Predicting Intention to Adopt Internationalization Linkages

A Study in Iranian Automotive Industry
Supply Chain in a B2B Environment

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ABSTRACT

Today the attention of managers is turning from intra-organizational focus to inter-organizational perspective in order to increase organizational efficiency and effectiveness. Managers realize that integration of organizational activities have significant benefits. EDI (Electronic Data Interchange) has been used for a long time as a powerful tool for information communications. The purpose of this research first is to define the concepts and importance of adopting Electronic Data Interchange (EDI) in the supply chain of automotive Part Supplier Companies, which ideally form a business-to-business environment and following that Institutional Perspective is used to examine influential factors that enable the adoption of inter-organizational systems. Additionally CEOs' of major auto part suppliers were surveyed in order to use their responses for validating the model constructed in this research for analyzing the influence of factors that enable the adoption of inter-organizational systems in organizational environment. Reviewing previous research shows the mimetic, coercive and normative pressures existing in an institutionalized environment and their influence on organizational predisposition towards an information technology-based inter-organizational linkage.

Keywords: Inter-organizational linkages, Electronic Data Interchange, Institutional Influences, Mimetic Pressures, Coercive Pressures, Normative Pressures, Business-to-Business, Supply Chain Management
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1 Chapter One - Introduction

1.1 Introduction

The first chapter will give an overview of information technology based inter-organizational linkages from institutional perspective on adoption.

I begin with a short history of the Internet and World Wide Web, then IT-based-IOL with an explanation of the impact of the Internet on easing and reinforcing the organizational relationship by employment of "Electronic Data Interchange" (EDI). Further in this chapter there will be a short discussion about Business-to-Business and Supply Chain. Then the impact of organizational pressures in adoption intention of inter-organizational linkages by companies will be demonstrated in a model. At the end of this chapter the problem area will be focused on.

1.2 Background

Kurose and Ross (2002) observed that the Internet is a world wide computer network that interconnects million and perhaps soon billions of computing devices. The internet is the infrastructure which is used by information to travel between the computers. For using this infrastructure more efficiently, between 1989–1991 Berners-Lee and associates developed the World Wide Web.

It is argued by Alsop (1999) that the Web opened up a classic window of opportunity for new companies to challenge the existing old companies. It is also stated by Dai and Kauffman (2002) that there has been an amazing growth of Internet-based Business-to-Business (B2B) electronic markets and on-line B2B sales.
Teo et. al. (2003) argued that the factors affecting adoption intention of Information technology-based inter-organizational linkages (IT-based IOL) from two major organizational perspectives, Diffusion of Innovations (DOI) perspective (Roger 1995) and Organizational Innovativeness (OI) perspective (Wolfe 1994). In order to drive IT-based IOL adoption, formerly companies used to look at the perceptions of IT that either encourage or inhibit adoption, and later examined the influence of organizational characteristics on innovation adoption decisions (e.g., Damanpour 1991; Premkumar and Ramamurthy 1995). Much of this literature assumed that Innovation adoption is driven by a rationalistic and deterministic orientation guided by goals of technical efficiency.

There are three factors influencing the adoption intention in organizations. The above-mentioned factors which influence adoption intention are three organizational pressures. These pressures are Mimetic pressures, Coercive pressures and Normative pressures.

The objective of this research is first to understand the environment of Iranian organizations, especially in the supply chain sector of auto-part suppliers. Conducting this research can lead the readers to understand that these organizational pressures can put the necessary influence or impact on companies to adopt organizational innovations or not to adopt and can give a deeper understanding of adoption behavior in Iranian organizations especially in the automotive part supplier sector.

1.2.1 Inter-Organizational Linkages & EDI

Information technology-based inter-organizational linkages (IT-based IOL) generated widespread interest among information systems (IS) academics in the 1980s, partly because of the competitive advantage gained by organizations such as American Airlines and American Hospital Supply (Cash et al. 1992).

IT-based IOL have, interestingly, become the center of attention again due to the increased focus on business-to-business (B2B) electronic commerce (Teo et al. 2003). Thus, for IS researchers and practitioners, adoption of inter-organizational linkages, while not new, is still an interesting topic worthy of further investigation.
Within the last two decades, several researches have been conducted to identify possible factors driving the adoption of IT-based IOL (e.g., Chwelos et al. 2001; O’Callagan et al. 1992; Premkumar et al. 1994; Teo et al. 1995).

In today’s business environment, most organizations are facing significant pressure to make their operational, tactical, and strategic processes more efficient and effective. Information technology (IT) has become an attractive means of improving these processes. Consequently, organizations have implemented several strategies to improve effectiveness and to enhance efficiencies through the use of IT (Soliman and Janz 2004). Inter-organizational information systems (IOIS) provide organizations with capabilities to improve linkages between trading partners along the supply chain (Soliman and Janz 2004). EDI can be considered as an example for inter-organizational systems.

Electronic Data Interchange (EDI) is an inter-organizational system that involves the movement of business documents electronically between or within firms in a structured machine-retrievable data format. EDI permits data to be transferred without re-keying from a business application in one location to another business application in another location (Hansen and Hill 1989). While EDI has been discussed in the literature as a technology that can provide several advantages both strategic and operational to its adopters, the adoption rate has not been as high as predicted (Bergeron and Raymond 1997). EDI provides a faster, more accurate, and less costly method of communication with customers compared to other methods, such as mail, telephone, and personal delivery (Crum, Johnson, & Allen, 1998; Emmelhainz, 1989). Crum et al. (1998) describe EDI as “the direct computer-to-computer communication of inter-company and intra-company business documents in a machine-readable standard format”.

![Diagram showing EDI processes](attachment:image.png)
The inter-organizational aspect of EDI has received much attention. For example, Hill and Swenson (1994) emphasize the role of EDI in the electronic exchange of information between business partners in a structured format. EDI can be distinguished from other forms of electronic communication, such as fax and electronic mail, as variations of forms, from unstructured to highly structured (Hansen & Hill, 1989).

Individual organizations first adopt EDI technology and then attempt to increase its’ use in order to derive financial benefits (Iacovou, et al. 1995) or competitive advantage (Kumar et al. 1996, Sharfman et al. 1991, Sokol 1989). However, some firms are coerced into using EDI.

Integration of relations between business partners by using electronic means can facilitate critical processes such as ordering, invoicing, and logistics etc. Accuracy in data transactions reducing paper work, accelerating communications can provide competitive advantages for organizations as a result of using EDI.

1.2.2 Business-to-Business E-Commerce

The other important issue in this research is the Business-to-Business (B2B) point of view which illuminates the relations between business partners. It has been recently suggested that in B2B contexts, firms may achieve a competitive advantage over their rivals by investing in the communication of their distinctive competencies (Golfteto, 2003; forthcoming).

The use of the Internet to facilitate B2B commerce has attracted much attention from both academics and practitioners due to its potential impact on industry structure and the way business is conducted today (Hong 2002). Internet markets have the potential to widen the choices available to buyers, provide sellers access to a larger customer base, and slash transaction costs (Kaplan, Sawhney 2000).

Many enterprises are eager to take advantage of the emerging "Internet Economy". Internet based commerce offers more potential than just online storefronts (Business-to-Customer (B2C)) and auction sites (Customer-to-Customer (C2C)). It also offers opportunities in Business-to-Business
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(B2B) e-commerce. B2B covers the area of online exchange of information between trading partners. Some examples of B2B include:

- **Trading partner integration** between enterprises, forming supply and value chains and allowing automated coordination of business operations (e.g. order management, invoicing, shipping and government procurement).
- **Business process integration** of commerce sites, Enterprise Resource Planning systems and legacy systems.
- **Business-to-business portals** enabling formation of trading communities, electronic catalog management, content syndication, and post-sale customer management.

Example sites include [www.mySAP.com](http://www.mySAP.com), [www.I2I.com](http://www.I2I.com) and [www.ariba.com](http://www.ariba.com). As a definition B2B markets have fewer partners, closer buyer–seller relationships, better technology and better information exchange than business to consumer markets (Hutt and Speh 1998).

Nowadays most companies and their decision makers understand the benefits of the usage of inter-organizational systems, however adopting and implementing IOS encompass significant expenses, but as a strategic perspective in the long term it can be profitable from different aspects. Therefore, they are trying to pass all the barriers in order to adopt the IOS by their organizations.

### 1.2.3 Supply Chain (Management)

Various definitions of a supply chain have been offered in the past several years as the concept has gained popularity. The *APICS Dictionary* describes the supply chain as:

1. The processes from the initial raw materials to the ultimate consumption of the finished product linking across supplier user companies; and

2. The functions within and outside a company that enable the value chain to make products and provide services to the customer (Cox *et al.*, 1995).

Another source defines supply chain as, the network of entities through which material flows. Those entities may include suppliers, carriers, manufacturing sites, distribution centers, retailers, and customers (Lummus and Alber, 1997). The Supply Chain Council (1997) uses the definition:
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“The supply chain – a term increasingly used by logistics professionals encompasses every effort involved in producing and delivering a final product.”

Following the proposal of Christopher (1998, p. 15) a supply chain (SC) ‘. . . is a network of organizations that are involved, through upstream and downstream linkages in the different processes and activities that produce value in the form of products and services in the hand of the ultimate consumer.’

This definition stresses that all the activities along a SC should be designed according to the needs of the customers to be served. Consequently, the (ultimate) consumer is at best an integral part of a SC. The main focus is on the order fulfillment processes and corresponding material, financial and information flows.

1.3 Problem Discussion

Figure 1-2: Supply Chain Flow

1.3 Problem Discussion
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Considering the preceding discussions and the different point of views which are argued by academics and practitioners, it is understandable why at present, most companies and businesses intend to adopt Inter-organizational linkages to facilitate the relations between each other, and reducing costs both in manpower and bureaucratic tasks perspective.

Before an explanation is provided, it is important to note that adoption in organizations is under the influence of organizational behavior which is related to sociological characteristics of organizations, and the mentality of managers and decision makers. It is obvious that the monetary condition of organizations is as important as the mentality and other characteristics. Making a decision for adopting an innovation in organizations requires infrastructure and know-how or knowledge of implementing the innovation.

The usage of a technology that has the power to change the world, build mutually profitable relations and strengthen the bond between businesses and its customers, needs fresh thinking.

Since the early 1990s, the Automotive Industry Action Group (AIAG), sponsored by Ford, GM and Daimler-Chrysler, has conducted research on EDI benefits (Saccomano, 1996). The Manufacturing Assembly Pilot (MAP), whose main objective is to improve the speed and quality (accuracy, timeliness and accessibility) of information flowing along the supply chain, was conducted by The Big Three in collaboration with Johnson Controls (a first-tier supplier) and 12 third-tier suppliers (Margolin, 1995). In most studies the advantages of implementing and usage of IOL (EDI) by organizations is discussed, but there are several arguments available which discuss the disadvantages of EDI. High investment and operation costs of EDI systems are considered barriers (Krzeczowski, 1998; Senn, 1998). Some companies feel that investment in machinery is more important than in EDI (Vasilash, 1997). Also, some companies believe that EDI links cause loss of autonomy, resulting in a shift of bargaining power to hub companies at the expense of mentioned companies. Young et al. (1999), Reekers and Smithson (1996) also discussed this point.

Despite high costs for implementing IOL or requirement of trained work force for using IOL in various purposes in organizations, the speed of adoption of IOL is still not fast enough.

The concept of ‘supply chain’ is a relatively new innovation among Iranian industries, and this will be a novel attempt to predict adoption intention of web based EDI by Iranian suppliers.
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My investigation will consider the pros and cons of adopting EDI internationally and asks the following question: “What factors influence Iranian suppliers and buyers in the automotive manufacturing sector supply chain to consider adopting EDI”.

1.4 Research Questions

According to Teo et al. (2003) there are three organizational pressures available and these pressures can have influence on their behavioral situation for adopting innovations.

It is obvious that organizations in any country are under the influence of their social and behavioral circumstances; hence, the organizational pressures may have different impacts in different countries.

With reference to availability of above mentioned pressures in organizations and on the other hand considering Iranian organizational behavior, this research attempts to find the influence of the above-mentioned pressures and find which one (if any) has an impact on adoption intention. To be more precise, I will define the following questions:

1- How can Mimetic pressures lead organizations to adopt EDI?
2- How can Coercive pressures lead organizations to adopt EDI?
3- How can Normative pressures lead organizations to adopt EDI?
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2 Chapter Two - Literature Review

2.1 Introduction

In the previous chapter the background and problems associated with the subject at hand were presented. That discussion led to a research proposal and a number of questions. In this chapter relevant literature will be reviewed.

2.2 Adoption of Inter-organizational Linkages

O’Callaghan et al. 1992 argue that not only is it likely that Inter-organizational systems will radically alter the competitive landscape of industries, but there is growing consensus that computer based inter-organizational systems will have significant impact on the relationship between channel members as well. For this reason companies intending to adopt inter-organizational linkages (IOL) gain competitive advantages compared to others in the business environment.

However, because interactive IT-based IOL induce uncertainty related to network effects and reciprocal interdependence (Markus 1987), the decision to adopt may have more to do with the institutional environment in which a firm is situated rather than rational intra-organizational and technological criteria. Interactive innovations diffuse when others observe and imitate the early adopters to replicate their success or to avoid being perceived as laggards, or when they communicate with these early adopters and are persuaded, induced or coerced to adopt (Teo, et al. 2003).

As mentioned before, EDI is a traditional form of inter-organizational information system. Chwelos, et al. (2000), argue that three factors are available as determinants for the adoption of the Electronic Data Interchange (EDI) which are: readiness, perceived benefits and external pressure.
By testing all these factors, together in one model, it is possible to investigate their relative contributions to EDI adoption decisions. He also argues that these three factors address the three major types of adoption perspectives: the technological, the organizational, and the inter-organizational. EDI promises many benefits ranging from modest-reduced communication and administration costs, improved accuracy, business process re-engineering 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 diffusions of innovations (DOI). Fundamental approach to the study of the adoption of new technologies (Tornatzky and Klein 1982, Rogers 1995), has been either explicitly or implicitly, a foundation for much EDI research (e.g. O'Callaghan, Kaufman and Konsynski, 1992; Premkumar, Ramamurthy, and Nilakanta 1994, Teo and Wei 1995).

O'Callaghan et al. (1992), examined independent property and casualty insurance agents, and found out that relative advantage is a predictor of intent to adopt, as well as a differentiator between adopters and non-adopters. Likewise, Premkumar et al. 1994, in a survey of EDI adopters found that relative advantage and compatibility are predictors of the extent of adoption - the degree of EDI usage in its first application (operationalized as either purchase orders or invoices).

EDI systems have three immediate effects on the quality of Inter-organizational communications: (1) Faster Transmission, (2) Greater Accuracy, and (3) More Complete Information about the transactions (Stern and Kaufmann 1985). The speed of transmission helps shorten lead times. Purchase orders arrive faster and if they are in a format the computer understands, order processing times and costs are reduced. Direct computer-to-computer or terminal-to-computer linkage illuminate the need for re-keying the order when it is received (Monczka and Carter 1989).

The relative advantage of EDI over traditional exchange processes not only involves transaction cost reduction for the channel members, but also allows greater servicing of the channel's customers in the output market. The quick response to customers' needs provided by EDI creates a competitive advantage for the downstream channel member. In highly competitive output markets, the potential for the competitive advantage has a significant impact on the likelihood of adoption of new technology (O'Callaghan et al. 1992).

In the case of EDI, compatibility is normally determined by the system's user interface (i.e. communications software), the level of new hardware investment, and the other system characteristics, such as message format that dictate the ease with which the EDI interface can be
integrated with the back office computer systems in the organization (e.g. whether modifications to present systems are necessary). The perceived compatibility of EDI in the target organization therefore, relates to two distinct factors; physical system compatibility and organizational compatibility (O'Callaghan et al. 1992).

Though the target firm's perception of the costs and benefits of EDI are the most critical inputs in its decision whether or not to adopt the EDI technology, that decision is not made in a vacuum; rather, it is responsive to the social and relational context in which it takes place. Three primary external sources of influence of EDI decisions have been discussed by O'Callaghan, namely (1) similar firms that have already adopted EDI and whose adoption encourages imitation, (2) channel partners who have developed EDI and who seek the operational and marketing benefits available through the target firm's adoption and (3) formal industry structures (e.g. organizations and publications) whose principals endorse the industry wide benefits of broad-based EDI adoption.

Teo et al. 2003 investigate a set of institutional factors that influence the intent to adopt financial EDI (FEDI). FEDI, being an interactive technological innovation that facilitates the electronic transmission of structured payment and remittance information between a corporate payer, corporate payee, and their respective banks, cannot be independently adopted by any organization. FEDI success depends on the willingness of an adopting organization's suppliers and customers to accede to electronic linkages, and on the universal acceptance of a common standard for FEDI transactions by banks, value-added networks, and businesses for enabling such linkages.

Given the growing recognition of institutional interdependence as an issue that could potentially shape the adoption and use of internet technology or IT based IOL (Orlikowski and Barley, 2001), Teo et al. focus on institutional based theories that add a much needed perspective on the role of institutional variables in IT based IOL adoption that is missing from much of the IT innovations adoption literature.

In this research after considering available possibilities and infrastructures among the automotive companies' part suppliers and conforming the institutional factors which Teo et al (2003) used for measuring the adoption intention for FEDI, the Iranian automotive Supply Chain and predisposition for adoption of EDI are examined. (The unavailability of financial transactions in Iran is the reason of changing the FEDI concept to EDI).
2.3 **Institutional Perspectives on Adoption**

The institutional approach argues that in modern societies where organizations are typified as systems of rationally ordered rules and activities (Webber 1946) organizational practices and policies become readily accepted as legitimate and rational and a means to attain organizational objectives (Meyer and Rowan 1977). The institutional approach to the study of organizations has led to significant insights regarding the importance of institutional environments to organizational structure and actions (Teo et.al. 2003).

Institutional theories posit that organizations face pressures to conform to these shared notions of appropriate forms and behaviors, since violating them may call into question the organization's legitimacy and thus affect its ability to secure resources and social support (DiMaggio and Powell 1983, Talbert 1985). Considering the above-mentioned definitions and studies we can further speculate that organizations are under the influence of pressures to be isomorphic with their environment, which incorporates both interconnectedness and structural equivalence (Burt 1987). Inter-connectedness refers to inter-organizational relations characterized by the existence of transactions tying organizations to one another while structural equivalence refers to the occupying of a similar position in an inter-organizational network.

DiMaggio and Powell (1983) distinguished between three types of isomorphic pressures - coercive, mimetic, and normative and suggested that coercive and normative pressures normally operate through interconnected relations while mimetic pressures act through structural equivalence (Teo et al. 2003).

Teo et al. 2003 studied these three pressures which have also been discussed by DiMaggio and Powell 1983 and its impact on adoption of FEDI in organizations, hence for achieving the purpose of this research these pressures are considered in order to find their influence in adoption intention for EDI in Iranian automotive Supply Chain.

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, continues 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 Clain 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 adoption the degree of EDI usage in its first application (operationalized as either purchase orders or invoices). Teo et al. (2003) 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 focus 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 inter-organizational 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 (Gopalakrishnan and Damanpour 1997). 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. On the contrary, IS research can mainly be classified into the variance sociologists group, and has focused on the innovation level of analysis and the development of "middle range" theory 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 in particular will vary across organizations.

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 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 degree, 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 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 organizations 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.

Collective actions and technology have been studied within a number of disciplines. Bouchard (1993) labels this collected body of work, "critical mass theory". However the positive benefits of having a critical mass of firms adopting the same technology are only one aspect of inter-organizational 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 inter-organizational level need to be characterized.
Recent EDI research has incorporated both inter-organizational and organizational factors with somewhat mixed findings. Saunders and Clark (1992) examined the impact of perceived benefit and perceived costs. They found that perceived costs reduce intent to adopt surprisingly. Premkumar and Ramamurthy (1995) found that the technological factor, internal need and the organizational factor, top management support, as well as the inter-organizational factors, competitive pressure and exercised power, influence whether a firm's EDI adoption decisions are proactive or reactive. Premkumar et al. (1997) examined EDI adoption in the European tracking industry and discovered that firm size and top management support (organizational factors) as well as competitive pressure and customer support (inter-organizational factors) were significant in predicting adoption of EDI. 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). EDI has also been studied from the micro-economics perspective and some of this work has provided direct estimates of the financial impact of adopting EDI.

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 in three levels: the technological, the organizational and the inter-organizational. 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 Mimetic Pressures

Mimetic pressures may cause an organization to change over time to become more like other organizations in its environment (DiMaggio and Powell 1983). It is also mentioned that this pressure can manifest itself in two ways: the prevalence of a practice in the focal organization's industry and the perceived success of organizations within the focal organization's industry that have adopted the practice (Haveman 1993). An organization will imitate the actions of other structurally equivalent organizations because those organizations occupy a similar economic network position in the same industry and, thus, share similar goals, produce similar commodities, share similar customers and suppliers, and experience similar constraints (Burts 1987).
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Faced with problems with uncertain solutions (or technologies), organizational decision makers may succumb to mimetic pressures from the environments to economize on search costs (Cuyert and March 1963), to minimize experimentation costs, or to avoid risks that are borne by first-movers (Lieberman and Montgomery 1988). It is highly possible that potential adopters of FEDI may monitor their environment closely and model themselves after similar organizations that have adopted FEDI.

In the Iranian business environment except for the limitation of financial transactions, the other electronic activities are used regularly. Nowadays, larger companies in Iran implement and use inter/intra linkages to perform their activities, so the environment is ready and smaller companies are more familiar with these systems and understand the perceived benefits of implementing and using IOL systems. Iranian automotive companies can be considered as a pioneer in implementing inter-organizational systems for their communications and establishing their relation with their other partners.

Sociological research suggests that decisions to engage in a particular behavior depend on the perceived number of similar others in the environment that have already done likewise (Teo et al. 2003). In the context of FEDI adoption, the greater the extent of adoption in a given sector, the more likely the potential adopters in that sector would adopt the innovation to avoid being perceived as technologically less advanced and as less suitable trading partners than their competitors that have adopted (Teo et al. 2003). Respectively, Iranian companies also intend to adopt EDI in order not to be considered as less technologically advanced. In Iran because of lack of necessary infrastructure and present limitations, FEDI is not implemented and also EDI should be considered as a prerequisite of FEDI.

In the context of FEDI adoption, potential adopters will be more likely to adopt if they perceive that FEDI has conferred successes on adopters, especially in the banking and airline industries (Clemons, 1990, Copeland and McKenney 1988).

According to the aforementioned definitions the following hypothesis have been considered for measuring the mimetic pressures in targeted organizations for this research for EDI adoption in Iranian organizations.

- Greater mimetic pressures will lead to greater intent to adopt EDI.
- Greater extent of adoption of EDI among its competitors will lead to greater intent to adopt EDI.
- Greater perceived success of competitors that have adopted EDI will lead to greater intent to adopt EDI.

**Figure 2-1: Mimetic Pressures and Adoption**

### 2.6 Coercive Pressures

Coercive pressures are defined as formal or informal pressures exerted on organizations by other organizations upon which they are dependant (DiMaggio and Powell 1983). Evidence suggests that coercive pressures on organizations may stem from a variety of sources including resource-dominant organizations, regulatory bodies, and parent corporations, and are building into exchange relationships (Teo et al. 2003). When an organization enters into an exchange relationship that runs counter to institutionalized patterns, the maintenance of the relationship would generally be difficult and require greater effort, or worse, be unsustainable. Thus, organizations characterized by an institutionalized dependency pattern are likely to exhibit similar structural features such as formal policies, organizational models, and programs.

In the context of FEDI adoption it is believed that coercive pressures stem mainly from dominant suppliers, dominant customers, and the parent corporation. Organizations are thus likely to receive both formal and informal pressures from dominant supplier adopters that want to maximize their benefit of adoption through speedy cash collection and reduction of paperwork. Similarly, both General Motors and Ford Motor Company required that their suppliers use EDI in order to retain their business (Fallon 1988, Webster 1995). Organizations may receive similar pressure from dominant customer adopters that want to reduce administrative disbursement costs and enhance systems efficiencies. Organizations may also receive coercive pressure from parent corporations in addition to resource dominant trading partners.
In Iranian automotive companies, due to the importance of SAPCO being the main customer, it can be considered as a parent company for part suppliers in Iranian automotive Supply Chain. It can, therefore, put coercive pressure on these suppliers to adopt EDI. I propose the following factors for measuring the coercive pressures in organizations:

- Greater coercive pressures will lead to greater intent to adopt EDI.
- Greater perceived dominance of its suppliers that have adopted EDI will lead to greater intent to adopt EDI.
- Greater perceived dominance of its customers that have adopted EDI will lead to greater intent to adopt EDI.
- Adoption of EDI by Parent Corporation will lead to greater intent to adopt EDI.

**Figure 2-2: Coercive Pressures and Adoption**
Chapter 2- Literature review

2.7 Normative Pressures

According to social contagion literature, a focal organization with direct or indirect ties to other organizations that have adopted an innovation is able to learn about that innovation and its associated benefits and costs, and is likely to be persuaded to behave similarly (Burt 1982). These normative pressures manifest themselves through dyadic inter-organizational channels of firm-supplier and firm-customer (Burt 1982) as well as through professional, trade, business, and other key organizations (Powell and DiMaggio 1991). Hence, in the context of FEDI adoption, normative pressures faced by an organization tend to be increased by a higher prevalence of adoption of FEDI among its suppliers and customers, and by its participation in professional, trade, or business organizations that sanction the adoption of FEDI (Teo et al. 2003).

As an organization perceives more of its contacts adopting an innovation, adoption may come to be deemed normatively appropriate for the organizations (Davis 1991). Some researchers have observed that a wide extent of use may also serve as a proxy indicator that a practice has technical value (Abrahamson and Rosenkopf 1993, Haunschild and Mimer 1997). Organizations contemplating FEDI adoption are likely to be influenced by the extent of adoption among their suppliers and customers with whom they have direct ties. Key institutions, that could influence organizational behavior with respect to IT innovation adoption include government sanctioned bodies, standards bodies, and professional and industry association (King et al. 1994).

Teo, et al. (2003), conclude the following factors for measuring the normative pressures in organizations. Now according to the limitations of financial transactions, measurement of normative pressures should be considered for implementing the EDI in Iranian automotive Supply Chain. Hence, the following factors should be included:

- Greater normative pressure will lead to greater intent to adopt EDI.
- Greater extent of adoption of EDI among its suppliers will lead to greater intent to adopt.
- Greater extent of adoption of EDI among its customers will lead to greater intent to adopt.

According to previous researches when technologies are poorly understood, mimetic pressures are likely to be strengthened, unlike coercive and normative pressures; consequently Teo et al. 2003 believe that, mimetic pressures will have a more significant impact on intention to adopt EDI when perceived complexity is higher than when it is lower.
Chapter 2- Literature review

After defining each of organizational pressures and related sub-constructs in this research it can be possible to consider all the items (constructs and sub-constructs) altogether in one model shows as follows.

Figure 2-3: Normative Pressures and Adoption

Figure 2-4: Organizational Pressures and Adoption
3 Chapter Three - Methodology

3.1 Methodology

This chapter contains a description of the core research methodology as well as the methods used in the study. Selection of methodology has been carried out according to the research problem and research questions. Classifying business research on the basis of purpose, allows us to understand how the nature of the problem influences the choice of research strategies. The nature of the problem defines whether the research is exploratory, descriptive or causal (Zikmund 2000).

3.2 Purpose of Research

According to Malhotra and Birks (1999) research design can be summarized in the following table:

![Figure 3-1: Research Design Process](image)

After designing the research according to the considered problem the type of research can be implemented. The research design is based on the purpose and strategy of research. The purpose of
research can be grouped in different ways. According to Zikmund (2000) research can be exploratory, descriptive or causal. Exploratory studies are used to clarify and define the nature of a problem. These kinds of studies are used to analyze a situation and to reach a better understanding of the dimensions of a problem. The purpose is however not to define a particular guideline. Exploratory research is instead conducted with the expectation that subsequent research will be required to determine the proper course of actions.

Unlike exploratory studies, descriptive researches are based on some previous understanding of the nature of the research problem. The purpose of descriptive studies is to describe the characteristics of a complex phenomenon or population. To describe something actually means to portray, register and document what has been identified. But descriptions are not neutral. To describe means to choose a perspective, levels of analysis, terms and concepts and to observe, register, systemize, classify and construe. Even though the answer to the question why is never given, descriptive information is in many cases enough to solve business problems (Zikmund 2000).

Causal or exploratory researches are often preceded by exploratory and descriptive research. Causal studies refer to research conducted to identify cause-and-effect relationships among variables where the research problem has been defined narrowly. Research with the purpose of inferring causality should according to Zikmund (2000):

“Establish the appropriate causal order of events. Measure the simultaneous variation, i.e. the occurrence of two phenomena that vary together, between the presumed cause and effect. Recognize the presence or absence of alternative reasonable explanations or causal factors”.

### 3.3 Thesis Research Purpose

The aim of this research is to find out how organizational pressures can influence companies to adopt inter-organizational linkages, i.e., the role of organizational pressures in adoption intention for companies. The focus of this research is on the Iranian auto part suppliers as a target to measure their intention to adopt EDI. It can be considered that the organizational pressures may have not any influential role in adoption intention in Iran because of the difference between behaviors and organizational conditions.
3.4 Research Approach

As mentioned above, there are some different types of research methods available. For researching complex situations like processes or behaviors where greater depth is required the case study approach is suitable. Case study data should be accessible and easy to interpret. Unlike case studies, survey is an approach where many participants are studied at the broader level but detailed information of each participant is limited.

There are two ways of approaching the data collected, qualitative or quantitative. To decide which research to employ depends on the nature of information needed to answer the stated research questions (Yin 1989).

According to Yin (1989), qualitative studies are conducted, when the research collects, analyzes, and interprets detailed data concerning ideas, feelings and attitudes. Additionally, Yin (1989) states that qualitative methods are often related to case studies, where the objective is to receive through information and consequently obtain a deep understanding of the research problem. The emphasis of qualitative researches is more on words rather than numbers. Holme and Solvang (1997) state that gathering, analyzing and interpreting data that can not be quantified is by nature qualitative.

Qualitative research is characterized by a great closeness to the respondents or to the source that the data is being collected from. The data should be collected in circumstances that are similar to ordinary and everyday conversation.

Because the researchers use only guidelines, which give the respondents a chance to affect the dialog, this form of interview will provide the interviewers with reliable information (Holme & Solvang 1997; cited by Mottaghian 2004).

Unlike qualitative research, quantitative research is often formal and highly structured. Selectivity and distance from the source of information also characterize this method. The researcher has to decide what questions have to be asked in advance without considering whether the respondent finds them important or not. This gives the researcher a high degree of control (Holme & Solvang 1997; cited by Mottaghian, 2004).
Quantitative research is usually associated with the natural science mode of research where data is measurable, obtained from samples and observations seeking for relationships and patterns that can be manifested in numbers rather than words (Tull & Hawkins, 1990).

It was previously mentioned that this research will focus on quantitative research method. The objective is to investigate and find out the adoption intention or organizational behavior for adoption of EDI by referring to the numbers which have been gathered by questionnaires.

### 3.5 Thesis Research Approach

For conducting this research in Iran, with reference to a study which had been formerly conducted in Singapore by Teo, et. al for measuring intention to adopt Financial EDI (FEDI) by Singaporean companies, the same approach was selected to measure and find out the impact of organizational pressures on adoption behavior in Iranian auto part suppliers. The main objective has been to characterize the influence of organizational pressures in adoption intention of automotive part suppliers in B2B environment, as mentioned above (mimetic, coercive and normative pressures). I will be using the Singaporean study as a model to find out whether organizational pressures have an impact on adoption intention in Iran or not.

There are other similar studies (Chwelos et. al, 2000) conducted for measuring the intention to adopt EDI therefore I described the findings according to the gathered data.

### 3.6 Research Strategy

For conducting social science research, Yin (1994) discussed five different strategies. For more clarification to determine which strategy is more suitable for the purpose of research, the following table shows the three criteria based on the research question.

Considering different criteria proposed by Yin (1994) a study using "how much or how" questions, should be implemented in the survey. Therefore, a researcher should use a set of relevant questions by designing a questionnaire.
Chapter 3- Methodology

### Table 3-1: Relevant Situation for Different 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: Case study research: design and methods (pp.6), Yin, Robert K., 1994, Thousand Oaks, CA: Sage, cop.

#### 3.7 Thesis Research Strategy

As discussed before, my research is testing the model previously employed in Singapore by Teo, et al. (2003).

The purpose of this thesis is to reach an understanding as to how much is the impact of organizational pressures on intention to adopt EDI, or what is the influence of organizational pressures on adoption intention in supply chain of Iranian automotive part suppliers which forms a B2B environment.

On the other hand, it is mentioned above that, for the quantitative approach, researchers use post positive claims for developing knowledge, employ strategies of inquiry such as experiment and survey and collect data on predestine instrument for statistical data output (Creswell 2003). Quantitative research is often referred to as hypothesis-testing research. Experimental design is implemented for the variables in question (the dependant variables) are measures while controlling the effect of selected independent variables. Subjects included in the research are selected randomly to reduce errors (Newman and Benz 1998). Since the purpose of this study is to find and understand the organizational behavior on adoption, therefore survey will be selected as the research technique to test the model. This approach can also provide a basis for establishing generalizability. In order to reach the proposed outputs and achieve the logical results according to the research problem and respectively research questions the model was modified. Using the result
of short interviews it can be concluded that some variables are not useful and do not work in the Iranian organizational environment.

### 3.8 Sample Selection

The chosen company for gathering the necessary data was SAPCO (Supply Automotive Part Company). This company was chosen because it fulfils all the criteria stated in chapter one, i.e. a B2B company which has a strong relationship with automotive part suppliers in a manufacturing market with a presence on the World Wide Web using the Internet in a specific way to conduct their business. Also SAPCO as the main and major automotive part supplier, attracts most of the companies in the supply chain in order to have business relation with this company for several reasons. The other reason for choosing this company was that they supported this research and gave access to the researcher and helped distribute the questionnaires for part suppliers which were mainly dependent on this company.

#### 3.8.1 SAPCO

Supplier of Automotive Parts Company (SAPCO) is a subsidiary of the Iran Khodro company, the largest auto-manufacturer in Iran and affiliated to the government of Islamic Republic of Iran. It was founded in 1993 and soon after it became the pioneer in auto-parts industry. It is actively involved in design, engineering, quality and planning aspects of auto-parts. The number of employees are approximately 1500 persons. 60% of these employees range from undergraduates to PhD degree holders.

Besides working with existing auto-parts suppliers, SAPCO has conducted active and vast research and as a result, has discovered potential capabilities of new suppliers. At the present time more than 500 of SAPCO’s auto-parts manufacturers are working closely with this company. Considering SAPCO's widespread network of auto parts manufacturers, the company is able to provide a great variety of auto parts in the shortest possible time. One of the successful accomplishments of SAPCO is the buy-back agreement with Peugeot Company to supply necessary auto-parts for the PSA group of France.

SAPCO outlined a set of objectives as follows:
- To identify promising auto-parts manufacturers.
- To design effective auto-parts distribution network.
- To open channels of communication between other international automotive part suppliers and vehicle manufacturers.
- To manage the supply chain for accurate quantity, high quality and fastest delivery time in wide range of products to Iran Khodro (SCM).

Considering the range of activities of SAPCO, having international relations is a must. Exporting auto-parts to UAE and European countries such as France and England drive SAPCO to use organizational innovations as a necessary tool for improving and developing its business with these partners. Integrating the inter-organizational systems can facilitate the business process for SAPCO in dealing with international partners to function more efficiently and also aid in its quest to remain technologically up-to-date.

### 3.9 Data Collection

Data gathering may range from a simple observation at one location to a grand survey of multinational corporations in different parts of the world. The method selected will vastly determine how the data are collected. Questionnaires, standardized tests, observational forms, laboratory notes and instrument calibration logs are among the devices used to record raw data (Cooper & Schindler 2003).

Research method strategy has direct influence on choosing the data collection method. There are two main approaches to gather data/information about a phenomenon, person, situation or a problem. As a first approach, when the information required is already available and only needs to be extracted, it means that these data are available from secondary sources; therefore, it is called Secondary data.

The second approach for gathering the required information is to collect the data from primary sources, which is called Primary data (Kumar, 1999). According to Wiedersheim and Eriksson, (1997; cited by Mottaghian, 2004) secondary data is data that has already been collected by some one else for another purpose, since primary data is collected directly by the researcher for a specific purpose (Wiedersheim & Eriksson, 1997; cited by Mottaghian 2004).
Since this research and model have been conducted before (Teo, et al. 2003) and the survey tool (questionnaire) was prepared, we only need to customize the questionnaire for domestic usage to obtain the necessary information for this research. Therefore, the primary information was collected in the form of a survey.

**3.10 Thesis Data Collection Method**

A researcher should train for a specific purpose of the research, argued by Yin (1994). For this thesis we only need to customize the available questionnaire by applying some modification. The necessary modification was carried out by interviewing managers and experts and knowledgeable people in SAPCO to gain familiarity with organizational behavior of Iranian auto-part suppliers in order to make the survey questions more consistent and relevant.

The results of interviews led us to modify the questionnaires and make it conform to Iranian organizational behavior as follows:

Elimination of some sub-constructs such as Parent corporation's practices and Participation in industry business, because it is not applicable among auto part suppliers considering their size and capability.

The elimination of some constructs such as ‘perceived complexity’ has been due to the lack of knowledge of suppliers in using EDI, consequently the degree of complexity cannot be assessed.

Eliminating some control variables such as ‘Float management’ has been due to it not being applicable among the suppliers and there is no record for its application.

For collecting the required data a combination of interviews and questionnaires were used. Interviews with experts in SAPCO were mainly about how adoption of EDI has affected competitive advantage of suppliers and how suppliers feel themselves empowered by using EDI and what is the level of supplier's intention for adoption. The questionnaires generated after the interviews were checked by experts in SAPCO to prevent any unforeseen problems.
3.11 Sample Selection of Respondents

According to Zinkmund (2000, pp. 338-365) "The process of sampling involves any procedures using a small number of items or parts of the whole population to make conclusions regarding the whole population". Zinkmund (2000) discussed that sampling could be done with a probability or a non-probability sampling method. Zinkmund (2000, p.350) argued that non-probability as, "A sampling technique is one where units of the sample are selected on the basis of personal judgment or convenience". The non-probability method of sampling includes:

- Convenience sampling
- Internet samples
- Judgment (Purposive) sampling
- Quota sampling
- Snowball sampling

As mentioned above, one of the non-probability sample selection techniques is based on personal judgement, therefore SAPCO was selected for two reasons:

**Strong background in automotive industry supply chain** - Reviewing the history of SAPCO shows that this company is responsible for all the necessary activities, from signing and conducting contracts for manufacturing vehicles with international car manufacturer, Iran Khodro (as the biggest automotive manufacturing company in Iran) to fulfilling procurement processes to supply required parts and know-how (as a raw material or fundamental requirements) for production line, to support either international contracts or national productions.

**Being the dominant part supplier** - SAPCO was chosen with the objective of accessibility to the information of a large number of suppliers through its database. Good understanding of suppliers and enough recognition of their capability led SAPCO to gather all the necessary information of suppliers in a database for their further usages. The questionnaires were distributed to those who were considered more capable and intended, was done, by consulting with experts in SAPCO to select 200 suppliers from the available list of 500.
3.12 The Survey

After several meeting and interviews in order to focus the research, a list of 200 suppliers was prepared from chosen companies among the SAPCO’s 500 database of local part suppliers. These 200 are considered more capable and have more potential in both technological and financial conditions to adopt organizational innovation.

The definition and description of EDI were included in the survey instrument to improve the validity of the responses. A package containing a covering letter stating the study objective, questionnaire and a prepaid reply envelope was sent to CEO/CIO of each company.

The CEO and the CIO were selected as the key people making EDI adoption decisions. Moreover, as opinion leaders (Rogers 1995), they were likely to be recipients of diverse information, and would thus be most aware of their environment. Viewpoints of different individuals are particularly important in the institutional context because they are entrenched simultaneously in a series of similar and different web of values, norms, rules, beliefs and taken-for-granted assumptions (e.g., inter-organizational web versus professional web), as argued by Teo 2003.

Respondents were instructed to complete the appropriate version of the questionnaire, depending on whether they were adopters or not. Of the 200 questionnaires sent out, two could not be delivered by the postal service at the stated addresses. Additional parcels were sent to 198 respondents at their addresses. Follow-up calls were made to increase the response rate. In the end, the total number of replies reached 52, which is equivalent to 26 percent of total questionnaires sent out.

3.13 Analysis Method

The analyzing methods for gathered data in this research were divided in two parts. First is Confirmatory Factor Analysis which was implemented to validate the model and respectively compatibility and relativeness of the question to the model, and the second method was path analysis which was implemented to discover the meaningful relation(s) between constructs/sub-constructs and adoption intention in this thesis.
4 Chapter Four – Frame of Reference

4.1 Frame of Reference

In the previous chapter, a literature review was carried out with the objective of better understanding of the problem. We also came up with three specific research questions.

In this chapter the three research questions (RQ) will be elaborated. To guide the readers, each research question will start with a discussion after the research questions are formulated. However, the main goal of this chapter is to present the frame of reference for the study.

The main purpose of this study which has been discussed several times before is ascertaining the impact of organizational pressures in Iranian industries (auto part suppliers) for the adoption of inter-organizational linkages. It is obvious that organizational behavior in different countries is not similar. The culture and level of development of each country can have a direct influence on organizational behavior and decision making. In short, these can either encourage or hinder innovation and change.

As it has been discussed in the first chapter, business-to-business (B2B) and Supply chain (SC) are concepts new to Iran. In the past few years, by establishing foreign companies (as a licenser or joint venture) in Iran, international relations changed and familiarity with organizational innovations are now more widespread than before. On the other hand, the perceived progress in technological knowledge and ability of Iranian academics and organizations, make terms like B2B and SC more meaningful. Consequently, implementing modern systems for gaining the competitive edge has become the top priority for key decision-makers.
4.2 Research Problem

With reference to the literature and main purpose of this thesis the research problem is as follows:

“What factors influence the intention of Iranian buyers and suppliers to adopt EDI in the automotive manufacturing sector supply chain?”

The literature review has made it clear that there have been several previous studies about the impact of organizational pressures in adoption intention (Chwelos 2000, DiMaggio 1983, Teo 2003). The aim of this research is to clarify and measure the impact of organizational pressures for adoption in Iranian industries whether they have or do not have any influence in adoption intention.

4.3 Research Questions

In 2003 Hock H. Teo wrote an article called “Predicting Intention to Adopt Inter-organizational Linkages: An Institutional Perspective”. In this article the author introduced a theoretical model and a framework of three essential factors. The author claimed that organizations respond to an interactive environment consisting of other organizations responses to its environment. Thus, organizations are subject to pressures to be isomorphic with their environment, which incorporates both interconnectedness and structural equivalence (Burt 1987). Interconnectedness refers to inter-organizational relations characterized by the existence of transactions tying organizations together while structural equivalence refers to occupying a similar position in an inter-organizational network.

DiMaggio and Powell (1983) also distinguished between three types of isomorphic pressures; coercive, mimetic, and normative, and suggested that coercive and normative pressures normally operate through interconnected relations while mimetic pressures act through structural equivalence. The research questions needed for this thesis were discussed based on the theories presented by Teo.

DiMaggio and Powell (1983, p.150) recognized that Mimetic pressures may cause an organization to change over time to become more like other organizations in its environment. It is also argued that mimetic pressures show themselves in two ways; existing of a practice in a focal organization's industry or perceived success of industries that have adopted the practice.
Chapter 4- Frame of references

Teo (2003, p.21) further suggested that an organization will imitate the actions of other structurally equivalent ones because those organizations inhabit the same economic network position in the same industry.

4.3.1 The First Research Question

Considering the above mentioned discussion and to find the existence and furthermore, the influence of mimetic pressure in Iranian auto part suppliers industry the first question and its corollaries will be formulated as follows:

My first research question: “How can greater mimetic pressure lead to greater intent to adopt EDI?”

In the context of EDI adoption by extending adoption in a given sector the potential adopters would adopt innovation to avoid being perceived as a less suitable partner than their competitor, hence, a corollary hypothesis would be: “Greater extent of adoption of EDI among its competitors will lead to greater intent to adopt EDI.”

It can be also remembered that organizations imitate the behavior of those whom they perceive as successful. But there are no studies directly examining mimicry of IT practices. There is implied evidence that followers, out of competitive necessity, imitate pioneers that have successfully exploited IT, therefore: in the context of EDI adoption potential adopters will be more enthusiastic to adopt EDI for its perceived success, and hence the corollary would be: “Greater perceived success of competitors that have adopted EDI will lead to greater intent to adopt EDI.”

4.3.2 The Second Research Question

Following the objective of this study the second research question and its corollaries would be as follows: “How can greater Coercive pressures lead to greater intent to adopt EDI?”

In the context of EDI, perceived coercive pressures stem mainly from dominant suppliers or customers. Several information system (IS) researchers have argued on the relevance of coercive isomorphism for EDI adoption (e.g., Chwelos et al. 2001). In the context of EDI adoption, organizations are likely to receive both formal and informal pressures from dominant supplier
adopters that want to maximize their benefits of adoption through speedy cash collection and reduction of paperwork (Teo et al. 2003).

In addition, organizations may imitate the adoption behavior of dominant suppliers and dominant customers that have adopted EDI to obtain legitimacy or to demonstrate their fitness to do business with these dominant organizations. Hence, the two following corollaries to the question would be:

1- Greater perceived dominance of its suppliers that have adopted EDI will lead to greater intent to adopt EDI.
2- Greater perceived dominance of its customers that have adopted EDI will lead to greater intent to adopt EDI.

4.3.3 The Third Research Question

Finally, regarding the discussion of normative pressure and according to social epidemic literature, a focal organization with direct or indirect ties to other organizations that has adopted an innovation is able to learn about that innovation and its associated benefits and costs, and is likely to be persuaded to behave similarly (Burt 1982). Consequently the research question can be formulated as follows: “How can greater Normative pressure lead to greater intent to adopt EDI?”

If two actors have direct and frequent communication/relaiton with each other, they are more likely to think alike or behave similarly (Burt 1982). Organizations pondering EDI adoption are likely to be influenced by the extent of adoption among their suppliers and customers with whom they have direct ties. Hence, two corollaries to the question would be:

1- Greater extent of adoption of EDI among its suppliers will lead to greater intent to adopt.
2- Greater extent of adoption of EDI among its customers will lead to greater intent to adopt.

The factors were rejected as not important for this thesis work, after interviews with experts such as managers and experts who were familiar with the suppliers in the supply chain were made.
Chapter Five - Results and Discussions

5.1 Introduction

In this chapter, I present and analyze the empirical data from questionnaires. As discussed in previous chapters, the questionnaires were inspired by former research conducted in Singapore (Teo et al. 2003). They were modified to make them closer to Iranian organizational environment, with the help of experts in SAPCO.

5.2 Demographics

Firm-level data were derived by averaging the scores of each item for all respondents from each organization. There were 52 responses from 198 suppliers. The profile of respondents will be demonstrated as follows:

EDI application among suppliers is shown in Table 5-5 and demonstrated graphically in Graph 5-1. They show that the most popular application of EDI among suppliers is “ordering” which is mainly used by them to place their “orders” through the computer, or send/receive it by fax as a traditional usage of EDI.

<table>
<thead>
<tr>
<th>EDI Application</th>
<th>Frequency (N=198)</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ordering</td>
<td>11</td>
<td>21.2</td>
<td>39.3</td>
<td>39.3</td>
</tr>
<tr>
<td>Procurement</td>
<td>1</td>
<td>1.9</td>
<td>3.6</td>
<td>42.9</td>
</tr>
<tr>
<td>Invoicing</td>
<td>3</td>
<td>5.8</td>
<td>10.7</td>
<td>53.6</td>
</tr>
<tr>
<td>Ordering &amp; Procurement</td>
<td>4</td>
<td>7.7</td>
<td>14.3</td>
<td>67.9</td>
</tr>
<tr>
<td>Ordering &amp; Logistic</td>
<td>3</td>
<td>5.8</td>
<td>10.7</td>
<td>78.6</td>
</tr>
<tr>
<td>Ordering &amp; Invoicing</td>
<td>5</td>
<td>9.6</td>
<td>17.9</td>
<td>96.4</td>
</tr>
<tr>
<td>Procurement &amp; Invoicing</td>
<td>1</td>
<td>1.9</td>
<td>3.6</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>28</td>
<td>53.8</td>
<td>100.0</td>
<td></td>
</tr>
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<td>Missing</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>System</td>
<td>24</td>
<td>46.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>52</td>
<td>100.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 5-1: Profile of using EDI Application among Suppliers

<table>
<thead>
<tr>
<th>EDI Application</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Procurement &amp; Invoicing</td>
<td>39</td>
<td>50</td>
<td>19.2</td>
<td>19.2</td>
</tr>
<tr>
<td>Ordering &amp; Invoicing</td>
<td>11</td>
<td>18</td>
<td>26.9</td>
<td>46.2</td>
</tr>
<tr>
<td>Ordering &amp; Logistic</td>
<td>14</td>
<td>30</td>
<td>32.7</td>
<td>78.8</td>
</tr>
<tr>
<td>Procurement</td>
<td>11</td>
<td>20</td>
<td>21.2</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>52</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

Table 5-2: Firm Size

The firm size considered and the profile of the suppliers are shown in Table 5-6 and its graphical view shown in Graph 5-2 to have a prompt understanding of suppliers size of the company.
The profile of IT department size among the sample is shown in Table 5-7 and respectively the graphical view of data in Graph 5-3.

<table>
<thead>
<tr>
<th>No. Personnel</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 2</td>
<td>27</td>
<td>51.9</td>
<td>51.9</td>
<td>51.9</td>
</tr>
<tr>
<td>3 to 5</td>
<td>18</td>
<td>34.6</td>
<td>34.6</td>
<td>86.5</td>
</tr>
<tr>
<td>6 to 8</td>
<td>4</td>
<td>7.7</td>
<td>7.7</td>
<td>94.2</td>
</tr>
<tr>
<td>9 to 15</td>
<td>2</td>
<td>3.8</td>
<td>3.8</td>
<td>98.1</td>
</tr>
<tr>
<td>More than 15</td>
<td>1</td>
<td>1.9</td>
<td>1.9</td>
<td>100.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>52</strong></td>
<td><strong>100.0</strong></td>
<td><strong>100.0</strong></td>
<td></td>
</tr>
</tbody>
</table>

Table 5-3: IT Dept. Size
Chapter 5- Results and Discussions

The profile of respondents’ position is shown in Table 5-8 and following that the graphical view will be shown in Graph 5-4. Referring to this data, it can be concluded that CIO’s are more involved in the context of adopting or implementing the organizational innovations.

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid CEO</td>
<td>12</td>
<td>23.1</td>
<td>23.1</td>
<td>23.1</td>
</tr>
<tr>
<td>CEO</td>
<td>40</td>
<td>76.9</td>
<td>76.9</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>52</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

Table 5-4 Position of Respondents

Graph 5-3: Position of Respondents

Graph 5-2: IT Dept. Size

IT Dept. size

Graph 5-2: IT Dept. Size

Graph 5-3: Position of Respondents
5.3 Data Presentation

Because the aim of this research was to find the effects of institutional variables on organizational adoption intention toward EDI, and also for finding the meaningful relation between organizational pressures influencing adoption intention, a modified firm-level model (Teo, et al. 2003), based on the result of interviews in SAPCO was tested (Figure 5-1).

![Firm-level Model](image)

**Figure 5-4: Firm-level Model**
For data analysis LISREL was used to perform confirmatory factor analysis of the measurement items (sub-constructs) that were used to capture the dimensions of the sub-constructs. Using LISREL for confirmatory factor analysis provides a more rigorous assessment of the fit between the collected data and the theoretical factor structure, and satisfies the minimum requirements of assessing the measurement properties.

Considering the results of testing the firm-level model, it was found that considered available organizational pressures have not any impact on adoption intention in Iranian automotive supply chain.

In the model, the three exogenous constructs—mimetic, coercive, and normative pressures—were operationalized as formative, emergent constructs formed from first-order reflective sub-construct.

Three multiple-items construct, perceived success of competitors that have adopted EDI, perceived dominance of suppliers that have adopted EDI, perceived dominance of customers that have adopted EDI, were subject to confirmatory factor analysis using LISREL 8.51. The validity of the constructs was assessed in terms of uni-dimensionality, internal consistency, and all other constructs in the model were operationalized through single indicators.

<table>
<thead>
<tr>
<th>Constructs items</th>
<th>Estimates</th>
<th>T-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mimetic Pressure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extent of adoption among competitors</td>
<td>1.03</td>
<td>4.71</td>
</tr>
<tr>
<td>Perceived success of competitors adopters</td>
<td>2.16</td>
<td>3.05</td>
</tr>
<tr>
<td>Coercive Pressures</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceived Dominance of Supplier Adopters</td>
<td>7.63</td>
<td>9.64</td>
</tr>
<tr>
<td>Perceived Dominance of Customer Adopter</td>
<td>2.47</td>
<td>3.58</td>
</tr>
<tr>
<td>Normative Pressures</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extent of Adoption Among Suppliers</td>
<td>2.41</td>
<td>3.39</td>
</tr>
<tr>
<td>Extent of Adoption Among Customers</td>
<td>0.20</td>
<td>3.38</td>
</tr>
</tbody>
</table>

Table 5-5: Operationalization of Multiple-Item Sub-constructs
Chapter 5- Results and Discussions

<table>
<thead>
<tr>
<th>Goodness of Fit</th>
<th>Revised Model</th>
<th>Desired Levels</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\chi^2$</td>
<td>91.62</td>
<td>--</td>
</tr>
<tr>
<td>df</td>
<td>73</td>
<td>--</td>
</tr>
<tr>
<td>$\chi^2$/df</td>
<td>1.25</td>
<td>&lt; 3.0</td>
</tr>
<tr>
<td>GFI</td>
<td>0.94</td>
<td>&gt; 0.90</td>
</tr>
<tr>
<td>AGFI</td>
<td>0.90</td>
<td>&gt; 0.80</td>
</tr>
<tr>
<td>Standardized RMR</td>
<td>0.031</td>
<td>&lt; 0.50</td>
</tr>
<tr>
<td>RMSEA</td>
<td>0.04</td>
<td>0.05</td>
</tr>
<tr>
<td>NFI</td>
<td>0.92</td>
<td>&gt; 0.90</td>
</tr>
<tr>
<td>CFI</td>
<td>0.94</td>
<td>&gt; 0.90</td>
</tr>
</tbody>
</table>

Table 5-6: Goodness of Fit Indices for the Model

Tables 5-3 show the descriptive statistics and the inter-correlations of the study variables respectively. Following the above mentioned correlation matrix which was calculated for constructs and sub-constructs respectively (see table 5-7), the results show that all of the constructs are related. The conducted survey was replied to with complete awareness.

<table>
<thead>
<tr>
<th>SUB-CONSTRUCTS</th>
<th>extent of adoption among competitors</th>
<th>perceived success of competitors adaptors</th>
<th>perceived dominance of supplier adaptors</th>
<th>perceived dominance of customer adopters</th>
<th>extent of adoption among suppliers</th>
<th>extent of adoption among customers</th>
<th>adoption intention</th>
</tr>
</thead>
<tbody>
<tr>
<td>extent of adoption among</td>
<td>1</td>
<td>.267</td>
<td>1</td>
<td>.083</td>
<td>.010</td>
<td>.458(*)</td>
<td>.105</td>
</tr>
<tr>
<td>competitors</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>perceived success of</td>
<td>.267</td>
<td>1</td>
<td>.120</td>
<td>.027</td>
<td>-.010</td>
<td>.433(*)</td>
<td>.025</td>
</tr>
<tr>
<td>competitors adaptors</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>perceived dominance of supplier</td>
<td>.083</td>
<td>.120</td>
<td>1</td>
<td>-.027</td>
<td>.253</td>
<td>.519(**)</td>
<td>.065</td>
</tr>
<tr>
<td>adaptors</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>perceived dominance of customer</td>
<td>-.027</td>
<td>.174</td>
<td>.652(**)</td>
<td>.212</td>
<td>.512**</td>
<td></td>
<td>.046</td>
</tr>
<tr>
<td>adopters</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>extent of adoption among</td>
<td>.420(*)</td>
<td>.443</td>
<td>.156</td>
<td>.091</td>
<td>.519(**)</td>
<td></td>
<td>.216</td>
</tr>
<tr>
<td>suppliers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.311</td>
</tr>
<tr>
<td>extent of adoption among</td>
<td>.458(*)</td>
<td>.443</td>
<td>.156</td>
<td>.091</td>
<td>.519(**)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>customers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>adoption intention</td>
<td>.105</td>
<td>.025</td>
<td>.065</td>
<td>.046</td>
<td>.216</td>
<td>.311</td>
<td>1</td>
</tr>
</tbody>
</table>

*Correlation is significant at the 0.05 level (2-tailed).  ** Correlation is significant at the 0.01 level (2-tailed).

Table 5-7: Intercorrelations Among Study Variables (sub-constructs)
Finally, according to the results it can be concluded that organizational pressures (mimetic, coercive and normative) in Iranian auto part industries did not play an influential role for adoption intention. Companies are not under the influence of organizational pressures for intending to adopt inter-organizational linkages, because the local environment is not prepared for implementing these types of innovations. The reason is perhaps to do with lack of infrastructure, unfamiliarity of companies with the benefit of implementing inter-organizational linkages and high costs of implementation.

### 5.4 Result of Analysis

After finding that the considered model is completely satisfy all the purpose of this research, for finding the meaningful and direct relation between the study variables, first the relation between constructs and adoption were studied and as the second step the relation between sub-constructs.
Chapter 5- Results and Discussions

Mimetic pressures, coercive pressures and normative pressures are considered as constructs which have influence on adoption intention towards EDI (Teo et al 2003). LISREL was used to implement path analysis for measuring the relation between organizational pressures and adoption intention (Figure 5-2).

![Diagram of Path Analysis]

**Figure 5-3: Result of Path Analysis**

The T-values show that the organizational pressures have not any impact on adoption intention in Iranian organizational environment. According to LISREL and the result of path analysis, T-value shows the meaningful relation with values more than 2.00. Since the obtained values shown in Table 5-9 are all less than 2.00 we can conclude that organizational pressures have no influence on adoption intention.

<table>
<thead>
<tr>
<th>Sub-constructs</th>
<th>T- Values</th>
<th>Standardized Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mimetic Pressure</td>
<td>0.81</td>
<td>0.12</td>
</tr>
<tr>
<td>Coercive Pressure</td>
<td>0.03</td>
<td>0.00</td>
</tr>
<tr>
<td>Normative Pressure</td>
<td>0.91</td>
<td>0.14</td>
</tr>
</tbody>
</table>

(R²)

Table 5-9: Standard and T-value of Constructs
Considering the data obtained from path analysis of the model (Chi-square = 0.00, Degree of Freedom = 0, P-value = 1.00 and RMSEA = 0.00), it can be concluded that the model is saturated and the fit is perfect.

5.5 Evaluation of the Model (Investigating for Other Relations)

After finding that organizational pressures have not any impact on adoption intention, the other relations were considered. According to previous researches (Teo et al. 2003; Chwelos 2000) and content validity, the available results show that sub-constructs are used to measure the constructs which have influential role on adoption intention in an organizational environment. Consequently using path analysis was implemented to find and analyze the relation between constructs and adoption intention.

According to previous research (Teo et al.) and the literature review and various corollaries observed, which were employed to measure the impact of organizational pressures on adoption intention toward EDI, it can also lead the research to assess or find the influence of corollaries on adoption intention.

The theoretical model shows that each one of the sub-constructs has the ability to measure the adoption intention through the organizational pressures, by the indicators (Appendix A). Consequently the relation between sub-constructs and adoption were measured.

LISREL was used to perform path analysis of the relation between measurement items that were used to capture the meaningful relations between the sub-constructs and adoption intention. Using LISREL for path analysis provides a more rigorous assessment of the fit between the collected data and the theoretical structure, and satisfies the minimum requirements of assessing the measurement.

To achieve a closer result during analyzing the relation of sub-constructs, path diagram was employed as a fundamental role player in structural modeling data analysis. Path diagrams are like flowcharts. They show variables interconnected with lines that are used to indicate causal flow. A path diagram can be considered as a device for showing which variables cause changes in other
variables. However, path diagrams need not be thought of strictly in this way. They may also be given a narrower, more specific interpretation.

Following this objective and for expanding on the findings, also for reaching a deeper understanding of the factors which may have influence on adoption intention among suppliers in Iranian auto part industries, the relation between sub-constructs and adoption intention were tested and the aim was to find any available meaningful relation (Figure 5-4) which may have influenced adoption intention in organizational environment. Studying the relations between each sub-construct is not very far from the goal of this thesis report, because as mentioned before, all of the sub-constructs were formed to test the influence of factors which affect the organizational adoption intention (organizational pressures).

Refinements to previous model (Figure 2-1) developed by Teo et al. (2003) were made by eliminating the organizational pressures because it formerly analyzed and the results did not show any meaningful relation among constructs and adoption intention. The refined model which was used to evaluate the relations between sub-constructs and adoption intention is presented in Figure 5-4.
Chapter 5- Results and Discussions

It is necessary to mention that according to previous findings (Teo, et al. 2003), and also regarding the interviews with experts at SAPCO two sub-constructs (Conformity with parent’s corporation practices and Participation in Industry, Business, and Trade Associations) were deleted from the model because these sub-constructs have not any application in Iranian auto part suppliers.

Internal consistency of sub-constructs was assessed by measuring the Cronbach’s alpha to show the reliability of sub-constructs. It is argued that the questions were precise (Table 5-10). All Cronbach’s alpha exceeded Nunnally’s (1978) criterion of .70. It is also necessary to mention that according to Teo et al (2003) the sub-constructs are not necessarily correlated together.

<table>
<thead>
<tr>
<th>Sub-construct</th>
<th>Cronbach’s Alpha</th>
<th>No. of Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived success of competitors adopters</td>
<td>0.734</td>
<td>4</td>
</tr>
<tr>
<td>Perceived dominance of supplier adopters</td>
<td>0.875</td>
<td>4</td>
</tr>
<tr>
<td>Perceived dominance of customer adopters</td>
<td>0.805</td>
<td>4</td>
</tr>
<tr>
<td>Adoption intention</td>
<td>0.721</td>
<td>2</td>
</tr>
</tbody>
</table>

*Table 5-10: Reliability Alpha for Sub-constructs*

The descriptive statistics of sub-constructs are shown in (Table 3-2 & 3-3). Additionally, as evident in (Table 3-3), the correlations between all pairs of sub-constructs are also below the threshold value of .90 (Bagozzi et al. 1991) reflecting that the constructs are distinct.

Inter-correlation matrix discussed the relation of questions or in better words, the indicator of each sub-construct together. A variable with value’s closer to 1.00, indicating the precision of the level and purpose of questions in its context.

Considering the above-mentioned discussions, the refined model was tested and both standard and T-values were obtained with assistance of LISREL and the data is shown in the model (Table 5-12). All of the values (Both standard and T-value) were present on the lines, which shows the relation between each of sub-constructs and adoption intention in the model.
<table>
<thead>
<tr>
<th></th>
<th>Co_adp</th>
<th>Co_suc01</th>
<th>Co_suc02</th>
<th>Co_suc03</th>
<th>Co_suc04</th>
<th>Dom_su01</th>
<th>Dom_su02</th>
<th>Dom_su03</th>
<th>Dom_su04</th>
<th>Dom_cu01</th>
<th>Dom_cu02</th>
<th>Dom_cu03</th>
<th>Dom_cu04</th>
<th>Su_adp</th>
<th>Cu_adp</th>
</tr>
</thead>
<tbody>
<tr>
<td>Co_adp</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Co_suc01</td>
<td>0.56</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Co_suc02</td>
<td>-0.28</td>
<td>-0.28</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Co_suc03</td>
<td>0.18</td>
<td>0.46</td>
<td>0.52</td>
<td>1.00</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Co_suc04</td>
<td>0.06</td>
<td>0.47</td>
<td>0.64</td>
<td>0.76</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Dom_su01</td>
<td>0.89</td>
<td>0.50</td>
<td>-0.25</td>
<td>0.17</td>
<td>0.11</td>
<td>1.00</td>
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<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Dom_su02</td>
<td>0.57</td>
<td>0.29</td>
<td>-0.58</td>
<td>-0.15</td>
<td>-0.36</td>
<td>0.70</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dom_su03</td>
<td>0.31</td>
<td>0.41</td>
<td>-0.42</td>
<td>0.27</td>
<td>-0.04</td>
<td>0.51</td>
<td>0.64</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dom_su04</td>
<td>0.77</td>
<td>0.40</td>
<td>-0.42</td>
<td>0.12</td>
<td>-0.03</td>
<td>0.92</td>
<td>0.80</td>
<td>0.64</td>
<td>1.00</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Dom_cu01</td>
<td>-0.21</td>
<td>0.02</td>
<td>-0.30</td>
<td>0.15</td>
<td>-0.25</td>
<td>0.06</td>
<td>0.43</td>
<td>0.62</td>
<td>0.30</td>
<td>1.00</td>
<td></td>
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</tr>
<tr>
<td>Dom_cu02</td>
<td>0.76</td>
<td>0.33</td>
<td>-0.37</td>
<td>0.17</td>
<td>-0.23</td>
<td>0.61</td>
<td>0.42</td>
<td>0.50</td>
<td>0.56</td>
<td>0.05</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dom_cu03</td>
<td>-0.03</td>
<td>0.32</td>
<td>-0.18</td>
<td>0.49</td>
<td>0.10</td>
<td>0.20</td>
<td>0.34</td>
<td>0.83</td>
<td>0.37</td>
<td>0.86</td>
<td>0.26</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dom_cu04</td>
<td>0.13</td>
<td>0.26</td>
<td>-0.00</td>
<td>0.60</td>
<td>0.13</td>
<td>0.28</td>
<td>0.33</td>
<td>0.80</td>
<td>0.37</td>
<td>0.69</td>
<td>0.47</td>
<td>0.91</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Su_adp</td>
<td>0.33</td>
<td>0.21</td>
<td>-0.26</td>
<td>-0.19</td>
<td>-0.20</td>
<td>0.52</td>
<td>0.36</td>
<td>0.17</td>
<td>0.39</td>
<td>0.22</td>
<td>0.22</td>
<td>0.13</td>
<td>-0.00</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Cu_adp</td>
<td>0.29</td>
<td>0.32</td>
<td>0.54</td>
<td>0.47</td>
<td>0.68</td>
<td>0.22</td>
<td>-0.50</td>
<td>-0.18</td>
<td>-0.08</td>
<td>-0.57</td>
<td>0.21</td>
<td>-0.19</td>
<td>-0.02</td>
<td>0.12</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Table 5-11: Intercorrelation among Sub-constructs
Chapter 5- Results and Discussions

After analyzing the data and finding the path diagram with the assistance of LISREL and considering T-values, the meaningful direct relations should be 2.00 or more.

Considering the obtained data, Extent of Adoption among Competitors and, respectively the Perceived Success of Competitors Adopters, Perceived Dominance of Supplier Adopter, Perceived Dominance of Supplier Adopter, Perceived Dominance of Customer Adopter, and Extent of Adoption among Suppliers with all the values being less than 2.00 they have not any meaningful direct relation with adoption intention by 99% of confidence.

This data was calculated through path analysis by assistance of LISREL (Table 3-4). According to the obtained data, the last sub-constructs in (Table 5-13) manifest that among the sub-constructs just Extent of Adoption among Customers with 3.09 of T-value have direct meaningful relation with adoption intention.

<table>
<thead>
<tr>
<th>Sub-constructs</th>
<th>T- Values</th>
<th>Standard Parameter Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extent of Adoption Among Competitors</td>
<td>-0.74</td>
<td>-0.17</td>
</tr>
<tr>
<td>Perceived Success of Competitors</td>
<td>-1.02</td>
<td>-0.18</td>
</tr>
<tr>
<td>Adopters</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceived Dominance of Supplier</td>
<td>-1.05</td>
<td>-0.28</td>
</tr>
<tr>
<td>Adopter</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceived Dominance of Customer</td>
<td>0.49</td>
<td>0.07</td>
</tr>
<tr>
<td>Adopter</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extent of Adoption among Suppliers</td>
<td>-1.61</td>
<td>-0.21</td>
</tr>
<tr>
<td>Customers</td>
<td>3.09</td>
<td>0.64</td>
</tr>
<tr>
<td>(R²)</td>
<td></td>
<td>0.47</td>
</tr>
</tbody>
</table>

Table 5-12: Standard and T-value of Sub-constructs
Chapter 5- Results and Discussions

After finding the single direct relation between one of sub-constructs (Extent of Adoption among Customers) and adoption intention, the indirect relations (relation between Extent of Adoption among Customers with other sub-constructs) were considered as factors with indirect influence on adoption intention and according to the values (Figure 5-5) the meaningful relations (indirect relations) between sub-constructs can be distinguished. As a result of this consideration it can be argued that extent of adoption among competitors and Perceived Success of Competitor Adopters has meaningful relation with Extent of Adoption among Customers. Respectively, it can be concluded that the above-mentioned sub-constructs have indirect relation with adoption intention.

Figure 5-5: Indirect Relations among Sub-constructs

Considering the data obtained from path analysis of the model (Chi-square = 0.00, Degree of Freedom = 0, P-value = 1.00 and RMSEA = 0.00) it can be concluded that the model is saturated and the fit is perfect.
The findings demonstrate meaningful direct relation among sub-constructs and adoption intention and also meaningful indirect relations among sub-constructs together.

Following this findings it can be concluded that since the mentioned sub-construct is one of the measurement items of normative pressures, consequently the normative pressures can have a role on adoption intention behavior.

<table>
<thead>
<tr>
<th>Sub-constructs</th>
<th>T- Values</th>
<th>Standard Parameter Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extent of Adoption Among Competitors</td>
<td>4.74</td>
<td>0.58</td>
</tr>
<tr>
<td>Perceived Success of Competitors Adopters</td>
<td>7.75</td>
<td>0.63</td>
</tr>
<tr>
<td>Perceived Dominance of Supplier Adopter</td>
<td>-5.46</td>
<td>-0.66</td>
</tr>
<tr>
<td>Extent of Adoption among Suppliers</td>
<td>3.37</td>
<td>0.28</td>
</tr>
<tr>
<td>(R²)</td>
<td></td>
<td>0.43</td>
</tr>
</tbody>
</table>

Table 5-13: Standard and T-value of Sub-constructs Revised Model

<table>
<thead>
<tr>
<th>Goodness of Fit</th>
<th>Revised Model</th>
<th>Desired Levels</th>
</tr>
</thead>
<tbody>
<tr>
<td>χ²</td>
<td>3.34</td>
<td>--</td>
</tr>
<tr>
<td>df</td>
<td>7</td>
<td>--</td>
</tr>
<tr>
<td>χ² /df</td>
<td>0.477</td>
<td>&lt; 3.0</td>
</tr>
<tr>
<td>GFI</td>
<td>0.98</td>
<td>&gt; 0.90</td>
</tr>
<tr>
<td>AGFI</td>
<td>0.94</td>
<td>&gt; 0.80</td>
</tr>
<tr>
<td>Standardized RMR</td>
<td>0.029</td>
<td>&lt; 0.50</td>
</tr>
<tr>
<td>RMSEA</td>
<td>0.00</td>
<td>0.05</td>
</tr>
<tr>
<td>NFI</td>
<td>0.98</td>
<td>&gt; 0.90</td>
</tr>
<tr>
<td>CFI</td>
<td>1.00</td>
<td>&gt; 0.90</td>
</tr>
</tbody>
</table>

Table 5-14: Goodness of Fit for the Revised Model
5.6 Summary

The results show that the organizational pressures have not any impact on Iranian automotive part suppliers’ industry adoption intention. The more detailed investigation found that among the sub-constructs there was one direct relation between, Extent of adoption among customers with Adoption intention and two indirect relations between:

1- Extent of Adoption among Competitors and Perceived Dominance of Supplier Adopter with (T-value = 4.68)
2- Perceived Dominance of Supplier Adopter with Extent of Adoption among Suppliers with the (T-value = 3.38).

Indirect relations can be considered influential because they were naturally formed to measure the factors, which deployed to find the level of adoption intention in an organizational environment.
6 Chapter Six - Conclusion

6.1 Conclusions

The objective of this chapter is to discuss the results from the analysis in the previous chapter and cover the conclusion and findings from this thesis, the results of statistical analysis will be demonstrated by the research problem and research questions. Finally, the recommendation about further research within this area will be the ending part of this thesis.

As it resulted through the analysis of the influence of three organizational pressures on adoption intention among Iranian automotive part suppliers, it was found that none of these pressures can lead above-mentioned industries to adopt inter-organizational linkages. As discussed in chapter 3, the auto part suppliers in Iranian automotive industry supply chain are mostly small and medium sized enterprises. According to the interviews with respondents, their main emphasis is to develop and expand their manufacturing capability. This is more important because unconsciously they are confident about their market and gaining the competitive advantages from a technical point of view is more valuable for them rather than investing on other organizational innovations.

From another perspective, because of the lack of necessary infrastructure and available limitations those who do not implement the organizational linkages are not perceived technologically less advanced than the others.
Usage of EDI among the suppliers at the present time is limited to using fax and e-mail for transferring the information between companies as a traditional and basic way of application.

As concluded in the analysis of this thesis, according to the obtained results there is no impact of the three organizational pressures on adoption intention of part suppliers, so all three research questions were rejected. In other words, with reference to available data because this research did not find any influence of organizational pressures on suppliers adoption intention, it can be discussed that the answer of the three research questions are negative. But after implementing path analysis to analyze the relation between organizational pressures and in the next step analyzing the relation between sub-constructs with adoption intention it can be concluded that organizational pressures have not any impact on adoption intention in Iranian automotive supply chain but according to the analysis of sub-constructs and adoption, just one of the mentioned items has meaningful relation with adoption.

6.2 Relation between Organizational Pressures and Adoption Intention

Using path analysis for finding the relation or in better words, finding the meaningful relation between organizational pressures (Mimetic, Coercive and Normative) and adoption intention, shows that in Iranian supply chain of automotive industry, there is no meaningful relation for adoption. Findings of this research through path analysis illuminate that, organizational pressures can not be the cause of adopting inter-organizational linkages among this industry. The reason can be discussed from different point of views. Organizational behavior, lack of suitable infrastructure, unavailability of electronic payments and transactions can be considered as main reasons for unfamiliarity with these sorts of innovations. Also the extent of using EDI among automotive industries is not that much to familiarize them with the benefit of using these systems.

6.2.1 Mimetic Pressures
As discussed before, Mimetic Pressures can cause an organization to change over time to become more like other organizations in its environment (DiMaggio and Powell 1983). An organization will imitate the actions of other structurally equivalent organizations because those organizations occupy a similar economic network position in the same industry and thus, share similar goals, produce similar commodities, share similar customers and suppliers, and experience similar constraints (Burt 1987). Regardless of the technical value of a practice or innovation, an organization may model itself after other organizations to acquire status-conferring legitimacy or social fitness in a wider social structure (DiMaggio and Powell 1983). Faced with problems with uncertain solutions (or technologies), organizational decision-makers may succumb to mimetic pressures from the environment to economize on search costs (Cyert and March 1963), to minimize experimentation costs (e.g., Levitt and March 1988), or to avoid risks that are borne by first-movers (Lieberman and Montgomery 1988).

Considering the results of analysis in this thesis it can be seen that there are no imitating characteristics present in Iranian suppliers in adoption intention. As mentioned before, the extent of adoption of organizational innovations among Iranian suppliers is not that much to illuminate the competitive advantages gained by implementing these kinds of systems so they are not aware of the benefits of using EDI, consequently it is natural for suppliers not to be interested to adopt such innovation for keeping their position constant among other suppliers or increasing their position. Imitating a behavior needs enough extent of that particular behavior in its society.

Usage of EDI is not as popular as considered by all users in Iranian supply chain to shift their organizational behavior to adopt inter-organizational linkages to gain a new competitive advantages among competitors. Most of these suppliers prefer to invest on manufacturing and production processes because for them it is more important rather than implementing inter-organizational linkages which its impact will present itself in the medium/long term. Imitating to use up-to-date technologies in production have more instant reflex in terms of reaching the manufacturing objectives instead of implementing organizational linkages.
Considering the above-mentioned explanations and referring to interviews with expert and knowledgeable people in SAPCO and selected manufacturers and on the other hand, the results of the analysis, it can be seen that mimetic pressures can not have any positive impact on adoption behavior mainly because of lack of suppliers' knowledge about EDI. Using web-based facilities such as the Internet and e-mail is now popular in Iranian industries, especially among automotive industries but as argued before the lack of basic and necessary infrastructures is the main barrier of implementing EDI.

6.2.2 Coercive Pressures

Coercive pressures are defined as formal or informal pressures exerted on organizations by other organizations upon which they are dependent (DiMaggio and Powell 1983). Empirical evidence suggests that coercive pressures on organizations may stem from a variety of sources including resource-dominant organizations, regulatory bodies, and parent corporations, and are built into exchange relationships (Teo et al. 2003). A dominant actor that controls scarce and important resources may demand that organizations dependent on it adopt structures or programs that serve its interests, and these resource-dependent organizations may comply with the demands to secure their own survival (Pfeffer and Salancik 1978). When an organization enters into an exchange relationship that runs counter to institutionalized patterns, the maintenance of the relationship would generally be difficult and require greater effort, or worse, be unsustainable. Thus, organizations characterized by an institutionalized dependency pattern are likely to exhibit similar structural features such as formal policies, organizational models, and programs. Indeed, institutional arguments on coercive pressures stem mainly from the resource-dependence perspective (DiMaggio 1988), as far as it was discussed above, the infrastructural condition in Iran among automotive supply chain on one hand, and the majority size of suppliers' (which they are mainly SMEs) on the other hand, do not maintain the possibility of implementation or adoption of EDI easily.

According to the obtained results from the analysis of the gathered data for this research and following the interviews managed according to the result of analysis, it can be concluded that:
The awareness of suppliers about the benefits of adopting inter-organizational linkages to gain competitive advantages is not enough to make decisions for adoption. The availability of required infrastructure, and also the expenses for maintaining and keeping the infrastructure up-to-date is high, and dominant companies usually do not force suppliers to use EDI.

As aforesaid, the company size of most of the suppliers is small and medium and they mostly produce or manufacture a limited variety of products. Consequently, forcing them to implement inter-organizational linkages may cause a high level of expenses and jeopardize their industrial condition. Spending money on upgrading the production or manufacturing equipments is more valuable for suppliers, especially because they can increase the volume of their production and cover the demand of automotive companies, so they can gain the competitive advantages in the production perspective. Automotve manufacturing companies also have not implemented inter-organizational systems for a long time and it’s still new among these industries, so it is logical for dominant companies in the supply chain to first get familiar with these systems and after a period of usage, to debug or comply it to their organizational tasks and then make others conform with them. As a result it can be discussed that coercive pressures have not any impact on adoption intention of companies in supply chain.

6.2.3 Normative Pressures
According to social pandemic literature, a focal organization with direct or indirect ties to other organizations that have adopted an innovation are able to learn about that innovation and its associated benefits and costs, and are likely to be persuaded to behave similarly (Burt 1982). Sharing these norms through relational channels among members of a network facilitates concurrence, which in turn increases the strength of these norms and their potential influence on organizational behavior (Powell and DiMaggio 1991). With reference to the results of analysis of this research, it can be concluded that because of the lack of extension of inter-organizational linkages among companies in automotive industry supply chain, companies can not understand the benefit of using or adopting
innovations because there are no perceived competitive advantages for those who adopted, among firm-suppliers and firm-customers. Consequently if two actors have direct and frequent communication with each other, they are more likely to think alike or behave similarly (e.g., Burt 1982; Erickson 1988). From a potential adopter’s perspective, the perceived value of adoption would increase to the extent that its contacts have adopted the innovation and communicated their reasoning (Davis 1991; Palmer et al. 1993). But the extent of potential adopters also is very low. And the actors can not be aware of the consequence of adoption.

According to the data and result of analysis, it can be understood that normative pressures have got no influence on adoption intention among Iranian supply chain of the automotive industry, because as discussed above trying to behave like adopters needs the contagion society of adopting companies.

6.3 Studying the Relations

Overall consideration of above mentioned arguments, shows that generally the context of inter-organizational linkages and EDI; organizational pressures, such as mimetic pressures, coercive pressures and normative pressures (considered as constructs in the basic model) which they either formed or can be measured by some other items (considered as sub-constructs), can not play an influential role on adoption intention or adoption behavior among Iranian automotive industry supply chain. Following these finding and with reference to the content validity of previous researches (Teo et al. 2003; Chwelos et al. 2000), the impact and influence of organizational pressures are considered positive, in other words, the role of organizational pressures are considered influential. Following this concept and after finding that elements available in the basic model, it was found that non of organizational pressures have got any impact on Iranian industries in auto part supply chain. The relation between adoption and organizational pressures and furthermore the sub-constructs which relate to constructs (Mimetic, Coercive and Normative Pressures) and can measure the intention to adopt inter-organizational systems, indirectly, in this research, the relation between each tier (constructs with adoption and sub-constructs with adoption) and adoption intention individually were studied.
6.4 **Relation between Constructs and Adoption**

In the first step the relation between three constructs (mimetic, coercive and normative pressures) were studied and by implementing path analysis using the gathered data, again it can be seen that the above-mentioned pressures individually have not any impact on adoption intention in Iranian automotive industry supply chain. Referring to Figure 5-3 the results of path analysis shows unpleasant low values which means that there are no meaningful relations between organizational pressures and adoption intention for companies in Iranian auto part suppliers supply chain. As discussed before, unavailability of necessary infrastructure and unfamiliarity of companies with the benefit of using EDI, also the high costs of implementing these systems can be considered as a barrier for adoption intention.

6.5 **Relation between Sub-constructs and Adoption**

In the second step the relation between sub-constructs and adoption were studied. Each of the sub-constructs and the constructs were analyzed with assistance of path analysis, and show that among 6 available sub-constructs just one have meaningful relation, this item is called "Extent of adoption among customers". Referring to the interviews with responsible persons in targeted companies, it can be seen that the only reason which may intent companies to adopt inter-organizational linkages is because it is an efficient tool. The reason is because from the companies point of view, customers who adopt inter-organizational linkages as their business-to-business tool have the potential to shift their businesses from traditional suppliers to more advanced companies to reach their targets more faster, consequently, it is logical for companies in Iranian supply chain of auto parts to make themselves more conformed with others in the environment. The companies try to adopt inter-organizational systems to keep themselves up-to-date and let customers communicate with them through their desired business medium. With this strategy they can retain their customers and keep their business relation alive. So this can be the only way which these companies can gain their competitive advantages.

Since the other results for sub-construct show the poor value for the other relations, (Extent of Adoption among Competitors, Perceived Success of Competitors Adopters,
Perceived Dominance of Supplier Adopter, Perceived Dominance of Customer Adopter, and Extent of Adoption among Suppliers) it can be concluded that adopting organizational innovations in Iranian automotive part suppliers requires different factors to make these constructs and sub-constructs influential.

As mentioned several times in this research, unavailability of necessary infrastructure can be the main reason for companies not to intent to adopt EDI. Perceived high costs for using EDI at the present time and inexistence of electronic payments can also be considered as other limitations for adoption intention.

6.6 Recommendations
This thesis has explored the impact of organizational pressures on adoption intention of companies in automotive industry supply chain in their business-to-business environment. This is the final chapter of thesis and will include the recommendations for management and further research.

6.6.1 Recommendations for Management and Future Research
It can be observed that web-based inter-organizational linkages will rarely be a competitive advantage, the main reasons which has been mentioned several times before in this research, were lack of infrastructure, high cost of implementation and local limitations which should be considered as barriers for adoption intention. The extent of adoption of EDI among companies in automotive supply chain is not as much as the perceived benefit spread among all the companies in the environment. Unavailability of electronic payments or in electronic transactions will pause most of the business activities through internet and web-based inter-organizational linkages. To pave the path for using EDI:

- investment for implementing minimum infrastructure should be a fundamental and basic task of managers.
- making suppliers more familiar with the benefits of using EDI and gaining the competitive advantages through using EDI is as important as the previous task.
- training can be the critical factor for making suppliers more familiar with EDI and its benefit.
Considering the ever-increasing growth of technology in Iran and considering the fact that even smaller companies are becoming more acquainted with electronic services, hopefully the understanding of competitive advantage which results in the usage of electronic services especially EDI, will cause all companies in the automotive industry to implement these systems.

As mentioned in the previous chapters in this thesis the direct relations between the sub-constructs and adoption were examined. Also in part of this analysis the indirect relation between sub-constructs and adoption were discussed. It is suggested that further research is carried out, examining the indirect relations, the factors that can influence EDI adoption in Iran, or the reasons for non adoption of these systems in this country.
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APPENDIX A

Questionnaire
1- **Perceived Extent of Adoption by Competitors (Co-adp):**
   1 – None has adopted, 7 – All have adopted, Don’t know
   What is the extent of EDI adoption by your firm’s competitors currently?

2- **Perceived Extent of Adoption by Customers (Cu-adp):**
   1 – None has adopted, 7 – All have adopted, Don’t know
   What is the extent of EDI adoption by your firm’s customers currently?

3- **Perceived Extent of Adoption by Suppliers (Su-adp):**
   1 – None has adopted, 7 – All have adopted, Don’t know
   What is the extent of EDI adoption by your firm’s suppliers currently?

4- **Perceived Success of Competitors that have adopted EDI (Co-suc):**
   1- Strongly disagree, 7- Strongly agree
   My main competitors that have adopted EDI:
   - have benefited greatly (Co-suc01).
   - are perceived favorably by others in the same industry (Co-suc02).
   - are perceived favorably by suppliers (Co-suc03).
   - are perceived favorably by customers (Co-suc04).

5- **Perceived Dominance of Suppliers that have adopted EDI (Dom-su):**
   1- Strongly disagree, 7- Strongly agree, NA
   With regard to my main suppliers that have adopted EDI:
   - my firm’s well-being depends on their resources (Dom-su01).
   - my firm cannot easily switch away from them (Dom-su02).
   - my firm must maintain good relationships with them (Dom-su03).
   - they are core suppliers in a concentrated industry (Dom-su04).

6- **Perceived Dominance of Customers that have adopted EDI (Dom-cu):**
   1- Strongly disagree, 7- Strongly agree, NA
   With regard to my main customers that have adopted EDI:
   - my firm’s well-being depends on their purchases (Dom-cu01).
   - my firm cannot introduce switching costs to them (Dom-cu02).
   - my firm must maintain good relationships with them (Dom-cu03).
   - they are the largest customers in the industry (Dom-cu04).

7- **Perceived Complexity of Using EDI (P-cplx):**
   1- Very easy, 7- Very difficult
   - EDI is conceptually difficult to understand from a business perspective (P-cplx01).
   - EDI is conceptually difficult to understand from a technical perspective (P-cplx02).
   - Using EDI is difficult (P-cplx03).
   - Using EDI is difficult to maintain an audit trail (P-cplx04).
   - Using EDI is difficult to trace and resolve transactional errors (P-cplx05).
- Using EDI is difficult to understand and visualize the whole process of cash disbursement and collection (P-cplx06).

8- Intention to Adopt EDI (Intent):
   1- Strongly disagree, 7- Strongly agree, NA
   - I am contemplating to adopt EDI in a year’s time (Intent01).
   - I am likely to adopt EDI in a year’s time (Intent02).

9- Extent of EDI applications Implementation (EDI-Appl):
   (Tick where appropriate)
   Has your firm implemented any EDI applications/messages in the following processes?
   Pre-order { }; Procurement { }; Logistics { }; Invoicing { }.

10- What is the current number of your personnel?
    0 – 10 { }; 11 - 50 { }; 51 – 150 { }; 151 – 350 { }; less than 350 { }

11- What is the current number of IT professionals in your firm?
    0 – 2 { }; 3 – 5 { }; 6 – 8 { }; 9 – 15 { }; less than 15 { }

12- Does your firm use any of the following electronic services?
    Electronic Post { }; Internet { }; Web-site { }
APPENDIX B

Covering Letter
Dear Sir,

Hereby, as the Computer & Systems Department of SAPCO, we would like to carry out some projects along with our contractors in order to develop our information systems and create more communication in the Supply Chain.

One of these projects is on Electronic Data Interchange in the Supply Chain. In order to understand the current situation and the future working environment in the Supply Chain, the attached questionnaire has been composed. Also attached is an explanatory guide regarding this project.

It would be highly appreciated if the CIO (Chief Information Officer) or CEO (Chief Executive Officer) of your company could spare the time to read and fill-in this questionnaire by 31/05/1384, and send it back to the undersigned.

Your co-operation in filling-in the questionnaire will enable us to make the correct decisions in the Supply Chain Management.

Thank you & Best Regards,

Mojtaba Hassanali Aragh
Computer & Systems Dept. Manager