is playing more important role. Today we have to have specialist who are capable of analyzing our customers businesses and provide them with solutions like call centers to improve their business performance”. He is using this to compare two of their vendors the first one is the one with the right strategy to grow with the same pace of world on IT and the other one that still sticks to its traditional view towards the business. In his opinion the second one made itself non-scaleable while the other one brought more scalability into the perspective and guaranteed more growth and profit for itself and its business counterparts.

A rather long discussion on e-commerce was necessary during the interview to familiarize the respondent with e-commerce. He then expected that “interrelationship” and “delivery” to have the highest impact from e-commerce adoption. His idea about “delivery” is mainly based on the type of the solutions they are providing their customers with. Almost all of them, solutions, are using modular but customized equipment to address the requirements of customers. They need to collaborate during the production process and be sure that the equipment is reaching at the right time.

The respondent was very optimistic about the impacts of e-commerce on most of the attributes of B2B relationships. In his opinion, only the impact on “product” will be low.

In response to the question: “Are you going to start e-commerce for your own company?” the respondent replied as “we are mainly working with end-users and the low adoption of e-commerce by them will be decrease the success of it. However, we are currently using what prepared by our vendors to optimize our operations”.

**4.1.5. Interview five**

Respondent five has PhD degree on political science and currently working as the head of planning for an investment organization as well as teaching at universities. He is 34 years old and was involved in huge development projects in Iran. He is typical researcher and has a very in-depth knowledge of new technologies and their impact globally. His management style is described “fair”, “logical” and “moderate”
by his co-workers. The interview with respondent five was a relatively long one due to his debates about the concepts.

The interviewer had the opportunity to discuss the attributes and sub-attributes with respondent five. His view to attributes is somehow different from the majority of the respondents. The respondent had a very interesting opinion on the attributes, as he believed that some of them are the cause for other effects as attributes. For instance he explained his point of view about “product” as the effect of “image”. He also mentioned an interrelationship between “financial terms” and sub-attributes of “delivery”. After almost one hour of discussion, the interviewer and respondent reached to the conclusion that the cause and effect relationship in this research is only might affect the order of priority in ranking attributes. However, if one attribute is the effect of any other this will not affect the impact of e-commerce on it. In the other words, e-commerce may impact one attribute more while it is not affecting cause of that too much. On the other hand, although he could not add any other attribute to this set, he believed that “governance” needs to be taken into consideration in such a study.

He believes that “image is the first ranked attribute in a B2B relationship. In his opinion “whenever the image is right and the member of the value chain is clear about its strategy and focus on customer, other tiers, no matter lower or upper, will be influenced by this and have a clear understanding of their business counterpart”. “Product” comes next in the order of priority in his opinion. He also supported his idea with the question that “ what makes a product good or bad?” then continues, “Is it something different from the vendor strategy and its focus on customer needs?” and replied “no. It is the vision which urges a vendor to look for a better competitive product which can address the needs of consumers”. The vendor reputation and its market position are also derived from their vision and strategy in his point of view. In the other words, he believes that the product is the effect of a cause named as “image” in our research.

Then he ranked “financial terms” as the third important attribute in a B2B relationship. He believes “no matter how a product is great or the image of the company is wonderful, if there are not the right setup and flexibility in the picture
then the B2B relationship will fail. This could be happened in the relationship by itself or as a reflex from other tiers into the primary relationship”.

E-commerce ultimately will have a medium on “image” and “interrelationship” in his opinion. He evaluated these as relatively high in compare to other attributes. He believes that prior to researching the effect of e-commerce it is necessary to discover how mature is the relationship of businesses with each other. In other words, he believes that e-commerce can have a high impact only if the structure of supply chain or network is formed earlier and each tier knows what is its role in the supply chain. The interviewer exactly with the same justification has addressed this issue. Interviewer explained that the reason for the current strategy of this research is exactly been customized, as there is less experience of acting in a supply chain in Iran. On the other hand, e-commerce adoption seems to be a voluntarily decision by the firm as there is no outside pressure, either as competition or alliances, for an entity to move towards it.

He also believes that e-commerce will have a relatively higher impact on “service performance” than other attributes as firms can have faster access to “everything” which is required by them to improve their service levels.

4.1.6. Interview six

Respondent five is a 35 years old civil engineer who heads a planning and IT department of a distributor of office equipment distributor. He holds a master degree on civil engineering and had completed different IT as well as MBA courses abroad. His co-workers believe that he possesses a “moderate” and “hesitant” management style.

He can only confirm the set of attributes and believes that “product” is the most important attribute to be considered in a B2B relationship. “Everybody can minimize his investment risk by selecting a product which is good” in his opinion. He continues, “good product is selling itself and the obstacles will be less in this case in compare to an unknown product”. He then refers to “time-to-market” as a very important factor in distribution and concludes, “Delivery is the second highest important attribute”. He believes that technology products life cycle is short and firms need to serve the market timely or someone else, competitor, will absorb the demand.
He believes that “financial terms” is key to orchestrate firm’s business activities. He uses “pillar” when explaining this attribute importance.

“Service performance” is also ranked next to “financial terms”. He compares business to chess and says “occupying a square is much easier than maintaining it” and concludes that with a good level of service no firm can maintain its leadership in the market.

He believes “interrelationship” and “image” are respectively least important attributes in a B2B relationship, as a firm with strong panning and execution possess more governance in the value chain not matter if it is a supplier or buyer. On the other hand he uses critical mass as the most powerful parameter in governance. He uses the example of Wall Mart and concludes that its critical mass is bringing governance in every single relationship it has with the suppliers.

After a very brief discussion on e-commerce and its effects due to his very good knowledge of these, he anticipated the impact of adoption of e-commerce. In response to the point raised by interviewer about the highest impact of e-commerce on “interrelationship” and “image” he replied, “Please do not get me wrong! If I believe that these two attributes are of least importance that does not mean that e-commerce adoption is not affecting high”. “Service performance” will effect high in his opinion. He believes that e ,as a suffix, will improve knowledge sharing which will affect a key element in service level improvement.

He also believes “delivery” will be least effected by e-commerce adoption due to very bureaucratic ways of importing products into Iran which all firms are “get use to it”.

He expects “products” and “financial terms” to be affected the same, low, by e-commerce adoption. He believes e, as suffix, can hardly cause any change in these two areas.
4.1.7. Interview seven

Respondent seven is 51 years old male who hold a master degree on financial management. He is currently working as financial deputy for an investment company that is member of a manufacturing holding. His colleagues describe him as “fair”, “kind” but “tough” and “conservative”.

Interviewer needed to spend some time to explain the theoretical concepts of this research. He believes that maybe it is possible to re-categorize sub-attributes. He could not mention any particular way for his proposed re-categorizing. He ranked “image” and “product” as the first two attributes in order of priority. Interviewer shared the experience of interview with respondent five who had a similar point of view with this respondent and asked if this is the same in this case as well. He is looking at the situation from the evaluation of the business from an investor standing point. He believes that “a company without the sub attributes of image in this research is of no worth for investing on the relationship either as a supplier or buyer”. In his opinion “there has to be something in the firm as soul to draw the attention of another firm”. Although he does not deny the possible interrelationship between “image” and “product”, he believes that it is not too much strong as companies with high level of strategy and reputation are also making mistakes. He uses Coca Cola introduction of new Coke during 90s as a “very bad mistake”.

In his opinion, “service performance” is the least important attribute in B2B relationship as it seems more or less the same in different vendors that can pass the first two important elements of evaluation, attributes “image” and “product” in his ranking.

It took almost 45 minutes to share the e-commerce effects with him and discuss it, as he himself believes that he belongs to “the past”. He then evaluated the impact the effects of e-commerce adoption. He believes that “interrelationship” will be impacted as “very high” by adoption of e-commerce as “what we are in shortage of is a quick and direct relationship between the ones who are really in charge” he believes. He continues, “Have you ever noticed to the lead time between sending a letter to an organization in Iran and receiving their reply? Is it less than two weeks? Just compare it with how others are communicating in even other developing countries in the region”.
He believes that e-commerce impact on other attributes is either low or very low due to the less effect it may have on them in his opinion.

4.1.8. Interview eight

Respondent 8 is a 41 years old male with no particular academic education. He is managing a business in mobile industry as distributor of a global leader. He is in business for the last 22 years and has splendid experience in technological Fast Moving Consumer Goods (FMCG) trade. The turn over of his operation is more than 150 million USD per annum. He manages more than 500 employees. He was the pioneer in starting mobile handset business in Iran and learnt a lot from his family who are traditionally traders. His management style can be described as “based on instinct”, “emotional” and “unpredictable”.

As his knowledge was very low on e-commerce and academic management, the interviewer tried to explain all requirements from the scratch in order to keep him in the sample. The rationale behind this is that he is a representative of part of decision makers in Iran. The result shows that his judgments were very much like the people who are active in the same business. He had no argument on the attributes and sub-attributes.

He believes that the most important attribute is “product”. He then believes that “delivery” is the second important attribute, as “there has to be something to be sold”. At the first glance, his explanation is not seemed academic but it is very similar to the others who have the same business activity.

He bellies that “finance” is also important in B2B relationships while sharing his experience with his vendor. He said “I always can negotiate easier with my vendor and have better achievements in compare to my rivals as I have very strong financial support and am punctual on my payments”.

“Image” is the least important attribute as “there is no proof of quality in words”.

He believes that e-commerce adoption will affect “interrelationship”, “delivery” and “financial terms” very much high. “Today, I can connect to my vendor website and find every single change in my shipment schedule and the amount I have
to pay easily. Five years ago, it took me days to get the same information and our shipments were always surprised me”. And continues “I am sure that I am the first who knows any price change either by the vendor or market as far as my employees are monitoring everything on web or by email”.

He also believes that “product” and “image” will have very low or low impact from e-commerce and “service performance” will have medium impact as “his people can access to experts easier”.

4.1.9. Interview nine

Respondent nine is managing director of a mobile phone distributor in Iran. He is 38 years old and holds bachelor degree on business administration. He used to work for state-owned organizations for more than 10 years. He is explained “moderate”, “very conservative” and “honest” by his colleagues. The company he is managing is established a year ago and spread around the country and sells and services mobile phones. They experienced a rapid growth in their first year of business.

He agreed with the set of attributes and believes that “product” is the most important attribute in their B2B relationships. “The reason for our rapid growth was the product we are promoting” he clarifies. “Frankly speaking, we are all new to this business and could not manage such a growth without having a superb product”.

“Service performance” is the second important attribute in his opinion. He is cascading their strategy for differentiating themselves into their B2B relationship with their suppliers and buyers. “If we could not get great support on after sales services we could not fit ourselves into the market. There is always people who think in the same way and we have to identify and recruit them” while referring to retailers in their value chain.

He also believes that “image” is playing an important role, “at least a supportive one”, in B2B relationship. He answered to the question of “supportive to what?” In this way: “buyer or supplier image is very important for their business partners as it is supporting the products and services available by them. It will increase the feeling of certainty of doing business with them”.
Respondent nine is optimistic on high and very high impact of e-commerce adoption on “service performance” and “interrelationship” as well as “image” respectively.

On the other extreme he does not believe that e-commerce will have a significant impact on “product” and “financial terms” by evaluating the impact as very low. He also expects e-commerce adoption to have low impact on “delivery”. “Financial terms and delivery are more or less dependant to the domestic regulations and the financial capability of any business in its relationship” he quotes.

4.1.10. Interview ten

Respondent ten is a 46 years old male individual who is heading finance department of a distributor of office equipment products. Although he is holding a bachelor degree on marketing, he was always working in finance and accounting departments. He is known as “wise” and “conservative” by his colleagues.

He mentioned “personal reputation of decision makers” as another sub-attribute that could be added to the existing set. He believes that “product” is the main attribute in B2B relationship. He ranked “service performance” as the second important attribute. He believes that: “a product is a mixture of hard part, the product itself, and it’s after sales services, the soft part”. “These two attributes are complementary for making the whole story pleasant” he continues. He believes that “A good product can sell itself while after sales services guarantee other sales as well as customer loyalty”.

He believes that “image is of the least important in a B2B relationship, as “it is never important for a consumer how they, the manufacturers, are thinking. He or she can have the reality, product, in hand which the best evidence of how do they think and how important are their consumers by providing the proper after sales services”.

He believes that e-commerce would have its maximum impact on “image” and “interrelationship”. However, the impact is evaluated a medium on these two attributes. He expects a very low impact on other four attributes by e-commerce adoption. He justifies his pessimism about the impact of e-commerce as: “the regulations do not allow us to have the flexibility of doing business freely with our business counterparts. On the other hand, mutual trust is a prerequisite for starting
such an activity financially for instance. I have learnt to have very limited trust to our business counterparts as the only payment I can understand is what is in my bank account”. Interviewer argued his opinion about “service performance”. He justified his answer by “it is the responsibility of the manufacturer or the distributor to invest heavily on its after sales services and train people to the certain level of knowledge and expertise to be as independent as possible. This will routinze the procedures and requires less access to the knowledge bases”.

4.2. Findings

4.2.1. Research data description

4.2.1.1. Validating the attributes of B2B relationships

The results of interviews are showing that all respondents agree on the same set attributes to be involved in any B2B relationship. Some of them had a different point of view for categorizing the sub attributes but none of them was able to formulate the idea.

In one case the respondent believed that the sub attributes need recategorization. However he could not identify how it could be changed. At the sub-attribute level he confirmed that this is a correct identification of B2B relationships.

In three cases respondents mentioned to shortage in soft attributes in the examined set of attributes. They mentioned to mutual trust, governance in the relationship and personal reputation of decision makers as another sub attributes that can be added to the list of attributes. Although they had mentioned different attributes, or sub-attributes, to be added, they had the same concern about a possible improvement in further studies as another dimension of B2B relationship that is not quantifiable easily. They all believed that the current set is accurate enough to use the results as a general achievement with a high degree of accuracy. In general, all of them agreed that the current set is either adequate or accurately describes any B2B relationship.
4.2.1.2. Assessment of the attributes of B2B relationships

Table 6 shows the mean, standard deviation and median of respondents’ assessment of attributes:

Table 6: Mean, standard deviation and median of attributes

<table>
<thead>
<tr>
<th></th>
<th>Delivery</th>
<th>Financial terms</th>
<th>Image</th>
<th>Relationship delivery</th>
<th>Product</th>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Average</strong></td>
<td>3.7</td>
<td>3.1</td>
<td>3.7</td>
<td>4.8</td>
<td>1.3</td>
<td>4.5</td>
</tr>
<tr>
<td><strong>SD</strong></td>
<td>1.09</td>
<td>0.74</td>
<td>2.00</td>
<td>0.52</td>
<td>0.42</td>
<td>1.58</td>
</tr>
<tr>
<td><strong>Median</strong></td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>5</td>
<td>1</td>
<td>4</td>
</tr>
</tbody>
</table>

Eighty percent of the respondents believe that “product” is the main attribute in any B2B relationship. The remaining twenty percent also believe that “product” is the second most important attribute in B2B relationship. It seems that “product” is the most important attribute in a B2B relationship as the standard deviation of the rankings by respondents is the lowest for this attribute.

“Financial terms” is ranked as the second important attribute with a relatively low standard deviation among the respondents’ opinions. Ten percent of the respondents ranked it as the second important attribute. Fifty percent believe it is the third important attribute and the rest forty percent assessed it as the forth important attribute of any B2B relationship.

“Delivery” and “Image” are the third important attributes with a similar average ranking by respondents. However, the respondents’ opinions were more supportive towards delivery with lower standard deviation. On the other hand the opinions about rankings of “image” is more dispersed. Twenty percent of respondents believe that “image” is the most important attribute in B2B relationships. It is believed by thirty percent of respondents that “delivery” is the second important attribute while only ten percent believe that “image” is second ranked one. Twenty percent of respondents ranked both “image” and “delivery” as the third important one equally. “Delivery” is assessed as forth important by ten percent of respondents and
“image” assessed with the same rank by twenty percent. “Delivery” is the fifth important attribute for thirty percent of respondents and ten percent believe so for “image”. “Image” by ten percent and “delivery” by thirty percent ranked as sixth important attribute.

Although “interrelationship” is the least important attribute in the eyes of the respondents due to the mean value of assessments, its assessments is varied from third important to sixth one. In fact, this variation is showing the proportional importance of this attribute in compare to others.

Table 7 shows the result of calculation of corelationship between respondents opinion about each pair of attributes. In general, nine out of fifteen pair of attributes shows negative corelationship. It could be interpreted as the difference in the nature of attributes and the opposite effect of them in the relationship.

The results show that there is rather strong negative corelationship between “image” and “product” as well as “delivery” and “image”, and “service performance” and “interrelationship”. These are showing the difference in class of thoughts or management style of decision makers. In the other words, “image” is more or less important for decision makers with more strategical preference while tactical decision makers prefer “delivery” and “product”.

At the first glance it might seem strange that a strong negative corelationship exists between “service performance” and “interrelationship” as the sub-attributes of these two are somehow similar by nature. Perhaps the vision/mentality/ attitude of respondents is also reflected in their opinion. Also “service performance” has a slightly strong corelationship with “financial terms” as per the respondents.

It also shows that except “interrelationship” and “product” there is no strong positive or negative corelationship between any of the attributes.
Table 7: Correlation between attributes

<table>
<thead>
<tr>
<th>Correlation</th>
<th>Delivery</th>
<th>Financial terms</th>
<th>Image</th>
<th>Interrelationships</th>
<th>Product</th>
<th>Service performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delivery</td>
<td>1</td>
<td>0.03</td>
<td>-0.74</td>
<td>0.18</td>
<td>0.28</td>
<td>-0.21</td>
</tr>
<tr>
<td>Financial terms</td>
<td>1.00</td>
<td>0.05</td>
<td>0.08</td>
<td>-0.07</td>
<td>-0.48</td>
<td>0.40</td>
</tr>
<tr>
<td>Image</td>
<td>1.00</td>
<td>-0.22</td>
<td>-0.71</td>
<td>-0.23</td>
<td>-0.61</td>
<td>0.40</td>
</tr>
<tr>
<td>Interrelationships</td>
<td>1.00</td>
<td>0.40</td>
<td>0.90</td>
<td>0.17</td>
<td>0.10</td>
<td>1.00</td>
</tr>
<tr>
<td>Product</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Service performance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 8 shows the summary of answers to another question as “Given that financial terms have a value of 1 in the following scale, how do you weight other attributes?” Respondents weight other attributes in comparison to “financial terms” in a logarithmic scale from 0 to 1 and 1 to 10.

Table 8: Assessment of attributes in the scale of 1 to 100

<table>
<thead>
<tr>
<th></th>
<th>Delivery</th>
<th>Financial terms</th>
<th>Image</th>
<th>Interrelationships</th>
<th>Product</th>
<th>Service performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average</td>
<td>4.32</td>
<td>1.00</td>
<td>3.26</td>
<td>1.79</td>
<td>7.55</td>
<td>3.16</td>
</tr>
<tr>
<td>SD</td>
<td>3.90</td>
<td>0.00</td>
<td>2.93</td>
<td>2.59</td>
<td>3.04</td>
<td>3.63</td>
</tr>
<tr>
<td>Median</td>
<td>0.9</td>
<td>1.00</td>
<td>3.00</td>
<td>0.7</td>
<td>9.00</td>
<td>0.9</td>
</tr>
</tbody>
</table>

The results confirm that “product” is still the most important attribute. “Financial terms” is not considered as it is used for relative assessment of weight of other attributes. The results show that “delivery” is assessed slightly higher than “image” but with higher standard deviation. This can confirm the previous absolute ranking of the attributes. “Service performance” and “interrelationship” are also assessed at the relatively same positions as before. This check shows that the absolute ranking is reliable for weighting each criterion for the next steps of this study.

4.2.1.3. Weighting the attributes of B2B relationship

In order to use PROMETHEE for analyzing the situation, it was needed to find the weight of each attribute in B2B relationships. Based on the absolute assessment of attributes by respondents, each attribute finds its weight as it is shown in table 9.
These weights are representing the relative importance of each attribute in assessment a typical B2B relationship. Later in this study, these weights are used for assessment of three different relationships by PROMETHEE.

4.2.1.4. E-commerce impact on attributes

In another part of each interview, the respondent was asked to share his expectation of possible impact of e-commerce adoption on each attribute of B2B relationships. They have been asked to rank the impact between 1 to 5, as very low to very high respectively.

The results show that the highest impact is believed to be on “interrelationship”. Eighty percent of respondents believe that the B2B e-commerce adoption will have a very high impact on “interrelationship”. The interesting part is that the other twenty percent opinion has a significant difference with others, as they believe that the impact will be medium on this attribute. It is the main reason that the standard deviation of assessments is slightly high, around 0.84, in compare to 0.42 for “product”, as the highest, in the previous assessment in the same interviews.

“Product” with ninety percent of respondents’ opinions will have the least impact from B2B e-commerce adoption. However, the other ten percent assessment is low on the impact.

Apart from “interrelationship” and “product”, the respondents’ opinions were varied on other attributes. The following figure 8 shows the distribution of respondents’ opinion:
It is also found that due to the opinions can be evaluated as very different due to the slightly high standard deviation.

With the same scale for measurement, the impact on “interrelationship” will be very high. While, the impact is expected to be high on “delivery”, “financial terms”, “image” and “service performance”. And, “product” will have very low impact after adoption of e-commerce. The summary is shown in table 10.

Table 10: Mean, standard deviation and median of attributes, after e-commerce

<table>
<thead>
<tr>
<th></th>
<th>Delivery</th>
<th>Financial Terms</th>
<th>Image</th>
<th>Interrelationships</th>
<th>Product</th>
<th>Service Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Average</strong></td>
<td>2.7</td>
<td>2.6</td>
<td>2.7</td>
<td>4.5</td>
<td>1.1</td>
<td>2.5</td>
</tr>
<tr>
<td><strong>SD</strong></td>
<td>1.70</td>
<td>1.58</td>
<td>1.16</td>
<td>0.84</td>
<td>0.32</td>
<td>1.51</td>
</tr>
<tr>
<td><strong>Median</strong></td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

4.2.1.5. Weighting the attributes of B2B relationship after adoption of e-commerce

The scale of 1 to 100 was used for identifying the impact of adoption of e-commerce as weight of each attribute. The mean of each attribute weight is posted in table 11.
Table 11: Weight of attributes

<table>
<thead>
<tr>
<th></th>
<th>Delivery</th>
<th>Financial terms</th>
<th>Image</th>
<th>Interrelationship</th>
<th>Product</th>
<th>Service performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>16.70</td>
<td>16.04</td>
<td>16.70</td>
<td>28.39</td>
<td>6.79</td>
<td>15.38</td>
</tr>
</tbody>
</table>

Table 11 is showing that:

1- A significant decrease is expected to be happened in “product” weight due to the least impact that e-commerce will have on this attribute.

2- “Interrelationship” will be expected to have a significant increase, almost 1.8 times more, after adoption of e-commerce.

3- “Delivery” and “image” are expected to have slightly higher weight after adoption of e-commerce. The interesting part is that they are also expected to have the same absolute increase.

4- “Service performance” is expected to have 29% increases in its weight after adoption of e-commerce.

4.2.1.6. The impact of e-commerce adoption on attributes

Table 12 shows the changes in the weight of each attribute in case of adoption of e-commerce:

Table 12: Comparison of weights

<table>
<thead>
<tr>
<th></th>
<th>Delivery</th>
<th>Financial terms</th>
<th>Image</th>
<th>Interrelationship</th>
<th>Product</th>
<th>Service performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current situation</td>
<td>15.71</td>
<td>18.57</td>
<td>15.71</td>
<td>10.48</td>
<td>27.62</td>
<td>11.90</td>
</tr>
<tr>
<td>After adoption of e-commerce</td>
<td>16.70</td>
<td>16.04</td>
<td>16.70</td>
<td>28.39</td>
<td>6.79</td>
<td>15.38</td>
</tr>
<tr>
<td>Change %</td>
<td>6%</td>
<td>-1.8%</td>
<td>6%</td>
<td>171%</td>
<td>-75%</td>
<td>29%</td>
</tr>
</tbody>
</table>
4.2.1.7. Which function describes each attribute best?

Each respondent reviewed the functions used in PROMETHEE during the interview and expressed his opinion about the nature of changes that he is expecting. Table 13 summarizes the results of their opinions:

Table 13: Appropriate criterion functions

<table>
<thead>
<tr>
<th></th>
<th>Delivery</th>
<th>Financial terms</th>
<th>Image</th>
<th>Interrelationships</th>
<th>Product</th>
<th>Service performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Usual criterion</td>
<td></td>
<td>5</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>U-shaped criterion</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V-shaped criterion</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level criterion</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Linear criterion</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Gaussian criterion</td>
<td>8</td>
<td>7</td>
<td>2</td>
<td>7</td>
<td>2</td>
<td>5</td>
</tr>
</tbody>
</table>

It is obvious that for “delivery”, “financial terms” and “interrelationship” the Gaussian criterion will best explain each attribute as far as the respondents’ opinion is concerned. Gaussian criterion can also be used for “service performance” as fifty percent of the respondents agree with it. However, other thirty percent agreed on V-shape criterion that has the same pattern as Gaussian with a permanent slow increase in magnitude. Usual criterion seems to be the best choice for “image” and linear criterion expected to suits “product” best.

Furthermore, the respondents has been asked, “How do you expect B2B e-commerce adoption influence each attribute? Minimizing or maximizing it?” with no exception all of the respondents chose maximizing as their expected impact of B2B adoption.

Another important part of this description was finding the indifference, preference and Guassian thresholds of each function. The respondents have been asked to rate each the Gaussian threshold based on steps of 25%. Table 14 shows the result of respondents’ assessment:
Table 14: Threshold settings of attributes, Guassian

<table>
<thead>
<tr>
<th>Gaussian Threshold</th>
<th>25%</th>
<th>50%</th>
<th>75%</th>
<th>100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delivery</td>
<td>8</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financial terms</td>
<td>8</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Image</td>
<td></td>
<td></td>
<td>Not applicable</td>
<td></td>
</tr>
<tr>
<td>Interrelationship</td>
<td>2</td>
<td>7</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Product</td>
<td></td>
<td></td>
<td>Not applicable</td>
<td></td>
</tr>
<tr>
<td>Service performance</td>
<td>7</td>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Without any doubt 25% was chosen for “delivery”, “financial terms” and “service performance and 50% for “interrelationship” due to higher preference by respondents. This is showing that the expectation of respondents on “interrelationship” improvement is higher than other attributes.

For linear function of “delivery” a scale with steps of 10% has been selected. According to the number of responses 10% was selected for the indifference threshold and 50% for preference threshold. (Table 15)

Table 15: Threshold settings of attributes, linear

<table>
<thead>
<tr>
<th>Linear Threshold for Delivery</th>
<th>10%</th>
<th>20%</th>
<th>30%</th>
<th>40%</th>
<th>50%</th>
<th>60%</th>
<th>70%</th>
<th>80%</th>
<th>90%</th>
<th>100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indifference</td>
<td>8</td>
<td>3</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preference</td>
<td></td>
<td>7</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4.3. Analysis and results

4.3.1. Description of three different relationships

Three different companies have been selected to test the findings of this research. These three are distributors of same vendor but having their own marketing channels. Their channels are more or less the same. Their relationships, with a typical buyer, are different. The differences in their relationships are summarized in table16.
Table 16: Assessment of sample relationships

<table>
<thead>
<tr>
<th>Relationship</th>
<th>Delivery</th>
<th>Financial terms</th>
<th>Image</th>
<th>Interrelationship</th>
<th>Product</th>
<th>Service performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relationship 1</td>
<td>Very High</td>
<td>Low</td>
<td>Low</td>
<td>High</td>
<td>Very High</td>
<td>High</td>
</tr>
<tr>
<td>Relationship 2</td>
<td>Medium</td>
<td>Medium</td>
<td>High</td>
<td>Low</td>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td>Relationship 3</td>
<td>Very Low</td>
<td>Very High</td>
<td>Medium</td>
<td>Very Low</td>
<td>High</td>
<td>Very Low</td>
</tr>
</tbody>
</table>

Distributor 1, owner of relationship 1, is very well known because of “availability of products”, “the best portfolio of vendor’s products”. Therefore these two attributes rated as very high. Its “service performance” is rated high as it is providing the best service among three according to their ranking by the vendor. “Interrelationship” is also rated high due to day-to-day communication between them and other tier in their value chain. Its “financial terms” is low as this company is experiencing difficulties in their financial management and therefore is not capable of being flexible to its buyers. Its “image” is also low, as its buyers know this company as “opportunistic” and “good at tactics but bad on strategy”. The profile of relationship 1 is shown in figure 9.

![Figure 9: Profile of relationship 1](image)

Distributor 2, owner of relationship 2, is rated high on “image” due to its reputation in the industry, clear strategy for having the highest market share of volume sold as well as their extremely good support to their buyers. Its “delivery” is rated medium as the buyers can only buy what is available and indeed allocated by distributo2 to them. Distributor2 always have available quantity of products for its channel. “Financial terms” is rated medium as this company is not too much flexible on its terms and normally dictates the terms to its channel however, distributor2 is rescheduling its channel payments according to the market and competitor situation.
In other words, its buyers do not have too much dilemma in their financial issue with distributor2. Its product portfolio is not rich and therefore the “product” attribute is rated as medium. “Service performance” is also rated medium. Distributor2 provides the basics of after sales services and does not allow its channel to provide service to consumers. Figure 10 shows the profile of relationship 2.

![Figure 10: Profile of relationship 2](image)

Distributor3 is extremely flexible on “financial terms”. It is rated as very high on this attribute. Its product portfolio is richer than distributor2 but slightly weaker than distributor1 which is rating its own “product” attribute as high. Its “image” is medium as this company is committed to the future and is caring toward their customers but is in shortage for clear strategy. “Delivery” is rated as very low as distributor3 is always short in supply and cannot address the demand. Distributor3 does not care about its “interrelationship” which causes this attribute to be rated as very low. Although distributor3 is caring about its customers, it only make the minimum investment for improvement in its after sales services and tries to replace its products in case of any malfunction which can not be repaired. This is evaluated as very good by end users and buyers who act as intermediary but will be the cause for rating its “after sales performance” as very low according to the criteria of attributes in this research. Figure 11 is showing relationship 3 profile.
In the next chapters, the three described relationships will be used in PROMETHEE in order to compare the results of pre and post e-commerce adoption based on the results of interviews.
4.3.2. Ranking three sample relationships with PROMETHEE in current B2B relationship situation

The results of complete ranking (figure 12) is showing that relationship 1 is a better match to the current pre-e-commerce B2B relationship situation. While, relationship 2 and relationship 3 are not showing a positive flow towards the existing situation in B2B relationships with a complete ranking approach.

![Diagram](image)

Figure 12: Complete ranking, pre-e-commerce

Partial ranking of different relationships in this research is showing the highest positive flow and lowest negative one in the case of relationship 1. Relationship 3 is the lowest preferred B2B relationship according to the findings of the current survey and relationship 2 is moderately in line with the current B2B relationship situation. (Figure 13)

![Diagram](image)

Figure 13: Partial ranking, pre-e-commerce

However, a more detailed look at the situation of relationships in GAIA plan is showing that although relationship 1 is in line with the decision stick Pi, it is still far from the suitable situation in a desired B2B relationship. Relationship 2 and relationship 3 are which is influenced by the overall situation of B2B relationships situation in Iran. Relationship 2 has a better opportunity to be preferred than relationship 3, which is almost hundred percent on the contrary of the preference in the
On the other hand, a successful B2B relationship in the current situation could be gained by using the model of relationship 1 while improving the performance in some of the criterions. The reason for this is laid behind the importance of different attributes that causes the decision stick, Pi, to be in a middle point of attributes like “product”, “service performance”, “interrelationship” and “delivery”. In the current
situation B2B relationships is based on “how well a supplier supplies and serves its buyers”.

4.3.3. Ranking each relationship with B2B e-commerce impacts on attributes with PROMETHEE

It is required to mention that in this chapter each relationship is going to be evaluated according to the impact of adoption of e-commerce on attributes and the consequent changes on them. The difference between ranking in this part and the one which is done in current situation part is that it will show how the relationship will gain or loose any opportunity if it is going to adopt B2B e-commerce. In other words, the more a relationship is loosing is meaning a better opportunity it will have for adoption of B2B e-commerce.

The impact of adoption of B2B e-commerce has remarkably changed the perspective. The result of ranking the three pre defined relationships after adoption of e-commerce is showing that relationship1 and relationship2 will be very much in line with the new impacted situation. In fact, relationship1 is matching the situation better than pre e-commerce situation by having 30% increase in its positivness in absolute flow. The very interesting result is about relationship2. Relationship2 will significantly gain positive flow, 350%, by being ranked with the situation after adoption of e-commerce due to better match between its situation and post e-commerce adoption situation. The situation for relationship 3 is getting significantly worse as far as its match with changes is concerned. It is losing the positiveness of absolute flow by almost 200% after adoption of e-commerce.

The other side of this for relationship3 is that distributor3 will benefit most if it adopts e-commerce as its current relationship is far below the impacted weights in B2B relationships. Figure 15 shows the complete ranking by PROMETHEE.
The partial ranking of relationships is also supporting the previous results. Relationship 2 gains positive flow and negative flow that is resulting a better match to the impacts. In other words, it will not benefit much from adoption of e-commerce. The situation is the same for relationship 1. It will not benefit much from the adoption of e-commerce. These could be justified by their performance in each attribute. Relationship 2 is not taking the important attributes into consideration in its current relationships. Relationship 1 is in shortage in some attributes that are not going to improve with adoption of e-commerce. In the same situation, relationship 3 can improve its weaknesses by adoption of e-commerce and gain a better position in the market. Figure 16 shows partial ranking of each relationship.

A closer look at GAIA plan, figure 17, disclosing that Pi, the decision stick, is changed its direction and magnitude. It will be more on the direction of “service performance”, “interrelationship” and “delivery”.
Figure 17: GAIA plan, impacted
Chapter Five
Discussion, conclusions and further researches

5. Discussion, conclusions and further researches

In this chapter, conclusions and implications drawn from the research performed in this study will be presented. The research question will be repeated and the found answer to them is mentioned. Thereafter some recommendations are made to firms in their route towards adoption of B2B e-commerce.

5.1. Discussions

5.1.1. What attributes are important to users in assessing relationships?

The results of this study are showing that B2B relationships in Iranian firms are having the same attributes. Businesses in Iran are dealing with the same attributes that have been identified and tested in B2B relationships in other geographical areas. This means that B2B relationships are more influenced by the characteristics of industries rather than the domestic situation. At least one attribute, “image”, seemed
to have causal effects on another attribute’ “product” in the eyes of couple of interviewees.

Furthermore, these attributes are hardly covering some soft issues i.e. mutual trust between businesses that are aspects in B2B relationships.

5.1.2. How do these attributes vary in importance?

The results of this study are showing that “product” is the most important attribute in B2B relationships in Iran.

80% of the respondents believe that “product” is the main attribute in any B2B relationship. The remaining 20% also believe that “product” is the second most important attribute in B2B relationship. It seems that “product” is the most important attribute in a B2B relationship as the standard deviation of the rankings by respondents is the lowest for this attribute.

“Financial terms” is ranked as the second important attribute with a relatively low standard deviation among the respondents. It means that businesses need to consider the importance of this attribute in their relationships.

“Delivery” and “Image” are the third important attributes with a similar average ranking by respondents. However, the respondents’ opinions were more supportive towards delivery with lower result for standard deviation.

Although “Service performance” is ranked 4th, respondents opinions varied remarkably about it by considering the standard deviation of their opinions.

The least important attribute is “interrelationship” with a consensus, due to the low standard deviation.

5.1.3. How B2B e-commerce adoption is going to impact the each attribute in the same set of attributes?

B2B e-commerce adoption will have the least impact on “product” as an attribute. There could be three reasons for that 1) the less dependency of this attribute to the what that could be counted as e-commerce benefits to businesses and 2) the current importance, as the first ranked attribute in the current situation, which limits
the improvement on it by adoption of e-commerce and 3) the nature of Iranian businesses in this study which is more biased toward trade than manufacturing.

“Interrelationship” will be expected to have a significant improvement, almost 1.8 times more, after adoption of e-commerce. This is showing the strength of e-enabled channels of communications versus the traditional ways.

“Delivery” and “image” are expected to have a slightly higher impact by adoption of e-commerce. The interesting part is that they are also expected to have the same absolute increase.

“Service performance” is also expected to have a fair impact after adoption of e-commerce in B2B relationships.

5.2. Conclusions

This study shows that B2B e-commerce adoption in Iran can affect firm-to-firm relationship positively in the absence of supply chains in most of Iranian industries. The current B2B relationships are hardly seems mature enough to motivate firms to improve it by adoption of e-commerce. The findings of the current study are showing that interaction between businesses in value chains is hardly considered as the modus operandus. Most of the relationships are still in their early stages as transactions between businesses. Relationships and improving them need more considerations at the current stage prior to adoption to e-commerce. In the other words, the improvement in the current B2B relationships is possible by consideration of B2B relationship’s attributes. This requires the right strategy towards long-term relationship or interaction as a critical success factor for businesses.

E-commerce adoption could also be considered into account as an opportunity for improving the current B2B relationships by moving a step forward toward more integration and understanding between businesses. E-commerce adoption can improve B2B interrelationships that can affect other dimensions of B2B relationships as well. The minimum impact of this could be increasing the pace of businesses locally as interrelationship seemed to be an obstacle in the current B2B relationships according to the findings of this research.
Service performance is also another attribute of B2B relationships that is expected to have an impact of B2B e-commerce adoption. The conclusion of ten interviews with Iranian decision makers shows that there is a gap between the current performance of service and their expectations about it. Perhaps the ability of sharing knowledge via an e-enabled relationship is the reason for the improvement in this particular attribute of B2B relationships.

Financial terms, image and delivery are expected by the interviewees to have a low to medium impact by adoption of e-commerce. At least on financial terms this seems to be under-evaluated, as the current infrastructure and services by financial institutions as well as regulation are seemed to be obstacles in this regard. In the other words, given that the infrastructure and services by financial institutions are having their improvements in near future, the B2B relationships can affect more than the interviewees expectations. For instance, almost all Iranian banks are moving towards redefining their services by IT enablement.

The interviewees answers, all of them without any exception, to the question “Do you have a clear strategy for your next five to ten years?” were “no”. Their answers can be evaluated as reflect of their uncertainty about the future. This fact is also brings up a debate on the assessments on “image” as an attribute. In the other words, shortsightedness in decision makers’ views could be an obstacle for improvement on the relationships as well as B2B e-commerce adoption.

B2B e-commerce adoption impact on “delivery” assessed as low. Perhaps this is because of the lack of control of businesses on the process i.e. delay by forwarders, time consuming custom clearance process etc. as well as the confidentiality of such information in the eye of interviewees.

5.3. Further researches

This study was narrowed down the interaction model of business-to-business relationship in the following manners:

1. Some other soft or intangible elements of interrelationship between organizations i.e. mutual trust, governance etc. were not involved in hierarchical ranking of attributes.
2. The respondents were mainly from trade-oriented organizations.

3. The relationships were studied in the context of one-to-one

   It might be good if further researches could be conducted to cover the *soft* or *intangible* elements of the relationships for adoption of e-commerce. Furthermore the effects of presence supply chains could be of the rare for further researches. A broader perspective of relationship e.g. one to many or many to one could also be of importance while considering B2B relationships.

   On the other hand, the effect of corporate strategy on B2B relationships at firm level and its impacts on the adoption of e-commerce can be useful for firms and other researchers.

   The last but not the least could be considering the effects of taking part in international supply chains in formation of domestic B2B relationships and the impacts of adoption of e-commerce.

5.4. Recommendation to firms

   Based on the findings of this study few recommendations will help firms to experience a smooth B2B e-commerce adoption transition as well as adjustment of their current B2B relationships.

   Firstly, defining a clear strategy based on the medium to long term objectives will impact the current B2B relationships and improve them in case of adoption of e-commerce. It is highly recommended to firms to define their strategy prior to any attempt to adopt B2B e-commerce.

   Secondly, firms need to focus more on all aspects, attributes in this text, of their relationships with their business counterparts. Understanding their needs in B2B relationship will help them to minimize the uncertainties and risks involved in their relationships.

   Thirdly, which could possibly be taken into account as a derivation of second recommendation, is to adjust the weights of different attributes to the norm of the industry as well as the other party expectation.
Fourthly, e-enablement of any firm value chain could speed up the process of maturity of their business relationships.
References

73. Sánchez M, Pérez M.P, “The use of EDI for interorganizational co-operation and co-ordination in the supply chain”, Received 21 November 2002 Revised 24 March 2003 Accepted 12 April 2003
Appendix

Identifying and ranking B2B relationship attributes

Any relationship; i.e. social, business to business; has different attributes. In social relationships we consider attributes like trust, honesty, etc. while in business to business relationships the attributes can be categorized as follow:

84. Delivery
85. Financial terms
86. Image
87. Interrelationship
88. Product
89. Service performance

There are some sub-attributes related to each of the above-mentioned categories. The table in the next page is giving a brief explanation of each attribute and related sub-attributes.
1- How do you rank these attributes in comparison to each other?

<table>
<thead>
<tr>
<th>Attributes</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Delivery</strong></td>
<td></td>
</tr>
<tr>
<td>1. Reliability</td>
<td>Offering products on time, making and keeping the agreement</td>
</tr>
<tr>
<td>2. Production process</td>
<td>Degree of impact of the company's processes on our business</td>
</tr>
<tr>
<td>3. Information</td>
<td>Clarity and correctness of information and documentation</td>
</tr>
<tr>
<td>4. Lead times</td>
<td>Time elapsed between making and receiving orders</td>
</tr>
<tr>
<td>5. Delivery quality</td>
<td>The extent to which orders are delivered on time and in full</td>
</tr>
<tr>
<td><strong>Financial terms</strong></td>
<td></td>
</tr>
<tr>
<td>1. Value</td>
<td>The extent to which price and quality combine to give value</td>
</tr>
<tr>
<td>2. Payment</td>
<td>Extent of the company's flexibility in payment terms</td>
</tr>
<tr>
<td>3. Prompt quotes</td>
<td>The extent to which quotations are given on time</td>
</tr>
<tr>
<td>4. Flexibility</td>
<td>The extent to which price negotiations are flexible</td>
</tr>
<tr>
<td><strong>Image</strong></td>
<td></td>
</tr>
<tr>
<td>1. Strategy</td>
<td>Vision and coherence of the company's strategy</td>
</tr>
<tr>
<td>2. Customer focus</td>
<td>The extent to which the company puts the customer first</td>
</tr>
<tr>
<td>3. Reputation</td>
<td>Covers both innovation and being a caring company</td>
</tr>
<tr>
<td>4. Market position</td>
<td>The extent to which they are globalised and committed to the future</td>
</tr>
<tr>
<td><strong>Interrelationships</strong></td>
<td></td>
</tr>
<tr>
<td>1. Ease of contact</td>
<td>Supply of information and support for problem solving</td>
</tr>
<tr>
<td>2. Access</td>
<td>Ease of contact with other functions within the company</td>
</tr>
<tr>
<td>3. Information</td>
<td>Information flow about potential problems and market trends</td>
</tr>
<tr>
<td>4. Company representative</td>
<td>Knowledge and professionalism</td>
</tr>
<tr>
<td><strong>Product</strong></td>
<td></td>
</tr>
<tr>
<td>1. Stable range</td>
<td>The extent to which the product range is stable over time</td>
</tr>
<tr>
<td>2. Quality levels</td>
<td>Absolute quality of the product</td>
</tr>
<tr>
<td>3. Consistent quality</td>
<td>Consistent quality and consistent specification</td>
</tr>
<tr>
<td>4. New product development (NPD)</td>
<td>Extent of NPD and willingness to work with customers</td>
</tr>
<tr>
<td><strong>Service performance</strong></td>
<td></td>
</tr>
<tr>
<td>1. Technical issues</td>
<td>Covers both rapidity and effectiveness of service</td>
</tr>
<tr>
<td>2. Literature</td>
<td>Quality of technical literature</td>
</tr>
<tr>
<td>3. Facilities</td>
<td>The extent to which the company's facilities are available for our use</td>
</tr>
</tbody>
</table>
2- Given that financial terms have a value of 1 in the following scale, how do you weight other attributes?

0 | 1 | 10
---|---|---
Financial terms

3- How do you score each attribute between 0 to 100?

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Score between 0 to 100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delivery</td>
<td><img src="image" alt="Score between 0 to 100" /></td>
</tr>
<tr>
<td>Financial terms</td>
<td><img src="image" alt="Score between 0 to 100" /></td>
</tr>
<tr>
<td>Image</td>
<td><img src="image" alt="Score between 0 to 100" /></td>
</tr>
<tr>
<td>Interrelationships</td>
<td><img src="image" alt="Score between 0 to 100" /></td>
</tr>
<tr>
<td>Product</td>
<td><img src="image" alt="Score between 0 to 100" /></td>
</tr>
<tr>
<td>Service performance</td>
<td><img src="image" alt="Score between 0 to 100" /></td>
</tr>
</tbody>
</table>
4- How do you rank sub-attributes of each attribute?

<table>
<thead>
<tr>
<th>Attributes</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Delivery</strong></td>
<td></td>
</tr>
<tr>
<td>1. Reliability</td>
<td>Offering products on time, making and keeping the agreement.</td>
</tr>
<tr>
<td>2. Production process</td>
<td>Degree of impact of the company's processes on our business.</td>
</tr>
<tr>
<td>3. Information</td>
<td>Clarity and correctness of information and documentation.</td>
</tr>
<tr>
<td>4. Lead times</td>
<td>Time elapsed between making and receiving orders.</td>
</tr>
<tr>
<td>5. Delivery quality</td>
<td>The extent to which orders are delivered on time and in full.</td>
</tr>
<tr>
<td><strong>Financial terms</strong></td>
<td></td>
</tr>
<tr>
<td>1. Value</td>
<td>The extent to which price and quality combine to give value.</td>
</tr>
<tr>
<td>2. Payment</td>
<td>Extent of the company's flexibility in payment terms.</td>
</tr>
<tr>
<td>3. Prompt quote</td>
<td>The extent to which quotations are given on time.</td>
</tr>
<tr>
<td>4. Flexibility</td>
<td>The extent to which price negotiations are flexible.</td>
</tr>
<tr>
<td><strong>Image</strong></td>
<td></td>
</tr>
<tr>
<td>1. Strategy</td>
<td>Vision and coherence of the company's strategy.</td>
</tr>
<tr>
<td>2. Customer focus</td>
<td>The extent to which the company puts the customer first.</td>
</tr>
<tr>
<td>3. Reputation</td>
<td>Covers both innovation and being a caring company.</td>
</tr>
<tr>
<td>4. Market position</td>
<td>The extent to which they are globalised and committed to the future.</td>
</tr>
<tr>
<td><strong>Interrelationships</strong></td>
<td></td>
</tr>
<tr>
<td>1. Ease of contact</td>
<td>Supply of information and support for problem solving.</td>
</tr>
<tr>
<td>2. Access</td>
<td>Ease of contact with other functions within the company.</td>
</tr>
<tr>
<td>3. Information</td>
<td>Information flow about potential problems and market trends.</td>
</tr>
<tr>
<td>4. Company representative</td>
<td>Knowledge and professionalism.</td>
</tr>
<tr>
<td><strong>Product</strong></td>
<td></td>
</tr>
<tr>
<td>1. Stable range</td>
<td>The extent to which the product range is stable over time.</td>
</tr>
<tr>
<td>2. Quality levels</td>
<td>Absolute quality of the product.</td>
</tr>
<tr>
<td>3. Consistent quality</td>
<td>Consistent quality and consistent specification.</td>
</tr>
<tr>
<td>4. New product development (NPD)</td>
<td>Extent of NPD and willingness to work with customers.</td>
</tr>
<tr>
<td><strong>Service performance</strong></td>
<td></td>
</tr>
<tr>
<td>1. Technical issues</td>
<td>Covers bothrapidity and effectiveness of service.</td>
</tr>
<tr>
<td>2. Literature</td>
<td>Quality of technical literature.</td>
</tr>
<tr>
<td>3. Facilities</td>
<td>The extent to which the company's facilities are available for our use.</td>
</tr>
</tbody>
</table>
5- According to e-commerce explanation and the discussion we had, how do you think B2B e-commerce implementation impact will be on each attribute? Please use a 1 to 5 scale 1=Very high, 2=High, 3=medium, 4=very low, 5=low.

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Please score between 1 to 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delivery</td>
<td>5</td>
</tr>
<tr>
<td>Financial terms</td>
<td>5</td>
</tr>
<tr>
<td>Image</td>
<td>5</td>
</tr>
<tr>
<td>Interrelationships</td>
<td>5</td>
</tr>
<tr>
<td>Product</td>
<td>5</td>
</tr>
<tr>
<td>Service performance</td>
<td>5</td>
</tr>
</tbody>
</table>
6. In your opinion which function suits e-commerce impact on each attribute best?

![Graphs of different functions]

<table>
<thead>
<tr>
<th></th>
<th>Usual criterion</th>
<th>U-shaped criterion</th>
<th>V-shaped criterion</th>
<th>Level criterion</th>
<th>Linear criterion</th>
<th>Gaussian criterion</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><img src="image1" alt="Graph" /></td>
<td><img src="image2" alt="Graph" /></td>
<td><img src="image3" alt="Graph" /></td>
<td><img src="image4" alt="Graph" /></td>
<td><img src="image5" alt="Graph" /></td>
<td><img src="image6" alt="Graph" /></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Delivery</th>
<th>Financial terms</th>
<th>Image</th>
<th>Interrelations</th>
<th>Tips</th>
<th>Product</th>
<th>Service performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Function 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Function 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Function 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Function 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Function 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Function 6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Please complete the following personal information:

90. Your age:
91. Your Gender:
92. Your last degree:
93. Your position: