

**B2B E-COMMERCE ADOPTION AND ITS
INFLUENCE ON PERFORMANCE IN
MANUFACTURING COMPANIES IN IRAN:
MEDIATING ROLE OF B2B E-COMMERCE
ADOPTION AND MODERATING ROLE OF
ORGANIZATIONAL CULTURE**

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ORGANIZATIONAL CULTURE**

By

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Doctor of Philosophy**

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

IN THE NAME OF GOD

DEDICATION

I would like to dedicate this dissertation:

To the memory of the departed soul of my mother, Maryam

To my husband, Ali

Who has been my biggest supporters and who has been a source of encouragement
and inspiration to me throughout my study

To my son, Arash

To everyone, who had a hand in my education, and helped in any way light a candle
for me along the road to accomplishing my objectives

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LIST OF ABBREVIATIONS

B2B	Business to Business
DOI	Theory on Diffusion of Innovation
ECRM	Electronic Customer Relationship Management
EC	Electronic Commerce
EDI	Electronic Data Interchange
E-business	E electronic business
E-commerce	Electronic commerce
EFT	Electronic Fund Transfer
E-procurement	Electronic procurement
ERP	Enterprise Resource Planning
ICT	Information and Communication Technology
IS	Information System
IT	Information Technology
OC	Organizational Culture
PLS	Partial Least Square
RBV	Recourse Based View
SEM	Structural Equation Modeling
SME	Small and Medium Enterprises
TAM	Technology Acceptance Model
TOE	Technology-Organization-Environment

**PENERIMAAN B2B E-DAGANG DAN PENGARUHNYA TERHADAP
PRESTASI SYARIKAT PEMBUATAN DI IRAN: PERANAN
PENYEDERHANA DARIPADA BUDAYA ORGANISASI DAN
PENERIMAAN B2B E-DAGANG**

ABSTRAK

Perdagangan elektronik (B2B E-dagang) memainkan peranan penting dalam meningkatkan prestasi organisasi. Di peringkat global, penerimaan B2B E-dagang berkembang pesat. Namun demikian, di Iran, perkembangan fenomena baru ini tidak sama seperti di tempat lain. Namun demikian, selepas dua dekad kemunculan sistem B2B E-dagang, syarikat pembuatan di Iran masih berusaha keras dengan penerimaan sistem B@B E-dagang bersepadu. Walaupun terdapat penyelidikan terdahulu yang mengkaji faktor yang mempengaruhi penerimaan teknologi, namun ia masih merupakan isu yang kritikal, yang masih dikaji secara menyeluruh dan perlu digarap sebaiknya. Ia termasuk: (1) dapatan kajian terdahulu tentang faktor yang mempengaruhi penerimaan B2B E-dagang adalah pelbagai. Justeru, terdapat keperluan agar lebih banyak penyelidikan yang bakal dijalankan memberi tumpuan terhadap penyederhana (moderator) yang berpotensi seperti pengalaman, pentafsiran, dan pengurusan pengaruh daripada faktor dalaman dan luaran. (2) Penyelidikan terdahulu juga mengabaikan kajian tentang prestasi firma sebagai anteseden daripada penerimaan sistem B2B E-dagang (3). Hampir 86% daripada syarikat pembuatan di Iran terdiri daripada perusahaan kecil dan sederhana (PKS). Sementara itu, PKS mendapati bahawa teknologi yang diaplikasi sukar disesuaikan disebabkan kekangan sumber. Justeru, penyelidikan ini bertujuan mengisi kelompangan ini dengan mengenal pasti faktor yang mempengaruhi sistem B2B E-dagang dan pengaruhnya terhadap prestasi syarikat di Iran. Budaya organisasi diaplikasikan untuk memahami

kesan penyederhana di antara faktor yang mempengaruhi dan penerimaan B2B E-dagang. Berdasarkan teori Teknologi, Organisasi dan Persekitaran (TOE), satu model bersepadu dibangunkan untuk menerangkan pengaruh relatif daripada sembilan penentu yang dikenal pasti. Data kajian dikumpul daripada 320 buah syarikat pembuatan di Iran. Pemodelan Persamaan Struktur - Kuasa Dua Terkecil Separa (PLS-SEM) diaplikasikan untuk menganalisis data, menilai model ukuran dan model struktur serta menguji hipotesis kajian. Dapatan kajian menunjukkan bahawa syarikat pembuatan di Iran tidak mahir dalam penggunaan teknologi baru dan masih menggunakan teknologi lama seperti penggunaan e-mel dan laman sesawang. Analisis kajian menunjukkan bahawa (1) kos penerimaan, sokongan pengurusan atasan, tekanan persaingan dan sokongan kerajaan adalah penentu utama terhadap penerimaan B2B E-dagang dalam syarikat pembuatan di Iran; (2) penerimaan B2B E-dagang mempunyai hubungan positif yang kuat terhadap prestasi syarikat; (3) penerimaan B2B E-dagang menjadi pencelah di antara sokongan pengurusan atasan dan sokongan kerajaan bagi prestasi syarikat; dan (4) budaya organisasi menjadi penyederhana yang signifikan terhadap sokongan pengurusan atasan dan penerimaan B2B E-dagang. Dapatan menunjukkan bahawa pengaruh faktor boleh meningkatkan tahap penerimaan sistem B2B E-dagang. Dapatan juga menyediakan pemahaman yang mendalam kepada para pengurus tentang penerimaan B2B E-dagang dalam usaha mencapai prestasi yang tinggi. Pendek kata, integrasi model kajian memberi penjelasan secara komprehensif bagi penerimaan B2B E-dagang di sesebuah organisasi. Di samping itu, penerimaan B2B E-dagang menjadi asas kepada penyelidikan/pada masa depan dalam penerimaan teknologi lain dalam sesebuah organisasi.

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ABSTRACT

In business, electronic commerce (B2B E-commerce) is known as an important tool that assists to increase performance in organizations. In this regard, the global B2B E-commerce adoption is increasing fast, and this new phenomenon is not at same speed of growth in Iran. After two decade of emerging B2B E-commerce systems, manufacturing companies in Iran are still struggling with the integrated B2B E-commerce systems adoption. Although past researches have studied factors influencing technology adoption, there are still critical issues that have not been thoroughly investigated and need to be addressed. They include: (1) the findings of previous studies on factors influence B2B E-commerce adoption has been mixed. Thus, there is a need for more research to investigate the potential moderators in the processes of firm is experiencing, interpreting, and managing internal and external influential factors. (2) Previous researchers have neglected the study of firm performance as antecedent of adopting B2B E-commerce adoption systems. (3) Almost 86% of manufacturing companies in Iran belonged to category of SMEs. It has been acknowledged that SMEs found technology difficult to adopt due to resource constraints. Thus, the aim of this research is to fills theses gaps by identify the factors influencing B2B E-commerce systems and its influence on company performance in Iran. Organizational culture has been applied to understand the moderating effect between influential factors and B2B E-commerce adoption. Based on the Technology Organization Environment (TOE) theory, an integrated research

model was developed to explain the relative influence of nine known determinants. Data was collected through survey from 320 Iranian manufacturing companies. Partial Least Squares-Structural Equation Modeling (PLS-SEM) has been applied to analyze the data, assess the measurement and structural model and to test the hypotheses. Based on the findings, manufacturing companies in Iran are not technologically savvy and they are still applying common technologies such as email and web page. The path analysis results demonstrated that (1) Cost of adoption, top management support, competitive pressure and government support are the main determinants of B2B E-commerce adoption in manufacturing companies in Iran, (2) B2B E-commerce adoption has a strong positive relationship with companies' performance, (3) B2B E-commerce adoption mediates the relationships between top management support and government support for company performance, (4) Organizational culture significantly moderates the relationships between top management support and B2B E-commerce adoption. The findings of the research show substantial insight on influential factors that could increase level of adoption by using B2B E-commerce system. It also provides managers with a richer understanding of the conditions under which B2B E-commerce adoption leads to superior performance. Briefly, the integration of the research model provided a comprehensive explanation for B2B E-commerce adoption in organization. The adoption of B2B E-commerce could serve as a base for future research in other emerging technology adoptions in organizations.

CHAPTER ONE

INTRODUCTION

1.0 Introduction

This chapter introduces an overview of the study in nine sections. Section 1.1 begins with the background to the research, and discusses the emergence of Business-to-Business Electronic Commerce (hereafter, B2B E-commerce) adoption as an excellent opportunity for organization. Section 1.2 describes concepts and definition of B2B E-commerce systems. Section 1.3 explains the nature of B2B E-commerce systems as a complex organizational technology adoption. Section 1.4 outlines the research problem. Section 1.5 highlights the research objectives followed by section 1.6 that outlines the research questions. The contributions of this research then are discussed on section 1.7. Section 1.8 provides the definitions of key terms. Finally, the main structure of the thesis is provided in section 1.9.

1.1 Research Background

Internet and World Wide Web (WWW) has become one of the most critical business infrastructures to achieve competitive advantages in modern organizations (Turban et al., 2009). Specifically, Internet-enabled systems, such as B2B E-commerce provide very cost-effective information processing network for companies to engage in collaboration, negotiation, and coordination with their supply chains and global trading partners (Iyer et al, 2004; Bordonaba-Juste et al., 2012). Now, B2B E-commerce systems allow organizations to integrate and manage their business

transactions across traditional firm boundaries and to extended and supply chain of the firm partners (Tan et al., 2007).

Electronic Commerce has been defined as buying and selling products and services and doing business activities via electronic devices such as the Internet and other computer networks (Schneider, 2007; Turban et al., 2009). In general, there are various types of Electronic Commerce (EC). E-commerce facilitates transactions and information sharing between organizations and customers (B2C E-commerce), between two or more organizations (B2B E-commerce), between organizations and government (B2G E-commerce), and between customers (C2C E-commerce) (Turban et al., 2009). Of mentioned types, B2B E-commerce adoption account for the largest share of business revenue. For example, in 2013, the US adoption of B2B E-commerce systems account for US\$5.8 trillion in value, representing 91% of total E-commerce volume (US Census Bureau, 2013). Of the total B2B E-commerce volume, the largest contributor is for manufacturing sector with a total of US\$3.3 trillion, or 57.1% of total B2B E-commerce volume (US Census Bureau, 2013). In Canada, 50.8% of manufacturing companies adopted B2B E-commerce systems to buy products and services (Sila, 2013). There is also positive perspective on the future of B2B E-commerce adoption in emerging economies such as India and China. In 2011, B2B E-commerce transactions increased by 7.7% from 2.7 billion Yuan in China (Sila, 2013). In India, B2B E-commerce transactions increased by 30-40% in 2008 and were predicted to play significant role in industries in future (Vaithianathan, 2010). These reports suggest that B2B E-commerce adoption have great impact on manufacturing companies' performance. In addition, it has been evidenced of significant link between amount of B2B E-commerce adoption and business value/performance gain, in particular developed countries (Zhu & Kreamer,

2005). As such, the adoption of B2B E-commerce systems is regarded as an essential element of manufacturing companies with their supply chain in the current market (Thatcher et al., 2006). In addition, it has been acknowledged widely that B2B E-commerce adoption is the key to survival for businesses, and an important economic indicator of growth special for developing countries (Tan et al., 2007; Ghobakhloo et al., 2011; Ghobakhloo & Tang, 2013). However, the global B2B E-commerce adoption is increasing fast, and this new phenomenon from being a mere productivity enhancement tool for organization is not at same speed of growth for organization in developing countries. In general, many organizations in developing countries are still struggling with the adoption of B2B E-commerce systems. Therefore, research on the antecedents of B2B E-commerce is of great significance and interest.

This empirical research is concerned with manufacturing companies in Iran as a developing country forms an interesting context for this research. This is because economic development programs initiated in Iran in the 1990s have resulted in investment in IT resource and transformation of technology adoption in Iranian industries (EDC, 2013). It is worth to note that the economy of Iran is heavily dependent on the export of oil and gas, which account for up to 82.5% of the country's total exports (PIBSCI, 2012). Clearly, the Government of Iran sees the diversification and increase of non-oil exports in strengthening the economy by making it less dependent on oil and gas export. In addition, Iran needs to increase its non-oil exports in order to become an active partner in the WTO-led process of globalization (Elahi & Hassanzadeh, 2009). Therefore, there is an urgent need to empirical research in the context of manufacturing sector in Iran. On the other hand, there is insufficient empirical research on B2B E-commerce systems in developing countries in general, and in the context of Iran in particular (Ghobakhloo, et al.,

2011). Many studies have been conducted in developed countries to explore factors that influence B2B E-commerce adoption and less in developing countries (Asari et al., 2011; Ghobakhloo et al., 2011; Al-Somali et al., 2011). Thus, it is suggested that theories developed in the context of industrialized countries (US and Europe) need to be reexamined in the context of developing countries to fit the cultural context of the recipient nation (Dewan & Kreamer, 2002; Tan et al, 2007; Al-Somali et al., 2011). These need further investigation into factors to influence the adoption of B2B E-commerce system and test its influence on firm performance in order to give a clear evaluation of the B2B E-commerce phenomenon in the context of manufacturing sector in Iran.

1.2 Concepts and Definition of B2B E-commerce Systems

B2B E-commerce is defined as the sharing of business information, the maintaining of business relationships, and the conducting of business transactions between all parties in value chain using a telecommunication network and electronic information technology (Eastin, 2002). Moodley (2003) defines B2B E-commerce as any form of commercial or administrative transaction or information exchange that take place via an ITC-based, computer-mediated network by organizations. This definition implies that B2B E-commerce is not solely restricted to the actual buying and selling of products, but also covers the conduct of other business transactions via web using Internet technologies, such as e-mail and Websites (Schneider, 2007). These transactions include pre-sale and post-sale transaction across the supply chain and maintaining business relationships (Turban et al., 2008). Figure 1.1 indicates the networks of B2B E-commerce systems collaboration and its use to support relationships of business with two or more suppliers and customers.

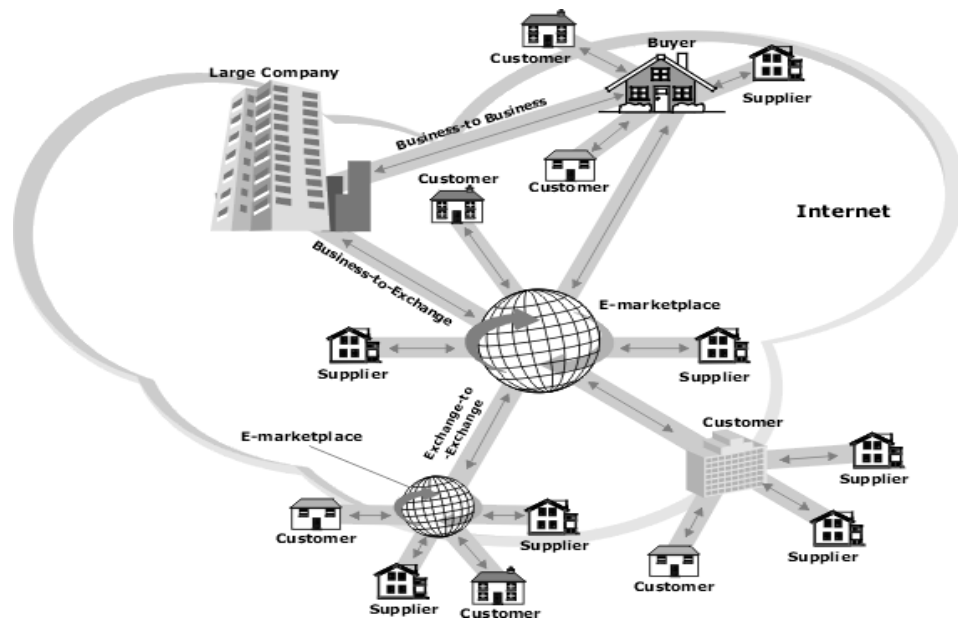


Figure 1.1 B2B E-commerce Systems networks

Source: Samtani & Gunjan (2002)

A variety of benefits such as better profits, improved communications, an evolving understanding of information requirements, brand awareness, and cost reductions is provided by adopting B2B commerce systems (Liu, et al., 2008). The information provided by new, advanced technology has characteristics that are important to national leaders and managers. It supports decision making by identifying areas that require attention, providing answers to questions, and giving knowledge about related areas. It provides relevant, timely information. Further, B2B E-commerce has improved communications in several ways (Chang & Wang, 2008). Summary of benefits of adopting B2B E-commerce systems provided in Table 1.1.

Table 1.1

Benefits of B2B E-commerce systems adoption

Benefits	Source
Global reach: Locating customers and/ or suppliers worldwide, at reasonable cost and fast.	Liu et al., (2008); Turban et al., (2009)
Cost reduction: Lower cost of information processing, storage, distribution.	Turban et al., (2009); Kim et al., (2006)
Supply chain improvements: Reduce delays, inventories, and cost.	Iyer et al., (2004)
Customization/ personalization: Make it to consumer's wish, fast, and at reasonable cost.	Kavainauskaite et al., (2005)
Ability to innovate, use new business models: Facilitate innovation and enable unique business model.	Liu et al., (2008)
Rapid time-to-market and increase speed: Expedite processes; higher speed and productivity.	Lin, (2008)
Lower communication cost: The internet is cheaper than VAN private lines.	Turban et al., (2009)
Efficient procurement: Enable of e-procurement saves time and reduce cost.	Barsauskas et al., (2008)
Improved customer service and relationship: Direct interaction with customers, better CRM.	Laudon and Guerico, (2009)
Up-to-date company material: All distributed material is up-to-date.	Wu et al., (2003)
Help SME to compete: EC may help small companies to compete against large ones through special business models.	Kartiwi and MacGregor (2007)
Lower inventories: Using customization, inventories can be minimized.	Zhu et al., (2006)

1.3 B2B E-commerce as a Complex Organizational Innovation Adoption

Innovation is defined as an idea or practice as novel by organizations (Damanpour & Aravind, 2012). However, organizational innovation adoption is more complicated than individual innovation and is very different from adoption of innovation by individuals. Actually, the extent to which an innovation is perceived

difficult to understand or use determines the complexity of innovation (Rogers, 2010). Innovation adoption in organizations needs the active and harmonized use of multiple organizational members to obtain benefits for organizations. Thus, the innovation literature on individual behavior is not enough in offering insights about organizations as adopters (Damanpour & Wischnevsky, 2006).

The presents study considers the nature of B2B E-commerce as a complicated innovation that implies change in technology, organization, and strategies or environment. This approach is essential, as despite the development of the Internet or general IT supports B2B E-commerce greatly, it is not appropriate enough to simplify it as IT innovation and ignore the organizational and environmental aspect. In contrast, it has the potential of making fundamental changes to the organizational structure, business processes and practices as well as relationship with collaborates and customers (Gopalakrishnan & Damanpour, 1996). Furthermore, today, B2B E-commerce is increasingly extending the concept of business from a simple transactional process (such as goods or services that need to be chosen, bought, or delivered) to a more complicated and broader concept of inter-organization co-operation involving the processes of monitoring, inter-company cooperation, and mutual planning. Therefore, a deep investigation on B2B E-commerce with a vision of its view as a complex innovation adoption is required to further understanding the possible impact of B2B E-commerce in organizations.

1.4 Research Problem

In the global business environments, manufacturing enterprises are increasingly adopting B2B E-commerce systems to gain competitive advantages and to have access to the global markets (Matopoulos et al., 2009). It has been evidenced that B2B E-commerce adoption account for the largest share of business revenue in developed countries such as the US and some of developing countries like China and India (US Census Bureau, 2013; Sila, 2013). Further, it has been reported that of the total B2B E-commerce volume, the largest contributor is for manufacturing sector (US Census Bureau, 2013). In addition, because of great potential benefits resulting from adopting B2B E-commerce systems, it has generated great excitement among manufacturing enterprises in developed countries (Johnson, 2013).

This research is concerned with manufacturing enterprises in Iran because on one hand, manufacturing enterprises regardless of their size are the engine of economic growth (Hansen & Zhang, 1996; Leon-Ledesma, 2000), and on the other hand, more than 86% of manufacturing enterprises in Iran are in the SMEs sector (PIBSCI, 2012). Although trading and service enterprises are important for the successful functioning of the economy, the manufacturing sector and its industrial SMEs are highly important in view of generating economic growth (WBG, 2012). In general, manufacturing enterprises are regarded as the major source of employment, development, and commercialization of innovation, and improvement of marketing competitiveness in globalised economy in particular in developing countries where poverty, uncompetitiveness of economy, and unemployment are still paralyzing the society (Hansen & Zhang, 1996; Radas & Bozic, 2009). Thus, It is expected that the adoption of B2B E-commerce systems among manufacturing enterprises expand rapidly due to various stimulants such as competitive pressure in the local and global

market, need for globalization that compel manufacturing enterprises to adopt B2B E-commerce systems, Iran's government programs and policies including E-commerce institutionalization across country to help enterprises in increasing their e-readiness (Fathian et al., 2008). However, the problem is that the adoption of integrated B2B E-commerce systems among manufacturing enterprises in Iran has remained low and they are not willing to adopt integrated B2B E-commerce systems.

The result of primary interview with the IT managers of selected manufacturing enterprises during this study (*see* detail in appendix E) indicated that most of manufacturing enterprises adopt very basic B2B E-commerce systems such as e-mail and static websites. Only few percentages of companies had an online store and online catalogue integrated with other business partners. In addition, Sanayei and Rajabion, (2012) reported that 91% of organizations in Iran merely use Internet for sending and receiving emails. Such emails though have indirect business generation as these reply queries and answer questions of buyers and suppliers cannot be claimed to use Internet as main tool of B2B E-commerce systems. It should be mentioned that although Iran has experienced radical and revolutionary improvement in ICT infrastructure between 2001-2009 (Araste, 2013), Digital Economy Rankings by the Economist Intelligence Unit (2011) suggested that Iran is 68th country among countries studied and is behind many countries such as China, Malaysia, and South Africa within transitioning economies in term of E-commerce readiness. All these observations and reports suggest the relative inappropriateness of B2B E-commerce adoption in Iran.

Although B2B E-commerce adoption has been researched by academics and many theories attempt to explain it in different context, there are still several critical

issues and gaps that have not been thoroughly investigated and need to be addressed.

They are including:

(1) The findings of previous studies on how technological, organizational, and environmental factors affect firm's technology adoption have been mixed. For example, while some studies find the significant influences of environmental pressure (e.g., Kurnia et al., 2015; Al-Bakri & Katsioloudes, 2014; Liu et al., 2010), others show that are insignificant (e.g., Alam et al., 2011). Thus, scholars are calling for more research to investigate the potential moderators and contextual factors in the processes of firm is experiencing, interpreting, and managing influential factors (Liu et al., 2010; Sila, 2013). Exploring the moderating effect of organizational culture may help resolve the inconsistency in previous studies (Liu et al., 2010; Hewett et al., 2002).

(2) Among studies that focus on technology adoption in organization, only a few percentages are devoted to the adoption of B2B E-commerce in manufacturer enterprises. B2B E-commerce adoption in manufacturing enterprises in Iran has only recently gained attention in the academic press (AhadMotlaghi & Eskandarian, 2015), thus, there is not exact status of B2B E-commerce adoption by this region. In addition, manufacturing enterprises differ from other businesses such as service sector in terms of B2B E-commerce adoption patterns. For example, manufacturer enterprises often find the technology difficult to implement due to their complex structure and supply chain integration rather than retail and service sector (Hansen & Zhang, 1996). In addition, considering that almost 86% of manufacturing enterprises in Iran belonged to category of SMEs (PIBSCI, 2012), thus, the contribution of the SMEs is extremely important to the economy and rapid growth of Iran. It has been widely mentioned in the literature that SMEs find technology

difficult to adopt due to resource constraints (Al-Qirim, 2007; Ghobakhloo et al., 2011). Therefore, there is a need to study B2B E-commerce adoption in this region.

(3) There is a need to validate existing theories in different contexts (Asare et al., 2011). The majority of B2B E-commerce adoption research focuses on the development world, mostly because the majority of research/academic institutions are located in developed countries such as USA, Canada, United Kingdom, and more recently Asia Pacific such as China (Asare et al., 2011). The issue is complicated further because B2B E-commerce adoption is not seen as transferring well to less developed countries (Al-Sukkar & Hasan, 2005, Molla & Licker, 2005). In addition, it is widely acknowledged that theories and management practices developed in the context of developed countries need to be reexamined in the context of developing countries to fit cultural context of the recipient nation (Dewan & Kraemer, 2000; Tan et al., 2007; Al-Somali et al., 2011). This is because issues that might seem insignificant for developed countries may play an important role for B2B E-commerce adoption in developing countries (Asare et al., 2011). Therefore, the need to understand whether existing theories apply to populations in developing countries is an important issue.

(4) Few researches attempt to study performance as antecedents of adopting B2B E-commerce in organization context. To overcome the above mentioned research gaps, this research attempt to empirically investigate these issues by proposing a comprehensive model within the technology-organization-environment (TOE) theory for adoption of B2B E-commerce and its influence on performance with data collected from Iranian manufacturing enterprises.

1.5 Research Objectives

Motivated by the issues identified above, the main objectives of this research are:

- 1) To explore the current level of B2B E-commerce adoption by manufacturing enterprises in Iran
- 2) To identify the related technological, organizational, and environmental factors influencing B2B E-commerce adoption in manufacturing companies in Iran
- 3) To test the relationship between B2B E-commerce adoption and companies' performance
- 4) To test the mediating effect of B2B E-commerce adoption between technological, organizational, and environmental factors and performance
- 5) To test the moderating effect of organizational culture between technological, organizational, and environmental factors and B2B E-commerce adoption

1.6 Research Questions

- 1) What is the current level of B2B E-commerce adoption in manufacturing enterprises in Iran?
- 2) What are the technological, organizational, and environmental factors influencing B2B E-commerce adoption in manufacturing companies in Iran?
- 3) What is the relationship between B2B E-commerce adoption and firm' performance?

- 4) Does B2B E-commerce adoption mediate the relationships between technological, organizational, and environmental factors and firm performance?
- 5) Does organizational culture moderate the relationship between technological, organizational, and environmental factors and B2B E-commerce adoption?

1.7 Significance of the Study

As any research contribution needs to fulfill the criteria of what is interesting and add to the existing knowledge of the field being studied, this research intends to accomplish these objectives through the following theoretical and practical contributions.

1.7.1 Theoretical Contribution

The theoretical contribution of this research is adding the literature of innovation adoption to B2B E-commerce adoption in order to enrich related knowledge and understanding the process of organizational technology adoption. It, in addition, contributes to the theory by evaluating the applicability of TOE (Tornatzky & Fleischer, 1990) theory that were developed and applied in Western and developed countries in the context of Middle East countries such as Iran.

The current research is based on TOE Tornatzky and Fleischer (1990) theoretical framework. In the current research, the organizational culture as moderator variable and performance construct is added to the TOE theory. This effort provides facilities to test the mediating and moderating effect in the TOE

framework. In addition, in the previous investigation it was shown that the moderating role of organizational culture often tends to be overlooked in B2B E-commerce adoption literature, especially in the culture of Iran. As a result, the current research contributes largely to the existing knowledge by filling the gap related the moderating effect of organizational culture as well as mediating effect of B2B E-commerce adoption and companies performance.

1.7.2 Practical Contribution

Given the importance of widespread adoption for the success of B2B E-commerce adoption and the slower than expected growth of B2B E-commerce among Iranian context, there is a great need for understanding the important factors that influence B2B E-commerce adoption in manufacturing companies. Policy makers are currently investigating the way of how encourage companies to use new technologies in order to enhance their performance and increase information on strategies and incentives that facilitate the widespread use and acceptance of the technology among organizations. Today more than ever before, the performance of companies is dependent on the access to accurate and up-to-date information, especially information flows between organizations and their trading partners. B2B E-commerce systems use state-of-the-art tools for automating and streamlining the flow of transactions between counterparts such as letters, documents, enquiries, payment, and delivery notes. Therefore, it is important for companies to understand how B2B E-commerce system transactions influence the performance of their companies. In addition, the results of this research will be important for policy makers in Iran who invest a lot on technology adoption. The findings of this research

will help policy maker recognize factors affecting technology adoption before proceeding to investment that in turn may lead to avoid waste of resources and wrong investments.

Moreover, technology consultants and software merchants attempt to identify the profile of organizations that are more willing to adopt B2B E-commerce systems in order to increase their marketing activities and target those organizations that tends to become B2B E-commerce adopters. Therefore, the current research is considered as being relevant for both policy and practice, as it can provide a substantial understanding of the factors that increase the widespread adoption of B2B E-commerce systems. In fact, studies that have so far been conducted in the context of Iran have focused on B2C E-commerce only rather than the level of organizational technology adoption.

1.8 Definitions of Key Terms

The key and critical terms that are important to understand of the current research are defined in the following sections.

B2B E-commerce adoption (B2B EC)

B2B E-commerce is defined as the level of adoption of Internet technologies such as e-mail, static website, interactive, transitive and integrated website, and other information technologies application to support business activities (e.g. marketing activities, purchasing, communication with suppliers and customers) in organization (Molla & Licker, 2005).

Perceived Relative Advantages (PRA)

Perceived relative advantages are defined as the degree to which B2B E-commerce systems are perceived as a better idea by organizations' member (Rogers, 1983). These advantages include increase business profitability, reduce direct and indirect costs, work better with suppliers, enhance productivity, provides timely information for decision-making purposes, increase customer satisfaction, and increase international sales (Ramamurthy et al., 1999; Kuan & Chau, 2001; Wu et al., 2003; Al-Qirim, 2007; Zhu & Kraemer, 2005).

Cost of Adoption

Cost of adoption refers to the financial and cost which need to implement the B2B E-commerce systems. These include cost of access to the Internet, hosting charge for websites, cost of substantial investment in training for employees, and cost of reengineering business processes required for B2B E-commerce implementation and adoption in organization (Rogers, 2003; Premkumar & Roberts, 1999; Al-Qirim, 2007; Al-Somali et al., 2011; Alam et al., 2011).

Top Management Support

Top management support refers to the degree to which top managers considering B2B E-commerce as an important and strategic tool in order to improve performance and gain competitive advantages in organization (Saprikis & Vlachopoulou, 2012). This include top managers efforts to provide necessary resource for implementing and using B2B E-commerce systems, offering educational programs, and advising employees to keep track of the latest development in Internet technologies in business processes in organization (Premkumar & Roberts, 1999; Soliman & Janz, 2004; Wu et al., 2003; Saprikis & Vlachopoulou, 2012).

Competitive Pressure

Competitive pressure refers to the extent of pressure (fear of losing customer and market) which an organization incurred from competitors in order to adopt B2B E-commerce systems (Liu et al., 2010; Zhu et al., 2004; Premkumar & Roberts, 1999; Al-Qirim, 2007; Saprikis & Vlachopoulou, 2012).

Trading Partner Pressure

Trading partner pressure refers to the extent of effects and pressure that an organization incurred from relational channels among network members such as suppliers and customers in order to adopt B2B E-commerce systems (Iacovou et al., 1995; Al-Qirim, 2007; Lin & Lin, 2008; Saprikis & Vlachopoulou, 2012).

IT Infrastructure and Capabilities

IT infrastructure and capabilities refers to firms possessing appropriate technology infrastructure such as telecommunications infrastructure, technical infrastructure, facilities and diversity of electronic payments, and skilled workforce with the knowledge of IT to support B2B E-commerce adoption in organizations (Elahi & Hasnzadeh, 2009; Liu et al., 2008; Chau & Tam, 2000; Saprikis & Vlachopoulou, 2012).

Legal Infrastructure

Legal infrastructure refers to the set of rules and regulation system and law enforcement including the legal protection for Internet buying and selling, data protection law, consumer protection and conflict resolution, as well as specialized facilities to adopt B2B E-commerce in a country (Al-Qirim, 2007; Molla & Licker, 2005; Zhu et al., 2003).

Government Support

It is defined as all governmental promotions, incentives, and activities such as legislative requirements, consulting services, educational services, and financial assistance in order to adopt B2B E-commerce systems by organization in a country (McCole, 2005; Al-Somali et al., 2011).

Organizational Culture

Organizational culture is defined as set of core values consensually shared by organizational members (O'Reilly et al., 1991). Organizational culture includes five dimensions such as employee orientation, customer focus, systematic management and control, innovativeness, and social responsibility (Tsui et al., 2006).

Employee Orientation

It is defined as the degree to which organization emphasizes promote feeling-sharing, team building, encouraging cooperation, trusting, and fostering cooperative spirit in employees in order to facilitate and adopt B2B E-commerce systems (Tsui et al., 2006).

Customer Focus

It refers to the degree to which an organization focuses on the needs, service and profit of customers (Tsui et al., 2006).

Innovativeness

Innovativeness is defined as the degree to which an organization emphasizes on developing new products and services continuously, ready to accept new changes,

adopting high-tech bravely, and encouraging innovation adoption among employees (Tsui et al., 2006).

Systematic Management and Control

It refers to the degree that an organization focuses on keep strict job principles, formal procedure, and clear standard on praise and punishment for employees (Tsui et al., 2006).

Social Responsibility

This term refers to which an organization emphasizes on showing social responsibility, mission, and social profits (Tsui et al., 2006).

Performance

Performance is defined as the degree to which adopting B2B E-commerce systems in a firm lead to increase sale, improve customer service, increase staff productivity, decrease procurement costs, decrease inventory cost, improve coordination by suppliers, and decrease production cost (Iyer et al., 2004; Kim et al., 2006) .

1.9 Structure of the Thesis

This thesis includes six chapters, including the present chapter (chapter one). **Chapter 2** provides a background to Iran in terms of its location, demographic profile, economy, business organizations and ICT development. Moreover, it provides the reader with a review and assessment of B2B E-commerce phenomenon

in developed economies in general and in developing economies in particular. Finally, the chapter ends with an overview of the E-commerce situation in Iran.

Chapter 3 reviews the body of research literature circumscribing the field of interest for this thesis. Here, research in organizational innovation adoption, theoretical models and B2B E-commerce adoption in developing countries will be discussed. It also presents the conceptual model and illustrates the various hypotheses regarding the proposed relationships in the research model.

Chapter 4 discusses the methodological framework and research approach. The content and description of the instrument used in collecting data are described. Furthermore, operationalizations for all variables under investigation are provided, and the development of a measuring instrument for the constructs is described. Finally, sampling procedure and data collection process are outlined and discussed.

Chapter 5 presents an interpretation of the research findings and discusses the main statistical methods used. Subsequently, the hypotheses test results are reported.

Chapter 6 summarizes the key findings outlined in the previous chapter regarding the significant facilitators and inhibitors to the successful adoption of B2B E-commerce in manufacturing companies in Iran. Chapter 6 is the final chapter and discusses the implications of the research for managers, government bodies, and policy makers in detail.

CHAPTER TWO

PROFILE AND E-COMMERCE PHENOMENON IN IRAN

2.0 Introduction

The purpose of this chapter is to provide an introduction of Iran in terms of its location, demographic and economic status, and ICT development. Furthermore, this chapter discusses issues related to the digital division of developed and developing countries. Finally, the situation of E-commerce and the Internet in Iran are discussed.

2.1 Profile of Iran

Iran, like other developing countries is influenced by rapid economic, social and demographic changes. This section provides general information about Iran in terms of its location, population, economy, and telecommunications.

2.1.1 Location of Iran in the World

Iran is 18th largest country in the area at 1,648,195 kilometer in the world (PIBSCI, 2012). Iran is a particular geostrategic country regarding its location in the Middle East and central Eurasia. Iran is bordered on the north by Armenia, Azerbaijan and Turkmenistan. As Iran is a littoral state of the Caspian Sea, which is an inland sea, Kazakhstan and Russia are direct neighbors of Iran. On the East, Iran

is bordered by Afghanistan and Pakistan, on the South by Persian Gulf and the Gulf of Oman, on the West by Iraq, and on the northwest by Turkey (see figure 2.1).



Figure 2.1 the Geographical Location of Iran

Tehran is the capital and the largest city of Iran. Iran is a district power and holds an important position in international energy security and world economy because of its large reserves of petroleum and natural gas. The government of Iran is Islamic Republic that is based on the 1979 constitution consisting of several intricately inter-related governing bodies. However, the highest state authority is the Supreme Leader. Country's official religion is Islam and Persian is the official language.

2.1.2 Population of Iran

Population of Iran is increasing and reached over 75 million in 2011 (PIBSCI, 2012). Regarding the age range, 23.37 percent are aged between 0-14 (17,548,134 people), 48.22 percent are aged between 15-39 (36,237,136 people), 20.15 percent are aged between 40-59 (15,144,757 people) and 8.2 per cent are aged at 60 years old and over (6,205,998 people). Among Iran's population, 71.59 percent is under 40 years old. The population growth rate in 2011 was 1.3 percent and it is expected that total population in Iran will increase above 100 million by 2050 (PIBSCI, 2102). The literacy information of the youth is improving and they are still becoming more knowledgeable about Internet application and prefer to own more complicated electronic gadgets such as laptops and mobile phones (Abbasi, 2006).

2.1.3 Economy of Iran

Iran has the second largest economy power in the Middle East and North Africa (MENA) region after Saudi Arabia, with an estimated Gross Domestic Product (GDP) of USD 366 billion in 2013 and 2014 (WEF, 2011- 2014). The economy in Iran is mixed and transition with a large public sector. The economy of Iran is dominated by oil and gas production. Although over 40 industries in Iran are directly involved in Tehran Stock Exchange, one of the best performing exchanges in the world over the past decade is occurred through oil and gas production (Andrews & Weening, 2013).

Iran is considered as an “energy superpower” with 10% of the worlds’ proven oil reserves and 15% of gas reserves (CIA, 2010). It is seventieth largest country by purchasing power parity and twenty-first by nominal gross domestic product in the

world. Because of its high developmental potentials, the country is a member of Next 11. A unique feature of Iran's economy is the presence of large religious foundations called *beyoud*; whose combined budgets represent more than 30% of central government spending. Oil and gas are the most exported products of the country, considering the major revenue of government in 2010. Oil export revenues enabled Iran to amass well over \$100 billion in foreign exchange reserves in 2010.

The currency of Iran is Rial (ISO code IRR). It is subdivided into 100 dinars; however, due to its very low current value, no fraction of Rial is used in accounting. Although "Toman" is no longer an official unit of Iranian currency, Iranians commonly use "Toman" as amount of money and price of goods. One "Toman" equals 10 "Rials". Despite their preference in using "Toman", the amounts of money and prices of goods are always written in "Rials".

In regards to scientific growth, Iran ranked first in the world in 2011 and, internationally, has one of the fastest developments in telecommunication (Andrews & Weening, 2013). Despite its isolation from global financial markets, Iran was initially able to avoid recession in the consequences of the 2008 global financial crisis. Nonetheless, following increasingly strict sanctions imposed by the international community as a result of the country's nuclear program, oil exports dropped by half that led to surpass Iraq oil exports over Iran's since the 1980 for the first time. Exports resulted in self-sufficiency and domestic investment, yet double-digit unemployment and inflation remain problematic.

Real growth rate of GDP was 1.09 in 2012 (WEF, 2012-2013) and the industrial annual production growth rate was 0.8% in 2011. Moreover, the Statistical