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Determining the relationships between e-business growth and enablers and barriers in Jordan

Khalid Nasser Al-Zubi

A thesis submitted in partial fulfilment of the requirements of

Sheffield Hallam University

For the degree of Doctor of Philosophy

March 2010

Sheffield Hallam University

DECLARATION

This work presented in this thesis is to the best of my knowledge and belief, original
except as acknowledge in the text. No part or whole of the work referred to in this thesis
has been submitted in support of an application for another degree or qualification.

ABSTRACT

Despite its obvious benefits and its potential for improving productivity and sharpening an organization's competitive edge both locally and internationally, SMEs are still reluctant to deploy the emerging technology of e-business. This lack of enthusiasm may be due to difficulties in identifying and measuring costs, benefits and risks associated with the adoption of e-business. Recent studies have shown, however, that many SMEs have engaged in e-business in order to catch up with their larger counterparts who have adopted such solutions.

The contribution of SMEs to their national economies cannot be overemphasized. These organizations account for some 99 per cent of private sector growth in Jordan, including most of the growth in employment. The present study was undertaken in response to the lack of empirical data, as well as to determine the stages of growth in the uptake of e-business by SMEs and to discover the factors influencing their decisions to adopt it. It supplies the deficiency of relevant evidence, which will improve understanding of the current state of affairs in this regard.

In order to achieve the objectives of this research, data was collected according to a quantitative research paradigm in order to provide exhaustive descriptions of how SMEs currently use e-business and of the factors involved in their decisions.

A questionnaire with 42 questions was distributed personally to a sample of 55 personnel in SMEs in the communications sector. The overall response rate was 87 per cent. Several analysis methods including descriptive statistics analysis, factors analysis, biivariate analysis, bar charts were applied to the data using SPSS.

The results validate the six-stage model, developed from previous studies, for the Jordanian context, and show that respondents' use of e-business is still in the first two stages. Some have reached the third stage, but the last three more complex levels have yet to be utilized to any significant extent. The results also provide empirical evidence that enablers (market, external and organizational) of, and barriers (technological, organizational and external) to, the use of this technology, as well as organizational size, play a significant role in decisions as to whether or not to adopt it, as well as the degree of its success in SMEs.

This study has important implications for research and practice. Specifically, it offers a useful framework with which to assess the six stages of growth in each factor in order to better pursue the adoption of e-business. The results will constitute a guide for the conduct of empirical studies based on the framework foundation of e-business adoption, and will give practitioners an understanding of how these factors influence such adoption, thereby improving that process.

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DEDICATION

This dissertation is dedicated to

my parents, Nasser Alzubi and Samya Alzubi

They gave me unconditional love, encouragement, and support.
They provided me with strength, dreams, courage and determination
to see this process through to the end.

I also dedicate this dissertation to

my beloved wife, Jihan Samara
and my two little daughters Razan and Ala'a

Without Jihan's love, patience, sacrifice and trust throughout this process,
this dissertation would not have been possible,
and without Razan and Ala'a's inspiration to remind me of what is truly important
I would have found it so much harder to carry on.

And not forgetting

my brothers and sisters

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Abbreviations

ADSL	Asymmetric Digital Subscriber Line
B2B	Business-to-Business
B2C	Business-to-Consumer
C2B	Consumer-to-Business
C2C	Consumer-to-Consumer
CEO	Chief Executive officers
DOS	Department of Statistics
DTI	Department of Trade and industry
E-Business	Electronic Business
ECDL	European Computer Driving Licence
E-Commerce	Electronic Commerce
EDI	Electronic Data Interchange
EJADA	Euro Jordanian Action for Development of Enterprise
EU	Euro Union
FA	Factor Analysis
GDP	Gross Domestic Products
ICT	Information and Communication Technology
INTAJ	Information Technology Association of Jordan
IS	Information Systems
IT	Information Technology
JD	Jordan Dinar
MOICT	Ministry of Information and Communication Technology
MOTI	Ministry of Trade and Industry
NGO	Non-Governmental Organisation
OCED	Organization for Economic Co-operation and Development
SMEs	Small and Medium Size Enterprises
PC	Personal Computer
PCA	Principle Component Analysis
SPSS	Statistical Package for Social Science
UK	United Kingdom
WIPO	World Intellectual Property Organisation
WWW	World Wide Web

CHAPTER 1

INTRODUCTION

1.1 The research issues

The discussion on the utilization of electronic business is of great importance in the world of trade and commerce (Elahi and Hassanzadeh, 2009). The growth and development of Internet technology and electronic business has contributed to a change in individual lives, communities and institutions throughout world. These developments in Internet technology change the way both large and small businesses interact with their partners, client companies and customers. Xu et al (2007) maintains that e-business is expected to become a key facilitator in organizations' conduct of business worldwide.

As a result, SMEs in developed and developing countries are moving if indeed they have not already moved their main operations to e-business formats in order to exploit their potential for increased automation, efficient business processes and global visibility. To this end, e-business has increasingly become an essential element of business strategy and a strong mechanism for economic development.

The implementation of e-business involves thoughtful changes in business organization, government regulation and human experience (Keoy et al, 2006). The adoption and use of e-business are important not only for organizations, but also increasingly for a nation's economic progress. In many countries, the adoption and development of e-business has become an important determinant of future economic growth. In both developed and developing countries, government can be seen to play a fostering role at the national level, setting the adoption of the Internet and e-business as main goals.

Previous studies have shown that many organizations, including SMEs, have embraced e-business (Teo and Pian, 2004a; Levy et al, 2005; Erikson et al, 2008; Eshun et al, 2009; Hunaiti et al, 2009). By contrast Drew (2003) points out those large organizations dominate e-business, while many SMEs are being left behind. Simpson and Docherty (2004) see large organizations as more actively involved in e-business activities. The research, mainly quantitative or qualitative, that has been conducted on e-business largely concerns the experience of implementation in developed countries (Huang and Zhao, 2004).

E-business involves organizations, including SMEs, changing the way they do business. SMEs have an important role to play in national economic growth. In the case of Jordan, several investments had been made by the government and private sector, including SMEs, to implement and develop e-business. This thesis investigates the adoption of e-business in Jordanian SMEs in order to identify the pattern of e-business growth and to determine the key factors that influence the successful adoption of e-business. This research argues that this activity should take into consideration the relationship between the factors associated with e-business and stages of growth.

The research framework is based primarily on two main areas of literature: that concerning e-business and that on SMEs. For this purpose, this thesis is divided into six chapters. The present chapter offers a concise research background and context, as well as the study's aims and objectives, its importance and its structure.

1.2 The research background and content

A growing body of research seeks to examine the impact of e-business on organizations, especially SMEs. Dynamic and vibrant SMEs play a key role in successful national economic growth, irrespective of whether the country concerned is a developed or a developing one (Trumbach et al, 2006; Ramdani et al, 2009; Obafemi, 2009). Given their importance in any economy, it is no surprise that almost every country places special emphasis on supporting and strengthening its SMEs through a variety of institutions and programmes. The Internet and e-business is seen by governments around the world as a technology critical to supporting the development of this sector (Levy et al, 2005; Hourali et al, 2008).). According to Zhu et al (2003) and MacGregor and Kartiwi (2010), governments have instigated intervention projects and offered financial incentives to encourage SMEs to adopt the Internet and subsequently to develop e-business systems that will enable them to trade more effectively with business partners. Despite the attempts of government and various support programs, very few SMEs have reached the advantaged stages of e-commerce (Al-Qirim, 2007b; Scopla, 2009; Kapurubandara and Lawson, 2009; Mendo and Fitzgerald, 2009; MacGregar and Kartiwi, 2010). SMEs need this support to overcome the economic and competitive disadvantages that they face, especially when they adopt e-business.

In addition, research indicates that the fear of lagging behind in adopting e-business has pressurized many SMEs into blindly engaging in e-business initiatives without deriving much benefit from them. Despite huge investments in such initiatives, academics and practitioners are still struggling to perceive any positive outcomes. These are hugely restricted by a lack of strategic planning. SMEs face obstacles to technical, organizational and external issues when adopting e-business strategies (Del-Aguila-Obra and Padilla, 2006; Bharadwaj and Soni, 2007; Kapurubandara and Lowson 2009:

Obafemi, 2009; Tarofder et al, 2010). It is therefore important to identify and evaluate factors affecting an organization's performance that may contribute to e-business adoption. Research to date, however, has only investigated the growth of e-business and sought to determine the factors associated with this adoption and in order to gain a holistic understanding of the subject, e-business implementation processes and the impacts of e-business on organizations should be examined.

In the present study SMEs are targeted for several reasons. Firstly, as has already been mentioned, they play a major role in the development of any economy, no more so than in Jordan. SMEs are viewed in Jordan as sources of flexibility and innovation and make a significant contribution to economic, both in terms of the number of SMEs and the proportion of the labour force employed by these organizations. For example, Al-Nsour et al (2007) maintains that SMEs play an important role in Jordanian economy and account for some 99 per cent of all business transactions. Nasco et al (2007) and Obafemi et al, (2009) they point out that SMEs make an extremely important contribution to an economy, especially to the rapid growth of developing countries. Secondly, previous studies on e-business have focused on large businesses. SMEs are ignored because, in many cases, it seems that they are perceived to be unsophisticated and therefore of no interest to researchers investigating IT adoption and implementation (Poon and Swatman, 1998; Nasco, 2007). Thirdly, although studies have looked at e-business adoption by SMEs from various angles, the stages of growth of e-business and the factors involved as two of the main issues involved have remained curiously under researched.

Finally, SMEs also have unique characteristics in such respects as size, age, turnover and top management structure (Rao et al 2003; Bose and Sugumaran, 2009; MacGregor and Vrazalic, 2008; Obafemi et al, 2009; MacGregor and Kartiwi, 2010) that provide

interesting grounds for research. According to MacGregor and Katiwi (2010) the special circumstances of the SME sector has been the subject of investigation by both government and academic research. The SMEs identified in this research organizations in the communication sector employing fewer than 250 people. This sector has played a significant role in the few last years in the growth of Jordan.

The ultimate aim of this research is to fill a gap in the literature, especially as regards developing countries, by focusing explicitly on e-business adoption by SMEs in Jordan.

The key issues dealt with are:

- a review of the various definitions of SMEs by researchers and countries
- a review of the various definitions of e-business and the stages of maturity reached by SMEs, as gleaned from the literature
- an evaluation of the general importance of, and the role played by, SMEs in economic growth generally
- a review of the key enablers of and barriers to e-business adoption by SMEs

SMEs in Jordan are motivated to adopt e-business solutions by government support, sales growth, market enlargement, increased competition and decreased dependence on the home market.

The communications sector is rightly considered to be one of the important sectors of national growth, employing a large number of people in various ways. There is also a common perception that if the economy is to attain sustainable growth in employment it must rely heavily on its smaller organizations.

Little empirical research has been carried out that investigates the factors associated with e-business adoption and the growth within SMEs, and most of the research that has

been conducted has been in developed countries, implying that the smaller organizations studied have reached certain levels of maturity in their e-business processes. In developing countries, few studies have addressed the issue of e-business adoption from the viewpoint of SMEs.

Only a few empirical quantitative studies investigate the adoption and development of e-business, particularly in developing countries. There is still a shortage of empirical research that attempts to answer key questions concerning the relationship between e-business enablers, barriers and organizational size and the stages of growth in SMEs' implementation of e-solutions. This study investigates precisely those aspects. Thus, this research brings a holistic understanding to the relationship between the state of e-business growth and the barriers, enablers and organizational size related to the adoption of e-business. It focuses in particular on the adoption of business to customer (B2C) technology, which is that used by an organization for buying, selling or exchanging information between it and its customers. The research finding will benefit researchers and practitioners alike. The identification and validation of e-business success factors will assist organizations in their e-business strategic planning in the Jordanian context.

1.3 Aim and objectives

The overall aim of this research is to determining the relationships between e-business growth and the enablers and barriers of e-business in Jordanian communication sector using a six stage model which synthesised from previous models of stages of maturity in the adoption of e-business by SMEs. This will be further explained in Chapter 4. The primary objectives of this exploration can be broadly classified under four objectives:

Research Objective 1: Classify data according to stages of growth and organizational size

RQ1: Identify the pattern of e-business adoption by SMEs in the chosen sector to stages of growth?

RQ2. Determine the distribution for various size of SMEs in Jordan?

Research Objective 2: Determine the key enablers of and barriers to e-business adoption by SMEs.

RQ3: Identify the significant enablers of e-business adoption by SME in Jordan?

RQ4: Identify the significant barriers of e-business adoption by SMEs in Jordan?

Research Objective 3: Determine the Relationships between stages of growth and e-business enablers and barriers.

RQ5: Is there any significant relationship between the stages of growth e-of business and e-business enablers?

RQ6: Is there any significant relationship between the stages of growth of e-business and e-business barriers?

Research Objective 4: Determine the relationship between stages of growth and organizational size.

RQ7: Is there any significant relationship between the stages of growth of e-business with organizational size in terms of number of employees?

The overall aim of this research was achieved by adopting a deductive approach, and the findings confirmed as suitable and accurate through use of the quantitative method to data collection using the Statistical Package for Social Science SPSS (17) as the analysis mechanism, with descriptive data analysis, factor analysis and bivariate correlation as the analysis methods (for further details see Chapter 5). Data was collected from two main sources: a survey distributed personally by the researcher was the primary source, with a background of secondary sources including books, journals, and online documents. The use of this background literature enabled a thorough understanding of e-business and SMEs. The literature includes definitions and categories of e-business, the stages of growth of this technology in organizations, definitions of SMEs, enablers of and barriers to the implementation of e-business solutions, the relationship between these and the stages of growth of e-business in organizations, a correlation between these factors, and analysis of the stages of growth in the Jordanian context using the six-stage model synthesised from previous ones, (for further details see Chapter Four).

This research is conducted in the context of the conceptual framework derived from the background literature. In the present research the four predictor variables of maturity of e-business stages, e-business enablers, e-business barriers and organizational size are grouped together. The research process involves four phases. The first aim to describe the participants' profiles, while the second seeks to identify the provider's perception of the maturity of the state of e-business in Jordan. This is achieved by synthesizing from the literature a six-stage model of maturity. The third phase includes the analysis of data and identification of the main factors associated with e-business adoption, including e-business enablers and e-business barriers. This is achieved by developing 21 questions from the background literature, which are tested by the pilot study (see Chapter Three).

The final level involves a detailed examination of the relationship between the key factors of growth stages, barriers and enablers, and organisational size. The statistical analysis includes descriptive data, factor analysis, bivariate analysis (Pearson correlation), and bar charts as the primary instruments for data analysis.

1.4 Research contribution

This study's findings will provide Jordanian organizations with knowledge related to e-business adoption in developing countries. The contribution's originality is grounded in the following factors:

1. The focus of this research is to provide Jordanian SMEs with new insights into the importance of e-business, giving them the requisite knowledge to consider the requirements needed in order to be ready to implement and develop e-business strategies.
2. The conceptual framework, a six-stage model employed to achieve the overall aim of this research, which provides empirical evidence that the stages of growth in SMEs does exist in Jordan.
3. Contribution to the body of knowledge on the practices of B2C e-business in developing countries, and specifically in Jordanian SMEs in the communications sector.
4. Provision of a holistic approach to evaluating e-business. A review of the available literature confirms that this is the first in-depth study concerning the status of Jordanian e-business using six stages model. It therefore provides insightful theoretical and empirical applications for increasing the effectiveness of e-business in developing countries.
5. Provision of new information for using e-business in the private sector to,

decision-makers in Jordan.

6. The present research will lead to further development in the use of e-business within Jordanian SMEs.
7. Provision of useful information for other developing countries whose circumstances are similar to those of Jordan.
8. The present research will raise new research questions concerning the adoption of e-business by SMEs.

Overall, this research highlights the importance of the respondents' perceptions regarding SMEs' adoption and development of e-business. In particular, this research emphasises that respondents will adopt e-business solutions when they meets their expectations and needs. It also reveals that the respondents are aware of the various enablers and barriers associated with and influencing decisions to adopt such solutions.

The result of this research presents baseline information and provides insights to decision-makers in SMEs regarding the factors associated with the adoption of e-business. The finding may also be of interest to Jordanian policymakers such as the Ministry of Communication and the Ministry of Trade and Industry by giving them an understanding of organizations' e-business adoption patterns and of the factors associated with the implementation and use of e-business. It is hoped that these findings will help provide recommendations for the improvement of the current state of e-business use by SMEs, as well as suggesting directions for further research. It also demonstrates that SMEs are aware of the barriers and enablers related to e-business adoption. Finally, this study gives academics insights into previous research on e-business adoption among SMEs, by variously supporting and challenging earlier finding.

1.5 Over view of Jordan

The Hashemite Kingdom of Jordan is a Muslim Arabic Country, located in the Middle East in western Asia, with a population of 6, 2 million in 2008, and lies in a strategic position in relation to its neighbors in the Middle East (DOS, 2009). Over one third of the Jordanians are under the age of twenty (DOS, 2009). Arabic is the country's official language and English is widely spoken.

Jordan is considered as one of the developing countries in the Middle East region. It has suitable telecommunication facilities with neighbouring countries. Jordan has grown rapidly in industrial modernization, liberalization of business and information technology. Jordanian business, academic, organization, government, ministers and human skills becoming reality, they convinced that the e-business is important for growth economic for country as buying, selling products, services and reduce purchase prices and cycle time.

1.5.1 E-business development in Jordan

The Internet introduced to individuals and the private sector in 1996 through private ISP companies, which are sharing the market of Internet (Muasher, 1999). McConnell International, LLC (2002), report considers Jordan's e-readiness and 'e-leadership' as rated medium to high compared to other counties in the world, as well as emphasizing that many conditions are present for the conduct of e-government and e-business.

King Abdullah II succeeded his father King Hussein following the latter's death in February 1999. During his first years in power, he refocused the government's agenda on electronic commerce reform. This was achieved through the creation of new laws such as the, investment law.

According to Arab Advisors Group (2009) survey on ICT usage in SMEs reveals that: Internet penetration in Jordan is 36% which is a high figure for the region. Internet usage more than doubled from 2007 to 2009 with the rapid growth expected to continue. Jordan has more internet start up companies than any other country in the Middle East. The Jordanian government has recently announced that the sales tax on computers and internet connection would be removed in order to further stimulate the ICT industry in Jordan. There by increasing the uptake from 22.3% of Jordanian SMEs who do not have (PCs). Of these companies that have PCs, over a half has a LAN set up in the office and more than two thirds of the companies use the Internet. 58.2% of the companies that use Internet started using it more than 3 years ago. 92% of companies in Amman use the Internet, which is far higher than other cities. More than 74.5% of the companies that use the Internet have Internet dialup accounts, with only 15.2% having Internet leased lines, and 15.2% having Internet ADSL. A little more than a quarter of Jordanian SMEs have a web page. Start up Arabia report (2008) looked at ICT usage of individuals number of Internet Subscribers in Jordan will be around 50% internet penetration rate, with 35,000 employed in the ICT sector and over \$3 billion revenues by 2011. While Asymmetric Digital Subscriber Line (ADSL) at the end of September 2008, there were over 29,000 ADSL subscribers in Jordan. Furthermore, that there are about 1.6 Internet users in the country in 2009, a penetration rate of 25.4 per cent (Internet world Stats, 2009).

The ICT infrastructure is rapidly expanding in Jordan, the number of landlines reached 629,000 at in 2007, an expansion rate of 11 percent, while the number of mobile phone subscribers reached 3.826 million at an expansion rate of 70 per cent. (UN report 2007). In more recent study conducted by Global Arab Network (2009) showed the ICT sector in Jordan represented 14.3% of GDP in 2008, making it one of the largest single contributors to the economy, with growth more than 80,000 new positions being created

between 1999 and 2008. Of these, the report said, 16,650 were direct jobs within the industry, a further 49,852 were indirect jobs and the remaining 15,365 were listed as induced positions.

According to Global Information Technology Report (2009) the ranked for Jordan were 44th out of 133 countries on its networked readiness index for ICT development. Also the report ranked Jordan's overall business readiness at 73rd, with staff training coming in at 67th and company spending on research and development at 108th.

1.5.2 Government initiatives in Jordan

In early 2000 the government of Jordan made ICT a national priority. This decision was translated into what is known as the 'REACH' initiative, supported by both public and private sectors, whose goal is to develop "a vibrant, export-oriented, and internationally competitive ICT sector that can successfully attract investment and generate high value jobs" [www.intaj.net]. The REACH report assessed Jordan's strengths and weaknesses and other related competitors. The REACH initiative was devised by the Information Technology Association of Jordan (INTAJ) and supported by the Ministry of ICT to develop the IT sector in Jordan, with a mission to promote and advance the Jordanian software and IT service industry in the global market. Intaj has grown from 53 organisations in 2000 to over 143 in mid-2006. Members of this association include companies working in Jordan in the fields of software development, support and application; telecommunications companies, value added assembly organisations and companies that distribute ICT products and services [www.intaj.net].

The Ministry of ICT initiated an e-government program in September 2000. The aim of this program is to enable businesses and citizens to obtain better (i.e. faster, more accessible, and less costly) services, to increase the government performance and efficiency, and to ensure transparency in government procedures and processes

[[http://www.moict.gov.jo/ MoICT/MoICT_Initiative.aspx](http://www.moict.gov.jo/MoICT/MoICT_Initiative.aspx)]. This initiative is still in progress. So far, the Jordanian government has 95% of its ministries online, all of these with full information about services, the ability to download forms and applications, and the ability to communicate with citizens and businesses via email (i.e. publishing stage). However, online governmental transactions (i.e. the transactional stage of e-government) to making secure payments for a service and tax, has not yet been achieved (Elsheikh et al., 2008).

The application of ICT in Jordanian business, industry, schools, universities, government departments and households is clearly occurring (Sahawneh, 2003). An e-learning initiative was begun in 2002 and has been implemented and supervised by the Ministry of Education and the Ministry of Higher Education and Scientific Research. The initiative comprises two tracks: e-education in schools and e-education at university level. In schools, the programme aims to introduce IT courses within the curriculum and to facilitate the required infrastructure. As a result, computers and the Internet are used in schools and have been connected through the schools network. In addition, IT, e-commerce and programming language courses are now taught in secondary schools.

At government level, an ICT literacy programme for 20,000 government employees commenced in 2004 and staff have been trained to the International Computer Driving Licence (ICDL) level [www.escwa.org.lb]. To increase dissemination of computer and Internet facilities among citizens, Jordan Telecom has launched a 'PC@every-home' initiative in 2004, offering packages consisting of a personal computer, software, modem and dial up or ADSL access. The package includes delivery, warranty and Internet help disk for support; and, to encourage people to purchase, its price is estimated to be at least 40% lower than the market price, making it suitable for people on low incomes, as payments start at £15 per month spread over three years

[http://www.escwa.un.org/wsis/reports/docs/Jordan_2005-E.pdf]. A recent government initiative in 2007 was to provide a laptop for each university student, again at subsidised cost, starting at £10 per month.

1.6 The structure of the thesis

The rest of this thesis is divided into six chapters organised as follows:

Chapter 2: Literature

This chapter provides the background to the research and introduces the concepts of e-business and SMEs. Definitions of e-business and e-commerce are distinguished before the current literature is thoroughly appraised. The next section details e-business categorises, growth stages and current practices. The definitions of SMEs are discussed, and their importance underlined.

There is extensive discussion of e-business enablers and barriers for successful e-business adoption by SMEs. This comprehensive discussion serves as the basis for developing the research framework for this study.

Chapter 3: Research methodology

This chapter described the research methodology and design used in this work. It seeks to develop and to employ an appropriate research methodology so that suitable data for testing the proposition is collected. The chapter begins by identifying the types of research, as this determines the method of data collection. The pilot research study and sampling methods are examined the approach and research instrument selected for data collection and analysis is justified in terms of the research objectives. The procedure for developing the questionnaire, data collection procedures, measurement of constructs, together with the corresponding issues of data reliability and validity, are critically

considered, as is the rationale for the adoption of the methods selected. The chapter concludes with a discussion of ethical considerations and the way they are approached in this research.

Chapter 4: Conceptual framework

The background literature is presented in this chapter, the research questions and the research variables are reviewed. A conceptual model is proposed by which to examine the factors influencing the adoption of e-business, enablers, barriers and organizational size. The model synthesises those that attempt to evaluate the stages of maturity of e-business in Jordan and examines the relationship between these factors. Each research question is associated with our study and explained.

Chapter 5: Data analysis

This chapter presents the analyses of the questionnaire returned by 301 respondents from the Jordanian communications sector. In the first part, percentages of frequency are used to describe the response and organizational profiles. In the second part a comprehensive discussion of data analysis technique illustrates the analysis of the questions and tests the hypotheses that have been developed. Several statistical methods are used to determine the factors associated with e-business adoption and to investigate the evaluation of e-business growth based on the proposed six-stage model. These methods determine the key enablers and barriers and examine the relationships between e-business factors and their effect on business performance. The several analyses include descriptive analysis, percentage of computing of the mean, factors analysis and bivariate (Pearson Correlation). This chapter identifies the stages of growth of e-business according to the data provided by the respondents, and determines the factors affecting e-business adoption. The first three stages were found to be significant for the sample, while the last three were irrelevant. The three factors of e-business enablers and barriers were determined to be of great importance for the respondents; they influence

the adoption and development of e-business. Bivariate analysis was also used to find out if there are any significant relationships between factors including enablers, barriers and organizational size with stages of growth. This thesis also highlights the empirical evidence of the impact of e-business success among SMEs.

Chapter 6: Discussion

This chapter discusses the research results arising from the analysis, reviewing all the phases of research process. This study identifies the empirical evidence of our respondent's attitudes towards the factors associated with e-business adoption. An e-business growth model is utilized to explain the e-business adoption and development among our SMEs respondents. The key research findings are presented and discussed, as are the enablers, barriers and organization size regarding e-business adoption, in order to identify the problems faced by the respondents.

Chapter 7: Conclusion and Recommendation

The last chapter discusses the conclusions and considering the limitations of the study, and directions for future research.

1.7 Conclusion

This chapter provides background information and introduces the research problem and research questions. It gives a brief overview of the study's contribution and outlines the approach and methodology used. An outline of this thesis is finally presented.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

Despite the emerged and the advantage offered by e-business, SMEs are still continuing and unenthusiastic to deploy e-business extensively in their business activates despite the benefits its offers. This slow in adoption and developing e-business activates may due to difficult and identifying and measuring cost, benefits and risks associated with e-business adoption. There is tremendous potential for SMEs to harness the power of e-business to improve their productivity and sharpen their competitive edge in both local and international markets. However, recent studies has indicates that SMEs due to lagging behind large organizations in the adoption e-business, many SMEs have anxiously engaged in e-business activates for gaining benefits.

The aim of this chapter is to provide an overview of previous research into E-business and Small- and Medium-sized Enterprises (SMEs), with a discussion of the relevant literature on e-business frameworks, definitions and characteristics, together with the growth of e-business applications. It reviews the current academic literature on the adoption of e-business in SMEs, with particular emphasis on the perceptions of SMEs, as well as tabulating the factors that influence such adoption, particularly the relevant enablers and barriers.

2.2. Overview of electronic business

The Internet and e-business plays an important role in modern business, and has in fact been seen as revolutionary for organizations in today's business world, embracing the business, consumers, government, and service sectors.

Turban et al (2006) emphasised this truly revolutionary impact, pointing out that its application to e-business is very much in its early stages in that the Internet is a major worldwide distribution channel for goods and services as well as surprisingly managerial and professional positions relating to many innovative applications, ranging from online direct sales to e-learning experience. Laudon and Traver (2008) explain that e-business is driven by Internet technology, creating a platform for millions of people to create and share content, establishing new social connections in an environment of changing markets, industry structures, products, services and economic circumstances. E-business was initially defined fundamentally as exchanges of information, but more types of business have of late become available electronically. E-business is considered as one of the leading developments in the world of business, in its impact on customer services as well as on enterprises such as retailing, finance, services, marketing publishing, communications, advertising, tourism and travel (Titi, 2005).

E-business has been adopted and implemented by organizations, and its potential to streamline central organizational policies and procedures has subsequently been proved. It is accelerating the transformation of both large and small enterprises by creating new electronic markets where prices are more transparent, markets are global, and trading is highly efficient (Chaffey, 2007).

E-business has emerged as a whole business strategy that enables organizations to improve businesses processes and communication, both within the organization and with trading partners (Chong and Pervan, 2007). E-business transforms the competitive

environment from a local market to a global one. For example, Forrester Research's (2005) forecast was that business e-commerce would grow from \$172 billion in 2005 to \$329 billion in 2010, figures representing the value of goods and services traded via the Internet. E-business impacts directly on a firm's relationship with suppliers, customers, competitors and partners, as well as influencing its product marketing, advertising and use of brands (Chaffey, 2007).

It becomes evident from this discussion that e-business can be the key to success or failure for organizations, depending on how well they adapt to these technologies. Turban et al (2006) suggest that the reason for this rapid expansion was the development of new networks, protocols and EC software, as well as an increased level of competition. In order to help understanding e-business, the rest of this chapter discusses such factors as definitions and categories of e-business, as well as e-business models.

2.2.1 Definitions of e-business

Defining e-business poses something of a problem regarding what elements to include. Various definitions have been proposed and evaluated by researchers according to their research purposes. There is a lack of consensus regarding such definitions. Common elements include the undertaking of normal selling and buying, government, and personal activities over the networks. As a result, researchers have suggested new definitions or adapted existing ones in a variety of studies on the field of e-business. Some examples follow.

In early studies Chan and Swatman (1999) define e-commerce as

"a wide variety of activities involving the exchange of information, data or value-based exchanges between two or more parties"

For Damanpour and Damanpour (2001) e-business is

“any internet business activity that transforms and external relationships to create value and exploit market opportunities driven by rules of the connected economy”

Laudon and Laudon, (2006) describe e-business as

“the process of buying and selling goods and services electronically through computerized business transactions using different internet technologies. This definition also encompasses activities supporting market transactions such as advertising, marketing, customer support, delivery and payment.

Zwass (2003) defines e-commerce broadly, in terms of the way of doing businesses using internet facilities. He states that it is

“the sharing of business information, maintaining business relationships, and conducting business transactions by means of telecommunications networks.

Turban et al (2006) defines E-commerce as

“the process of buying, selling or exchanging services and/or information via computer networks including the Internet.

Common elements emerge from these definitions. Firstly, e-business is a kind of exchange of service and information. Secondly, it is an inter-organisational electronic network. Thirdly, e-business involves partners, customers and suppliers, buying and selling products and services; information is the key commodity. Laudon and Laudon, (2006) add that e-business involves more than the use of technology. It also encompasses activities supporting market transactions such as advertising, marketing,

customer support, delivery and payment. Turban et al (2006) provides another perspective on e-commerce by classifying it into seven elements:

- **Communications:** EC is the delivery of goods, services, information or payments electronically using the Internet.
- **Commerce (trading):** EC confers the ability to buy and sell products, services and information using online services.
- **Business process:** EC is business transacted electronically, thus substituting information for physical business processes.
- **Service:** EC is a tool that addresses the desire of governments, firms, consumers and management to cut service costs while improving the quality of customer service and increasing the speed of service delivery.
- **Learning:** EC is an enabler of online training and education institutions as well as business organizations.
- **Collaboration:** EC is the framework for inter- and intraorganizational collaboration.
- **Community:** EC provides a platform for community members to share thoughts and to perform various tasks.

This study examines B2C e-business from an organizational perspective, examining transactions between small to medium sized organizations and their customers.

However, for our purposes Turban's (2006) definition of e-commerce as "the process of buying, selling or exchanging services and/or information via computer networks including the Internet" is generally consistent with the concept as portrayed in the literature. This definition focuses on the enabling organization online transactions, which includes the buying and selling of goods, services and information. The next

section investigates and discusses the difference between the terms “e-business” and “e-commerce”.

2.2.2 Difference between the terms “e-business” and “e-commerce”

As already stated, e-business is not just another process by which existing business practices can be sustained or improved. It is a paradigm shift that is radically changing traditional ways of doing business. In contrast with e-commerce, e-business is a broader term because it is not limited only to information exchanges related to buying and selling, but also encompasses servicing customers and collaborating with business partners, distributors and suppliers (Turban et al, 2006). According to Pavic et al (2007) there is no universally accepted definition of e-business, and the term is consequently used interchangeably with e-commerce.

Kalakota and Robinson (1999) point out that e-business

“is about redefining old business models, with the aid of technology to maximise customer value”

There is then some confusion regarding the two terms. In addition, e-commerce involves online transactions conducted between purely business partners (B2B), whereas e-business entails those between business and consumer (B2C). The concept of e-business is broader than that of e-commerce, and includes the integration of electronic means (mainly network technologies) into business processes (Katz and Hilbert, 2003). Chatterjee et al (2002) define e-business as "the application of web technologies for understanding customer needs, marketing products, services, and product-market solutions, and taking customer orders" while for Lewis & Cockrill (2002) e-commerce is electronic networks intended to improve and speed up business processes such as buying, selling and delivery of goods and services.

It is important to establish the relationship of the two terms. It can be well understood from the above discussion that definitions of e-commerce vary among the authors, many of whom state for example that e-commerce is a subset of e-business (Chaffey, 2007; Turban et al., 2006; Bidgoli, 2002; Rowley, 2002; Beynon-Davies, 2004). Others suggest that e-business includes many activities that do not fall under the definition of e-commerce, such as servicing customers and collaborating with business partners (Turban et al., 2006; Rowley, 2002; Bidgoli, 2002) or processing purchasing orders (Chaffey, 2007). Carter and Belanger (2004) state that some people use e-commerce to encompass e-business. The latter involves integration across business activities and communication within the organisation (Rowley, 2002), as well as web advertising, supply-chain management, order management, sales force automation and electronic payment (Bidgoli, 2002).

Sengupta et al (2005) use e-commerce in a wider sense, maintaining that a good definition of e-commerce mentions the use of electronic data transmission to support business processes. Schneider (2007) considers e-business to be a broader term than e-commerce, as it is not limited to information exchanges related to buying and selling but also encompasses servicing customers and collaborating with business partners, distributors and suppliers.

This section differentiates the two terms. For the purposes of this study, and following the rationale of definitions of e-business, that term will be used, with e-commerce being conceived of as a subset of it. The following section seeks to investigate the e-business categorises.

2.2.3 Categories of e-business: There are several categories of electronic business. These are typically classified according to the nature of the transaction and the participating entities (Schneider, 2007). The four main categories that have been identified are:

2.2.3.1 Business to Consumer (B2C)

In earlier works, B2C was seen as a commercial activity between businesses and consumers more precisely, the use of e-business to enable customer information interaction, personal finance management, purchasing products and the dissemination of after sales information (Rayport and Jaworski, 2001).

Electronic business between companies and consumers is a growing and highly publicized category of e-business (Van Slyke and Belanger, 2003).

Hundreds of thousands of items are available on the Web from numerous vendors. This study focuses on sales in the service industry as one of the categories of B2C in SMEs. This focus on SMEs was because they play a key role in successful economic growth worldwide, no less so in Jordan than elsewhere. This importance is underscored by the observation that SMEs actually account for the majority of enterprise activity in many countries; the special emphasis on supporting and strengthening a country's SMEs through a variety of support institutions and programmes is almost universal.

2.2.3.2 Business to Business (B2B)

B2B entails commercial activity between two or more organizations, or the use of the internet to facilitate payment, inventory and distribution management. (Dou and Chou, 2002; Turban et al, 2006; Chaffey, 2007). The B2B sector provides the greatest opportunity for exploitation, especially in the supply chain where B2B activity is concentrated.

2.2.3.3 Consumer to Consumer (C2C): C2C is a direct relationship between consumers; they can interact with each other and sell and buy many items; such aggregates of individual transactions on the same website can result in an agglomeration of consumers who constitute a buyer group when dealing with businesses (Rayport and Jaworski, 2001). eBay is one of the most well-known examples of sites that bring buyers and sellers together (Chaffey, 2007; Laudon and Traver,2008).

2.2.2.4 Consumer to Business (C2B)

C2B is individuals transacting directly with companies; these transactions require specific services such as LetsBuyit.com and Priceline.com (Turban et al, 2006). B2B and B2C form the largest components of e-commerce and have been growing rapidly in the last few years (Turban et al 2006; Chaffey, 2007; Schneider, 2007).

For convenience, a summary of the various business types is presented in Table 2.1.

This study is concerned primarily with the first kind of e-business B2C. Using a six-stage model as a framework, it examines e-business in Jordan in terms of the developmental stages reached. The following section discusses the literature on these stages and their models. It then suggests a choice of model to characterize the standard features of each stage.

<p>B2C Business to Consumer</p> <p>E-business that focuses on direct transaction between businesses and end consumers</p>	<p>C2C Consumer to Consumer</p> <p>Virtual communities, enabling consumers to sell goods or services, to share member generated information and to interact with each other</p>
<ul style="list-style-type: none"> • Provides customers with interactive information • Provides personal finance management • Allows customers to purchase products and services • Provides customers with powerful web searching facilities 	<ul style="list-style-type: none"> • Increases transactions between individual consumers • Increases buying and selling between consumers • Allows individual consumers to conduct transactions with others on the website
<p>B2B Business to Business</p> <p>E-business transaction or among multiple business</p>	<p>C2B Consumer to Business</p> <p>Transactions where individuals sell products to businesses. It can also mean individuals seeking sellers online in order to conduct transactions</p>
<ul style="list-style-type: none"> • Increase the transaction of information • Improve communication between organizations • Improve the supply of products and services directly to individual businesses and suppliers • Enhance transactions between suppliers and commercial purchasers 	<ul style="list-style-type: none"> • Allows for consumers to communicate directly with organizations • Allows consumers to request specific services or products directly from organizations • Reduces the time taken by transactions between consumers and organizations

Table 2.1: Summary of e-businesses categories

2.2.4 Stages of e-business development

The previous section described the various kinds of e-business. The present one focuses on what are called “e-business stage models”. These models help develop an understanding of the various processes used to improve the development of e-business. Different models have emerged to describe these “stages” that SMEs go through when

they implement e-business. According to Mendo and Fitzgerald (2005), the stages of e-business are one of the most common approaches used to explain the evolution and development of e-business technologies by SMEs.

Mendo and Fitzgerald (2005) have already pointed out that the adoption of e-business among organisations follows an ordered series of levels known as "level of growth models" or "adoption ladders". Researchers suggest that businesses move up through these levels, from the basic use of the Internet as an email or marketing tool to a more complicated deployment that integrates business systems and redesigns business processes (Martin 2005; Xu et al 2007). This stage theory has been widely used as a way of examining the adoption and progression of various aspects of e-business in organizations. The literature contains conceptual models describing the stages involved in the development of e-business systems (Burgess and Cooper, 1998; Earl, 2000; Daniel 2002; Teo and Pian 2004a). There have also been a number of papers that seek to identify and describe the increasingly sophisticated phases that SMEs move through with respect to their use of internet technologies (Daniel 2002; Huizingh 2002; Lawson et al, 2003; Teo and Pian 2004a) For example, Cockburn and Wilson (1996) were among the earliest researchers to point out that the adoption of internet technologies among organizations takes place in a cycle of stages. These stages encompass the use of general information through to the full adoption of e-commerce, with comprising complete transactions. Similarly, Burgess and Cooper (1998) categorize the adoption of e-commerce into three stages, ranging from promotion of products and services to full processing.

Earl's (2000) more recent model is a more intensive breakdown of the subject into six evolutionary stages of e-business, from Stage One (external communication) to Stage Six (transformation). Daniel et al (2002) classifies the adoption of e-commerce into a

four-stage model of intranet growth, ranging from developers to transaction. For Teo and Pian (2004a) the adoption of e-commerce consists of five steps, beginning with the use of email only and finishing with the full transformation of the business). The literature also describes a parallel development of several stages of growth models seeking to specify the phases that companies had moved through in their use of Internet technologies (Windrum and Berranger, 2002; Kartiwi 2006; Xu et al 2007)

The literature also categorises the stages in which e-commerce is adopted as related to types of connectivity such as internet access, type of internet use or web technologies. For example, Parish et al (2002) in an early UK study of the stages by which e-commerce is adopted emphasise that such implementation refers to the setting up of web sites include email, online marketing, online ordering and online payment, before progressing to online sales service.

This stage is a major focus for this research, and Chapter 4's examination of the research framework returns to it in greater depth.

The next section draws on the overview and the definition of SMEs.

2.3 Overview of SMEs

SMEs are considered as major economic players and a powerful source of national, regional and local economic growth (Ramdani et al, 2009). They have a huge impact on economic growth in all countries, being in fact regarded as cornerstones of the economy (OCED, 2004; Trumbach et al, 2006).

A country's economic growth is very much dependent on the development of SMEs. For example, in a study conducted in Indonesia by Kartiwi (2006), it was found that there are approximately 40 million SMEs, constituting around 99 per cent of the total number of business enterprises. Furthermore, Al nsour et al (2007), points out that SMEs make up over 99 per cent of businesses in the Jordanian economy. This is equally

true in many other countries. SMEs in the United States represent over 98 per cent of businesses there (Brown and Lockett, 2004).

As well as being critical to national economies worldwide, many countries have recognized the necessity of studying as well as supporting their SMEs (Hourali et al 2008). SMEs are generally considered to be more flexible in providing services and cost effective products than are large organizations. Their structures and their managers are more able to accept new models of doing business, characteristics that make them ideal candidates for adoption of e-commerce. In this context, MacGregor and Vrazalic (2008) recognize that SMEs are not simply scaled down versions of large organisations, but that they have their own unique characteristics, which can lead either to improved competitiveness or inhibited growth depending on how they are managed.

SMEs could be led to adopt e-business by customer demand, competitive pressure, reduced costs, increased sales, government initiatives, expanded markets or any one of a number of other agents. Research indicates that SMEs have been generally slow to adopt e-business (OECD, 2004; MacGregor & Vrazalic, 2006; Pavice et al, 2007), doubtless because of the barriers impeding such adoption, which include limited financial resources and staff skills.

The next section will provide some definitions of SMEs as found in previous studies, followed by a discussion of their role, importance and characteristics.

2.3.1 The definition of SME

There is no single, universally accepted definition. In spite of the features shared by SMEs worldwide, neither researchers nor governments use common definitions for classifying their SME sectors. The problem resides in arriving at a suitable set of criteria that can be used in any definition. “Small” and “medium” are relative terms, varying

from country to country, and even due to their different characteristics within sectors and economies from sector to sector within a country. These differences have led to major variations in size-based definitions of SMEs. For example, maximum cut points in terms of numbers of employees have historically ranged from 10 to 500 and even 1000.

The size of an SMEs can be defined in many ways, some of which are based on quantitative measures, such as a number of employees and turnover, while others are qualitative. Meredith (1994) suggests that any description or definitions must include a quantitative component that takes into account staff levels, turnover and assets together with financial and non-financial measures. Other definitions must include a qualitative component that reflects how the business is organized and how it is operated. These suggestions can also be found in more recent studies by MacGregor and Vrazalic (2006) and Hourali et al (2008). Bose and Sugumaran (2009) define SMEs as non-subsiary, independent firms employing less than a set number of employees.

Different countries use various parameters for defining SMEs, such as the number of persons employed, the amount of capital invested, the level of turnover or the nature of the business (Kapurubandara and Lawson, 2007; Ayyagari et al, 2007). Indeed, there are many definitions in each country, due to the diverse characteristics of SMEs in each sector and in each economy (Hallberg, 2000). Curran and Blackburn (2001) point to those SMEs one SMEs that operates in industry, retail, banking and finance that perform in each economic sector. Harvie and Lee (2002) likewise emphasise that no standardized definitions can be applied to all SMEs.

SMEs can be defined quantitatively, classifying them according to their number of employees, capital, assets and turnover, and qualitatively (mainly according to the

managerial, behavioural and attitudinal features that distinguish small organizations from large ones) (Curran and Blackburn 2001).

The next section discusses both of these classes of definition.

2.3.1.1 Quantitative definitions

When classifying SMEs quantitatively, researchers use various criteria depending on their countries. The most common measures are the number of employees and the turnover (Harvie and Lee, 2002; Ayyagari et al., 2007), although others use capital value, turnover, labour intensity, sales, production capability or financial turnover (Kendall et al, 2001; Harvie and Lee, 2002; Shakir and Viehland 2004; Ayyagari et al 2007). For example, Shakir and Viehland (2004) draw the distinction between SMEs and large companies by revenue rather than the number of employees.

Among other things, definitions of SMEs can depend on the number of employees, the value of paid up capital, or a combination of both of these. The employee number benchmark has several advantages: it makes it a simple matter to compare organizations in different sectors and countries, and it is also a stable yardstick since it has no direct, automatic relation to variations in prices, such as movements in exchange rates or inflation. It is also relatively easy to gather data for this measure (Al-Mahrouq, 2003). Ajlouni, (2006).maintains that the most widely used measure to define SMEs is the number of employees this despite the wide variety of bases for definition in many countries. For example, Beck et al (2005) identify SMEs as those enterprises having fewer than 500 employees, while for Kotelnikov (2007) the equivalent number is 250. It may be more suitable to define organization size by the number of employees in some sectors, while turnover would be more appropriate for others. However, governments across the world most commonly measure organization size according to numbers of

full-time employees or their equivalents. Some other countries base their definitions of organizational size on economic factors. In Italy and France an organization is small or medium if it employs less than 500 employees, in Sweden less than 200, in Australia less than 99 and in Denmark less than 50 (Al-Mahrouq, 2003).

In the UK, SMEs are usually considered to include organizations with fewer than 250 employees (Ahmad, 2009). For example, the Department of Trade and Industry (DTI) defines three groups of SMEs:

- Micro SMEs from 0-9 employees
- Small SMEs from 10-49 employees
- Medium SMEs from 50-249 employees

The European Commission revised its definition of SMEs in the new SME definition (2005), taking into account economic developments since 1996 and the application of the definition. This was an attempt to make sure that organizations that were part of larger groupings did not benefit from SME support schemes. An increase in the financial upper limit was also designed to avoid penalizing organizations that invest, though this is unlikely to significantly increase the number of SMEs. The European Commission set the following criteria:

- **Micro Enterprise:** fewer than 10 employees and/or annual turnover and balance sheet of €2 million or less
- **Small Enterprises:** fewer than 50 employees and/or annual turnover and balance sheet of €10 million or less
- **Medium Enterprises:** fewer than 250 employees and/or annual turnover and balance sheet of €50 million or less. The UK adopted a similar definition. The standard of fewer than 50 employees and not being a subsidiary of any other

company was laid out in the UK Companies Act (Ahmad, 2009). This UK definition is the same as the Jordanian one of fewer than 50 employees in small and fewer than 250 in medium companies. In Singapore, SMEs are defined as those with fewer than 100 employees and turnovers of less than \$ 15 million (Kendall et al, 2001).

Other places use other definitions. This section looks at those definitions that are comparable to Jordan's. In particular, it looks at Malaysia, Turkey and Pakistan, on each of which there have been a number of studies. Osman and Hassan, (2002) states that SMEs in Malaysia are those that have fewer than 250 employees. In Turkey, SMEs are defined using quantitative measures, as organizations with 10 to 200 employees. These companies represent 99.5 per cent of manufacturing industries, 61.4 per cent of total employees and have a value add of 29.1 per cent (Altintas et al., 2007). By contrast, in Pakistan there is no single official definition; the definitions that are used differ among sectors. SMEs in the manufacturing sector, for example, have more than 250 employees with turnovers of more than \$4 million, while those in the service sector have the same amount of turnover but *fewer* than 250 employees (Ahmad and Zink, 2009).

In Jordan, definitions of SMEs are no less varied than elsewhere. This applies to various government agencies and institutions as much as to the private sector (Al- Homs, 2001). He also states that organizations in Jordan have used their own definitions, mainly based on the number of employees.

The central government's Department of Statistics (DOS, 2004), for example, defines SMEs for all sectors according to the number of employees.

It distinguishes between firms as follows: a firm employing one to four workers is a Micro-enterprise, five to 49 is a small firm and 50 to 99 is a medium firm; large firms employ more than 100 workers. The Amman Chambers of industry identifies small

organizations as those with fewer than 10 employees and medium ones as those between 10 and 99. Euro Jordanian Action for the Development of Enterprise (EJADA) defines SMEs as organizations with five to 250 employees. The Ministry of Trade and Industry classifies enterprises according to the number of employees as follows (MOTI, 2006):

1. **Small enterprises:** those with between 10 and 50 employees
2. **Medium enterprises:** those with between 50 and 249 employees
3. **Large enterprises:** those with more than 250 employees

In this study the definition of small and medium-sized enterprises used by the Ministry of Trade and Industry in Jordan – i.e. “10-250 employees” is used.

2.3.1.2 Qualitative definitions

The qualitative criterion of not being publicly accountable may therefore frequently define them (Rakowski, N, 2006). Research indicates that many qualitative measures are used to define SMEs. According to an early report by Bolton (1971), qualitative measures are important and cannot be ignored. It suggests qualitative definitions for SMEs, as they usually have a small market share while management is personalized, being by owners or part owners; they are independent in the sense that they do not form part of larger enterprises, and their owners are free from outside control in making their principal decisions (cited by Krake, 2005).

Sweeney (2007) defines SMEs according to qualitative characteristics: for him, they are organizations operated and managed by owner managers. Kuratko and Hodgetts (2001) state that the US defines a small business as one independently owned and operated, and not dominant in its field of operation. From previous studies, we find that there is now a clear international framework for defining SMEs. All countries have their own social

and cultural conditions. This research adopts the definitions of the Jordanian Ministry of Trade and Industry, which is based on numbers of employees.

For convenience, a summary of the various quantitative definition is presented in Table 2.2:

Source Literature	Quantitative Definition
European Commission (1996)	Micro: less than 9 employees Small: less than 40 employees Medium: less than 250 employees
UK – DTI	Micro: less than 9 employees Small: less than 40 employees Medium: less than 250 employees
Osman and Hassan, (2002)Malaysia	SMEs: less than 250 employees
Altintas et al., (2007) Turkey	SMEs: more than 10 and less than 200 employees
Ahmad and Zink, (2009).Pakistan	SMEs in manufacturing sectors: More than 250 employees, with turnovers of more than US\$4 million SMEs in service sectors: Fewer than 250 employees with more than US\$4 million turnover
Jordan MTI (2006) adapted for the study	Micro: fewer than 10 employees Small: fewer than 50 employees Medium: fewer than 250 employees
Amman Champers of industry Jordan	Small: fewer than 10 employees Medium: fewer than 100 employees
EU (EJADA) Jordan	SMEs: more 5 and less than 250 employees
Kendall, 2001	SME less than 100 employees with less than 15

Singapore	million turnover
Beck et al, (2005)	SMEs less than 500 employees
Kotelnikov (2007)	SMEs less than 250 employees

Table 2.2: Comparison of definitions of SMEs in different countries

2.3.2 The importance of SMEs

The importance of SMEs to national economies has been widely recognized (Egbtokun, 2009). Research argue SMEs create jobs increase wealth and incomes within their host domains and promote industrial and economic development through the utilisation of local resources. Engsbø et al., (2001) enumerates the attractions of SMEs in the current climate of financial downturn: he says they contribute to economic growth, social structure, employment, and regional and local development, and that consequently they have become an important sector of the economy. The development of SMEs has long been regarded as crucial for the achievement of broader developmental objectives, including economic development, employment growth, innovation and technological advancement and revenue generation (Zou and Stan, 1998; Robertson, 2003; Westhead and Storey 2009). SMEs generally constitute the greatest number of organizations in many countries and world economies (Reijonen and Komppula, 2007). In addition, they are considered to bring improvements to the economy, to operate as catalysts in society and to strengthen the industrial base in both developing and developed countries (Kazem and Heijden, 2006; Reijonen and Komppula, 2007).

Their contributions to employment and their country's GDP are significant. For instance, more than 140 million SMEs in 130 countries employ approximately 65 percent of the total labour force. It is also claimed that SMEs play an important role in

creating employment opportunities by creating approximately 60 per cent of the total global workforce (Kotelnikov 2007).

SMEs are vital not only for economic growth but also for national economies and the implications of this for society.

Mahdi and Osman (1998) and Arinaitwe (2006) both recognize that in the last three decades a large number of developing countries have realized the importance of developing their SMEs as a way of achieving several goals. These include, among other things, provision of work opportunities, alleviation of poverty, increase in the GDP, generation of employment, creation of a much needed feeder industry for larger enterprises, and contribution to the export sector. Ibbotson and Moran (2005) argue that since SMEs play an increasingly important role in a country's economy, the wellbeing of these firms is a prerequisite for national success.

The OECD (2004) report estimates that over 95 per cent of enterprises in the OECD area are SMEs, which account for 60-70 per cent of jobs in most countries. They are the source of most new jobs and make significant contributions to innovation and employment in the high-technology sphere. Duarte (2004) argues that SMEs are very important because they are defined as the engine of economic growth, but more so because they form the greatest share of national economic activity.

Moreover, SMEs employ more than 70 million in the EU, a full two thirds of all EU employment (Watson, 2001). SMEs predominate in the service sector but also account for a high percentage of manufacturing organizations. SMEs account for at least half of OECD manufacturing employment, and on average organizations with less than 50 employees account for 20 per cent of OECD manufacturing output (OECD, 2002). In the UK there are approximately 3.7 million businesses of which 99 per cent have fewer

than 50 employees. This constitutes about 46 per cent of non-government employment and 42 per cent of non-government turnover (OECD, 2002). Abdullah (2000) maintains that in Malaysia, Indonesia, Singapore, Taiwan and South Korea, there are 40 million SMEs, accounting for 90 percent of all enterprises. These SMEs employ between 32 to 84 percent of the work force depending on the country, and contribute between 30 to 60 per cent of national GDP. In the Indonesia there are approximately account 99% of the total number of business enterprises (Macgragor and Kartiwi 2010).

In fact, most countries recognise the importance of SMEs. As can be seen from the previous discussion, their importance is evident in their share of organizations (whether by number or by turnover) and GDP, as well as their major role in dealing with problems of poverty and unemployment. According to JLGC, a report by the Jordan Loan Guarantee Corporation, around 80 per cent of the labour force in the private sector is employed by SMEs, and around 30 percent of the total output is produced by them (JLGC, 2000).

Ajlouni (2006) argues in her study that the SME sector is vital for the development of Jordan's economy in terms of employment and innovation. She states that SMEs are the engines of the economy, since a large proportion of Jordanian commercial activity is carried out by them. She points to Jordan's relatively small economy and marketplace as magnifying this effect. SMEs in Jordan can also contribute to the economy by decreasing the level of poverty and unemployment, by creating a variety of job opportunities, and by generating income for their employees.

The development of SMEs has been one of the major elements of Jordan's economic development strategy since the country's independence. The SMEs sector occupies a place of strategic importance in the Jordanian economic structure due to its considerable

considerable contributions in terms of output and employment (Lozi, 2008).

2.3.3 The characteristics of SMEs

Many studies have attempted to define the characteristics of SMEs. Their strengths and weaknesses differ markedly from those of large organizations, which is why all of this research recognises that the processes and techniques that have been successfully applied in the latter will not necessarily produce similar outcomes when implemented in the former.

Auger and Gallaigher (1997) consider that SMEs' specific attributes distinguish them from large organizations, a distinction most often noted in studies of information systems usage. It is argued that SMEs differ from large organizations in the way they develop their corporate strategies and their technological policies. Large organizations typically have well defined processes for developing and implementing strategies through a corporate planning process, while SMEs often adopt less structured approaches, strategies and policies that may evolve through practice rather than being formally codified. Other researchers suggest that the key factor in SMEs' adoption of e-commerce is business size (i.e. number of employees) (Fallon and Moran, 2000; MacGregor and Vrazalic, 2008). Early studies by Fallon and Moran (2000) and Martin and Matlay (2001) have found significant links between SMEs' sizes (defined in terms of number of employees) and the intensity with which they adopt e-commerce. Both researchers suggest that the outcomes would not have been affected by geographic spread or market focus; rather, service organizations were more willing to implement e-commerce than other sectors.

Zhu et al (2003) consider that the relationship of size to the readiness to adopt e-commerce is due to four factors. SMEs are less likely to achieve economies of scale, which is an important concern due to the substantial investment required for e-business

projects; they tend to have fewer disposable resources that would facilitate adoption; they are less capable of sustaining the high levels of risk associated with the early stages of investment in e-business; and they lack the necessary market power to influence trading partners to adopt the e-commerce technology.

Tan et al (2007) emphasise that organizational size is one of the most important factors in the adoption of e-commerce. These studies show that size is a major factor distinguishing SMEs from other types of organization. Stockdale and Standing (2006) point out that their relatively small size enables SMEs to be more adaptable and responsive to changing conditions than large organisations, and to benefit from the speed and flexibility that the electronic environment offers. However, it must be noticed that the process of adoption within an organization should accord with its size. For example, Powell, et al (2006) finds that "Size is seen as a significant factor in SMEs adoption of internet technology". These early suggestions have been supported by more recent studies, among them MacGregor and Vrazalic (2008), who emphasise SMEs' uniqueness: they are distinguished from their larger counterparts by several characterises, particularly organizational resources, size and management and ownership structure.

SMEs have fewer resources for the adoption of e-business than to large organizations. They are more vulnerable because of their lack of financial and human resources (Auger and Gallagher, 1997). SMEs generally have limited business choices, focusing mostly on their core businesses and skills. Limited financial resources limit investment in technology, the number of expert and skilled staff and the funds available for training (Gilmore et al, 2001). More recent studies such as OECD (2004) and Kartiwi (2006) suggest that lack of finance due to a focus on the needs of the moment at the expense of long-term planning is frequently an important factor limiting the growth of SMEs.

A number of recent studies have suggested that SMEs suffered from a lack of technical expertise (Barry and Milner, 2002; Rao et al, 2003; Kartiwi, 2006). A study conducted by Stansfield and Grant (2003) points to the weight of evidence that a lack of knowledge and skills are factors inhibiting SMEs from adopting e-commerce. OECD (2004) and Bose and Sugumaran (2009) expand on this: the skills base of SMEs is generally related to production, marketing, finance and accounting, and such IT knowledge they possess is centred around their conduct of normal business and the adoption of new business strategies. Barry and Milner (2002) suggest that SMEs have unique characteristics including a lack of technical and technological expertise and an insufficiency in human resources by which they can expand technology and undertake technical improvement.

On the other hand, a widely recognized advantage of SMEs over large organizations is the nature of their managerial decision making. Researchers have found that decisions for adoption of e-commerce are usually made by owners or managers (Gilmore et al 2001, Kapurubandara and Lawson 2006; Scupola 2009; Ramdani et al 2009).

A study by Lefebvre et al, (1997) finds that the implementation of technology strategies in SMEs was strongly influenced by the owner/managers perception of their environments. Levy and Powell, (2005) highlight the critical role of the owner/manager in making this decision. Clearly, owner/managers play a dominant role in SMEs and are critical contributors to their strategies and policies.

Researchers also stress that SMEs are more flexible and entrepreneurial than large organizations, with a better capacity to respond to changing customer demand and to adopt different forms of work organization and new technologies (Al-Qirim and Corbitt

2001; Stockdale and Standing, 2006; Feltham et al 2005). A more recent study by Chong and Prevan (2007) also emphasises this flexibility; SMEs can rapidly adapt themselves to challenges by adopting new strategies and technologies. This flexibility is made possible by the simplicity and informality of their internal structures (Stockdale and Standing, 2006). They are generally less formal in their organisational and managerial practices, and their IT capabilities and expertise are usually less sophisticated than those of larger organizations. Their methods of communication tend to be less formal, their modes of operation less bureaucratic and their functional divisions less rigid.

Other studies focus on different characteristics, such as a business's age (Gilmore et al, 2001; Fallon and Moran 2000; Reo et al, 2003), its sector (Martin and Mataly, 2001; Rao et al, 2003) and its market share (Hadjimonolis, 1999; Quayle, 2002; MacGregor and Vrazalic, 2006).

For convenience, the characteristics shown in these studies are summarized in Table 2.3.

SMEs Characteristics	Source Literature
Business size	Damanpour, 1991; Rogers 1995; Auger and Gallagher 1997; Martin and Matlay 2001; Fallon and Moran 2000; Zhu et al 2002; Stockdale and Standing 2006; Powell et al 2006; Tan et al 2007; Xu et al 2007; MacGregor and Vrazalic 2008
Business age	Gilmore et al 2001; Fallon and Moran 2000; Rao et al 2003
Business sector	Martin and Mataly 2001; Rao et al 2003
Limited resources	Abell and Lim 1996; Auger and Gallagher 1997; Gilmore et al 2001; OECD 2004; Kartiwi 2006
Lack of technical expertise	Gilmore et al 2001; Barry and Milner 2002; Stansfield and Grant 2003; Rao et al 2003; OECD 2004; Bose and Sugumaran 2009; Kartiwi 2006
Owner/Top Management influence	Gilmore et al 2001; Levy et al 2002; Feltham and Barnett 2005; Kapurubandara and Lawson 2006; Ramdani et al 2009
Market share	Hadjimonolis 1999; Quayle 2002; MacGregor and Vrazalic 2006
Flexibility	Al-Qirim and Corbitt 2001; Stockdale and Standing 2006; Feltham et al 2005; Sanchez and Marin 2005; Chong and Prevan 2007; MacGregor and Vrazalic 2008

Table 2.3 Characteristics of SMEs

2.4 SMEs and e-business

Development of the internet to pave the way for SMEs to implement e-business using less expensive options than such traditional value-added networks such as EDI is

intensive (Ratnasingam, 2000). MacGregor and Vrazalic, (2008) argue that the use of e-business by SMEs is not a recent phenomenon indeed; they are typically regarded as innovators.

The growth of e-business and the move towards e-government in many parts of the world are driving those SMEs that are suppliers to large organizations and government to use the internet (Drew, 2003). As a result, SMEs are emerging as significant internet users, and like their large counterparts are increasingly adopting e-commerce (Drew, 2003).

Previous studies have suggested that they are at their early stages of adoption (Poon and Swatman, 1998; Poon, 2002; Mehrtens et al, 2001; Drew, 2003; Taylor et al, 2004; Stockdale and Standing, 2006; Levy and Powell, 2005; Mendo and Fitzgerald 2005; Pavic et al, 2007; Erikson et al, 2008; Eshun et al, 2009; Hunaiti et al, 2009). According to these commentators, in these early stages of implementation SMEs adopt e-commerce mainly for information and communication purposes. For example, Poon (2002) argues that SMEs' adoption of internet commerce is still slow, and that many SMEs are not realizing short-term benefits from this method of transaction. Surveys conducted in the UK and other parts of the world have indicated that e-business uptake among SMEs has been slow (Taylor et al, 2004).

Mendo and Fitzgerald (2005) emphasise that the number of SMEs in the advanced stages of e-business is very low compared with larger companies.

This finding has been more recently supported by Pavic et al (2007): of UK (SMEs), who found that the adoption of e-business as the basis for business communication and transaction in SMEs is still sluggish. This slow rate has been attributed to the various barriers or impediments faced by these organizations, which in turn is mainly due to the low level of diffusion of information and communication technology, especially in a

developing economy that limits the level of awareness of e-commerce (Molla and Licker., 2005). The majority of SMEs have access to the internet but they do not use it for e-business applications. Some 40 per cent of SMEs do not have websites, and the majority do not use the internet, extranets, online purchasing or e-government services (Chaffey, 2007).

Several studies have been carried out to examine the relationship between SMEs and e-commerce, and the opportunities created by the adoption of e-business by SMEs. Poon and Swatman (1999) assumed that there would be no integration until significant benefits could be demonstrated or turnkey solutions become more affordable. SMEs have recognized the positive effect that the Internet and e-business can have on their operations, benefits that include business applications using computer terminals, email and the Internet (OECD, 2004; Erikson et al, 2008). Porter (2001) demonstrates that SMEs have been known to adopt new technologies as soon as they are available. Internet technologies help businesses establish distinctive strategic positions to a much greater extent than allowed by previous technologies. Drew (2003) indicates that early use of e-commerce was mainly driven by a combination of management enthusiasm and the need for improved communication.

In spite of the widespread acceptance of e-business adoption in large organizations, the extent of e-business usage varies widely between SMEs.

There is evidence showing they are indeed utilising e-business, but not to its full potential (Peet et al, 2002; Kula and Tatoglu, 2003; Eshun et al, 2009; Hunaiti et al, 2009). E-business in SMEs is currently a real growth area, which is why it makes a real contribution to the economy (Lee and Cheung, 2004). More recently, MacGregor and Vrazalic, (2006) show that e-commerce technology has the potential to become a major

source of competitive advantage to small business because it is a cost effective way of reaching customers around the world, as well as being a means of competing on equal terms with larger counterparts. Sanchez et al., (2007) note that e-business has great potential for developing SMEs through more effective use and better integration of e-business processes, while assisting them to make more efficient decisions relevant to their performance. E-business can in fact generate a step change in SMEs and make them more competitive, innovative and able to generate growth.

E-business has provided a unique opportunity for SMEs to be more competitive, and to do business in a global environment (Beheshti and Sangari., 2007). It is also suggested that there has been rapid growth in the use and adoption of e-business by SMEs. This new business technology also presents the opportunity for new ways to do business, giving rise to a new, and more flexible type of SME that is more successful in doing business.

In developing countries there is, however, a lack of empirical evidence regarding the adoption and use of e-business in organizations, and in particular in SMEs. Neither has previous research sufficiently explained the stages by which e-business matures, nor the factors' influencing it's among SMEs, particularly in the communication sector. Its impact on SMEs in developing countries is similarly under researched.

This literature review examines both enablers and barriers associated with the adoption of e-business by SMEs, as shown in Fig.2.1 This study groups the key enablers of e-business adoption under the headings of "*market enablers*", "*external enablers*" and "*organizational enablers*". Similarly, key barriers are categorised under the headings of "*technological barriers*", "*organizational barriers*" and "*external barriers*", as explained in subsequent sections.

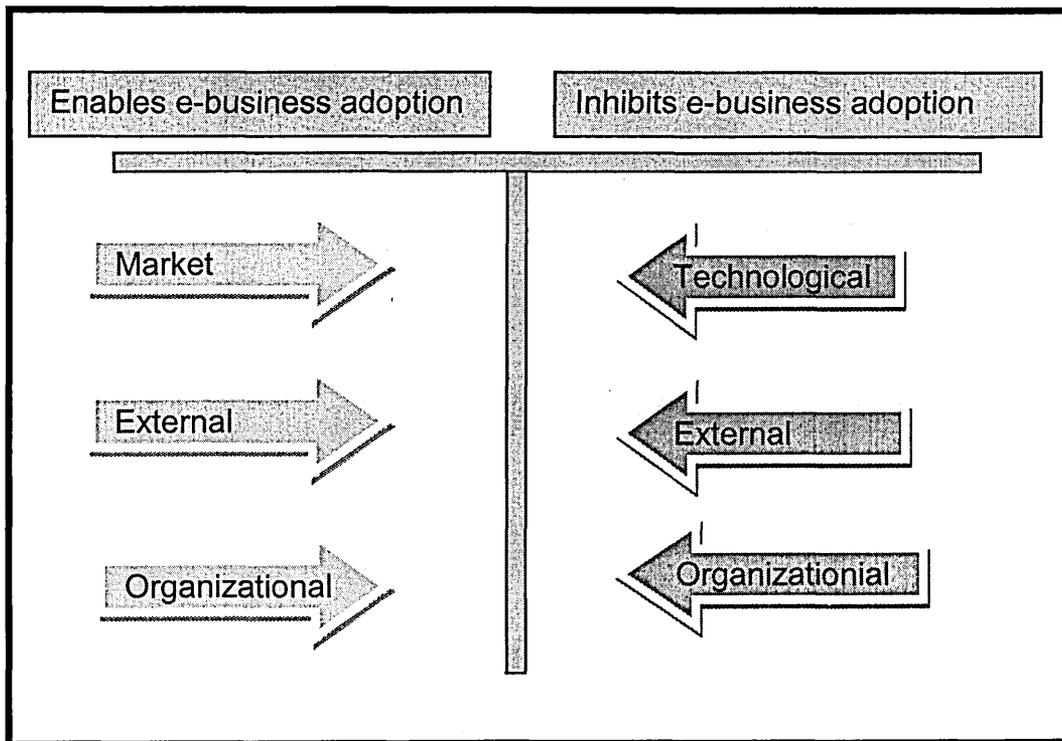


Figure 2.1 Enablers of and barriers to e-business adoption

In order to identify various factors perceived to be associated with e-business adoption by organizations, and in particular SMEs, a review of the related e-business studies has been conducted and the various factors involved have been categorised accordingly.

2.4.1 Enablers of e-business adoption

In order to reap the full benefits of e-business implementation, businesses must identify and evaluate a variety of enablers affecting the adoption and use of e-business in SMEs. Chaffey (2007) states that enablers for the adoption of e-business are the main motivation for such adoption.

Abell and Lim (1996) emphasise the main enablers: reduced costs, revenue growth, enhanced customer services, enhanced lead times and improvement in sales. These were the major criteria for the adoption of e-business, to which external technical support was

regarded as being very important. In an early study carried out on 146 SMEs by Poon and Swarman (1999), respondents listed five enablers of e-business adoption: new methods of direct or indirect marketing, strengthening of relationships with business partners, the ability to reach new customers, enhancement of customer services and the reduction of communication costs. These suggestions have been supported by more recent studies (Reimenschneider and Mykytyn, 2000; Raymond, 2001; Levy and Powell, 2005; Ramsey and McCole, 2005; Bharadwaj and Soni, 2007; Chong and Pervan, 2007).

This study groups key enablers of e-business adoption under “*market enablers*”, “*external enablers*” and “*organizational enablers*”. Market enablers include the ability to reach new customers, the enhancement of customer relations, branching out into new business areas and the enhancement of customer services. External enablers include customer demand, supplier requests, competitive pressure and government incentives, and among organizational enablers are cost reduction, management support and enhanced revenues. This categorisation of enablers helps to better understand their nature as well as facilitating exploration of their relationship with the adoption of e-business by SMEs. The following section extensively reviews the literature discussing each enabler.

2.4.1.1 Market enablers

Many studies of e-business have attempted to examine the association between enablers and the adoption of e-business. Market enablers include the reaching of new customers, the enhancement of customer service, the ability to enter new business areas and markets, and the enhancement of customer/supplier relationships. These enablers were identified by Poon and Swatman (1999), Auger and Gallaaugher (1997), Levy and Powell, (2005), Keoy et al (2006), Al-Qirim (2007b), Chong and Pervan (2007) and

Ashrafi and Murtaza (2008) as key elements in the adoption of e-business by organizations.

Entering new markets and business areas are equally important (Jennex et al, 2004). Keoy et als' (2006) study of e-business adoption in Malaysia and the UK finds that entering new business areas and markets are crucial enablers for both countries. The results of a study conducted by Chaston and Mangles (2002) indicate that SMEs move to the use of e-business are driven by new marketing activities, with the adoption of innovative approaches to ensure ongoing provision of new products or services as online market offerings.

Simpson and Docherty (2004) point out that the most cited reasons for e-business adoption tend to be the desire to reap the benefits of entering new markets.

The enhancement of customer services is another motivation for developing and implementing e-business (Ramsey and McCole, 2005; Chong and Pervan, 2007; Harindranath et al, 2008 Ashrafi and Murtaza, 2008). Daniel et al, (2002) highlight the enhancement of customer relationships (for example, brand development) and the seeking out of, and the facilitation of exchanges with, new customers as being the main enablers for SMEs' adoption of e-business. An early study by Auger and Gallagher (1997) identifies the main requirement for the adoption of e-business is organizations' enhancement and improvement of customer services, particularly for SMEs.

Simpson and Docherty (2004) and Ashrafi and Murtaza (2008) consider the enhancement of customer relationships, for example as a potential enabler stimulating the adoption of e-business. Ramsey and McCole (2005) likewise acknowledge that this is the most significant factor affecting an SME's decision to adopt e-business.

Another important element of successful implementation of e-business, one that is much cited in the literature, is the ability to reach new customers (Levy and Powell, 2005).

According to Abell and Lim (1996) and Poon and Swatman (1999), this ability is the main motivation for the adoption and implementation of e-business by SMEs. In fact, "reach new customers" was found to be one of the major motivators in this regard in studies by Bose and Sugunaran (2009), Qualye (2002) and Grandon and Pearson (2004).

An OECD report (2004) acknowledges that the adoption of e-commerce by SMEs can allow them to reach a wider and possibly more targeted range of customers, locally and globally, in B2C or transactions. Sutanonpaiboon and Pearson (2006) recognize the opportunity e-commerce provides SMEs of reaching new customers, as well as the fact that this is one of the key components of the perceived strategic value of e-commerce.

However, e-commerce can give small firms a similar potential to large ones for reaching customers in every country in the world Schneider (2007). Chaffey (2007) declares that such adoption provides both sellers and buyers with many advantages by decreasing the cost and the duration of their daily transactions. With minimal capital expenditure, a company using e-commerce can easily and quickly locate more customers and allow them more accessibility and convenience for shopping (Turban et al, 2006).

2.4.1.2 External enablers

Many researchers and studies have addressed the external enablers associated with e-business adoption among SMEs in developed and developing countries (Windrum and Berranger, 2003). Researchers have identified a number of these factors that influence e-business adoption, including customer demand, competitive pressure, supplier requirements and government incentives. The majority of e-business studies suggest that customer demand and competitor pressure provide the main impetus for the

adoption of e-commerce. Customer demand is beginning to move organizations in this direction, particularly those that are preferred suppliers (Poon, 2002). In their study of e-business adoption by SMEs in Australia, Chong and Pervan (2007) consider that pressure from trading partners and customers plays a critical role in encouraging the adoption of e-business by SMEs. They also find that market pressure from both customers and suppliers is strongly related to the adoption and extent of e-business.

Most studies echo these findings. An important enabler is customer pressure (Poon, 2002; Levy and Powell, 2005). In their study of SMEs, Martin and Matlay (2001) identify customer and competitive pressures as being of statistical significance for the adoption of e-business, while for Qualye (2002) the former only is of importance.

Powell et al, (2006) maintain that external pressures include those from customers, suppliers and employees, all of which push SMEs to adopt e-commerce. They also find that the development of e-commerce in SMEs is based on customer requirements through consultation sessions with clients, while the customer is clearly the key factor as regards adoption (Powell et al, 2006). Many SMEs have invested heavily in EDI, and their current dilemma is whether to fulfil customer demands and suppliers requests to move to internet-based e-commerce, particularly in SMEs that are preferred suppliers (Powell et al 2006). In a more recent study in e-business adoption by Koey et al, (2006) demands by customers and suppliers are enablers for e-business use in Malaysian and UK organizations. They also observe for organizations from these same countries that supplier demand is one of the least significant enablers for the implementation of e-business implementation. Al-Qirim (2007b) also emphasises that external enablers such as supplier/buyer pressure, types of products and services and policy makers are the most important for the adoption of e-business by SMEs.

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Researchers have also identified competitive pressure as a main enabler for e-business adoption by SMEs (Chong and Pervan, 2007; Ashrafi and Murtaza, 2008). In other words, competitive pressures provide the main impetus for SMEs to deploy their existing capabilities. Many organizations believe they would gain a competitive advantage if they were among the first to implement e-business (Poon 2002; Rao et al 2003; Bidgolo, 2002). In their study of e-commerce adoption and use by SMEs, Wymer and Regan (2005) consider that competitive pressure is the most important single such factor. Competitive pressure is an important enabler for e-business use and adoption (Raymond 2001; Al Qirim 2007b; Ashrafi and Murtaza 2008).

Chong and Pervan (2007) indicate that the emergence of competitive pressure as a key variable also underscores the need to electronically integrate business operations, both internally and externally. Competitive pressures apart from compatibility were significant determinants of e-commerce adoption (Grandon and Pearson, 2004). However, organizations would respond to competitive pressures regarding the adoption of e-commerce, these pressures come from the understanding that organizations will copy or duplicate their competitors' processes (Teo and Pian, 2003).

Another major external enabler common to many studies was that relating to government incentives. The role of government is also a powerful institutional driver affecting innovation, especially as regards resource-poor SMEs. Many governments have active intervention policies to encourage such moves by SMEs. In the UK, for example, the government has policy guidelines and websites that provide information about internet opportunities (Powell et al, 2006). Government initiatives are focused on promoting the adoption of e-commerce in SMEs (Stockdate and Standing 2004). In Singapore there are a number of initiatives for SMEs (Kendall et al 2001). Keoy et al

(2006) emphasise that "Governmental agencies play an important role as the lead-user of e-business if various business and private-sector related activities are to be encouraged to move online, the electronic government can take the form of various online transaction such as company requirement, information by websites".

The government has recognised that the level of adoption of e-commerce by SMEs will result in minimising the barriers of time and distance between world markets (Al-Qirim and Corbitt 2001). For example, Ramsey and McCole's (2005) study of SMEs in New Zealand indicate that, while government bodies should continue to provide help and support to those that need it, the responsibility for e-progress does not and should not solely rest with them. There is some evidence that these initiatives are successful in encouraging SMEs. Beck et al (2005) show that government contributions are unimportant in fostering the efficient use of e-commerce by SMEs. Governments in all countries recognize the benefits of e-commerce for the economy and have begun to create various funding schemes and initiatives in order to facilitate the adoption of e-commerce (Macgregor and Vrazalic, 2006).

2.4.1.3 Organizational enablers

Researchers into e-business adoption categorize many related organizational enablers. The main factors they have identified are management support, enhanced revenues and reduced costs. Grandon and Pearson (2004) maintain that, in both developed and developing countries, the main enabler for e-commerce is seen as reduced costs.

The greatest gain that is made possible by using e-business applications is the reduction of costs (Amit et al, 2002; Levy and Powell, 2005; Ashrafi and Murtaza, 2008). Jennex et als' (2004) study of the uptake of e-commerce by SMEs in developing countries comes to a similar conclusion. Seyal and Rahman (2003), however, cite lower operating

and transaction costs as one reason for the adoption of the internet by business organizations. They also suggest that small organizations may adopt e-commerce because of the availability and decreasing cost of sophisticated hardware and software, as well as the overall benefits that can be reaped by SMEs. Beck et al (2005) argues that SMEs' decisions to adopt e-commerce technology are more dependent on potential cost reductions and improved supplier-customer coordination than on other enablers.

In a study of e-business adoption by SMEs Wymer & Regan (2005) show that the reduced costs is the one consistent factor across all organizational types. There are many examples of reducing costs, including advertising and promotion (Kartiwi, 2006). This finding has also been reported in more recent studies by Chong and Pervan (2007) and Harindranath et al (2008), who indicate that the reduction of costs often determine the nature and extent of e-business. Beheshti and Sangari (2007) also consider that e-business enables companies to become more efficient by lowering costs. There are in fact many examples of potential cost reductions and savings. The OECD report of 2004 estimates that transaction costs of between \$2.22 and \$3.32 can be reduced to \$0.65 to \$1.10 – a saving of some 70 per cent.

The adoption of e-business by SMEs is also heavily related on the acceptance of technology by owner/managers (Al-Qirim, 2007b). Studies have found that the ownership and decision making power of SMEs is frequently exercised by one or two people (Cloete et al, 2002).

Management support is important for e-business implementation because it ensures the availability of adequate resources for this activity (Scupola, 2009). Owner/manager motivation for such technology has been identified as a major motivator in SMEs' adoption of e-commerce (Stockdale and Standing 2004). The interest of top

management or ownership is an important factor in the allocation of resources for the adoption of e-commerce (Premkumar and Roberts, 1999).

Several studies confirm that the support of top management is the most motivation for the adoption of e-business by SMEs. Grandom and Pearson (2004) investigate the factors influencing the adoption of e-commerce and find that the support of top management in SMEs is a significant factor when implementing such technology. Indeed, SME owner/managers are often highlighted in the literature as factors determining the nature and extent of such adoption.

The effect of such support can be undermined by owner/managers' weak backgrounds in technology or IT skills, which means that they cannot judge the potential of technology investment (Harindranath et al, 2008). It is also suggested that most of the owner/managers are uninformed about the variety of support mechanisms available through regional and national agencies targeting SMEs.

These studies have also shown that the typically small SME management teams are usually influenced by the manager/owner's personal preferences. For example, a study of Danish and Australian companies by Scupola (2009) demonstrates that top management support and CEO characteristics are the most significant organizational factors in the adoption and implementation of e-commerce. He also finds that decisions to adopt e-commerce are made by top management and CEOs of all Danish and Australian SMEs.

Owner/managers have also been found to be the more important enablers' for e-business adoption by many authors (McGowan and Durkin, 2002; Powell et al, 2006). Managers must see that e-commerce leads to an increase in their job performances before they decide to support adoption. Most do indeed see that e-commerce is useful to

their organization and decide to proceed with implementation (Grandon and Pearson, 2004). Previous studies have also pointed out that top management and CEOs are generally the single deciders when it comes to adopting e-commerce; they do not generally share information with their employees. Only they identify new opportunities (Poon and Swatman, 1998; Chau and Turner, 2001).

Another organizational enabler of successful implementation of e-business by SMEs often cited in the literature is the enhancement of sales and revenues (Abell and Lim,, 1996; Ashrafi and Murtaza, 2008). The improvement in sales is also a powerful driver affecting the adoption of e-business. In their study, Abell and Lim (1996) consider that enhanced revenue plays an important role in this respect. The importance of this is that if organizations do not have a revenue stream related to this new technology, and can therefore not identify any benefits of implementing it, their interest in it may cease. Ashrafi and Murtaza's (2008) study of SMEs in Oman identifies the main enabler for most organization that had adopted e-business as revenue and sales enhancement.

Generally, this literature shows that there is a wide range of e-business enablers requiring an equally broad variety of motives such as top management, government policies and increased sales, all of which are important determinants of the extent and development of e-business among SMEs.

As these e-business enablers are important for the present research, they will be revisited in more detail in Chapter 4, on the research framework.

Table 2.4 summarises the external and internal enablers.

Market Enablers	
Reach new customers	Abell and Lim, 1996; Poon and Swatman, 1998; Bose and Sugunaran, 2009; Qualye 2002; Grandon and Pearson 2004; Levy and Powell 2005; OECD, 2004; Sutanonpaiboon and Pearson, 2006; Turban et al, 2006
Enhance customer/supplier relation	Ramsey and McCole, 2005; Ashrafi and Murtaza, 2008
Enter new business and Market	Chaston and Mangles, 2002; Simpson and Docherty, 2004; Keoy et al, 2006
Enhance customer service	Auger and Gallaaugher, 1997; Ramsey and McCole, 2005; Ashrafi and Murtaza, 2008

External Enablers	
Pressure from Customers	Martin and Mataly, 2001; Poon, 2002; Qualye, 2002 ; Levy and Powell, 2005; Chong and Pervan, 2007; Powell et al, 2006; Al-Qirim, 2007b
Pressure of competition	Martin and Mataly, 2001; Raymond, 2001; Poon 2002; Rao et al, 2003; Bidgolo, 2002; Teo and Pian, 2003 ; Grandon and Pearson, 2004; Wymer and Regan, 2005; ; Chong and Pervan, 2007; Al-Qirim, 2007b; Ashrafi and Murtaza, 2008
Government incentives	Kendall et al, 2001; Stockdate and Standing, 2004; Ramsey and McCole, 2005; Beck et al, 2005; Powell et al, 2006; Al-Qirim, 2007b; Keoy et al, 2006; Macgregor and Vrazalic, 2006
Suppliers required	Powell et al, 2006; Koey et al, 2006; AlQirim 2007b
Organizational Enablers	

Reducing Cost	Amit et al, 2002; Grandon and Pearson, 2004; Jennex et al, 2004; Levy and Powell et al, 2005; Wymer and Regan, 2005; Seyal and Rahman, 2003; Beck et al, 2005; Kartiwi, 2006; Chong and Pervan, 2007; Beheshti and Sangari, 2007; Harindranath et al, 2008; Ashrafi and Murtaza, 2008
Management Support	Premkumar and Roberts, 1999; Grandon and Pearson, 2004; Stockdale and Standing, 2004; Harindranath et al, 2008; Powell et al, 2006; Scupola, 2009
Enhance Revenue	Ashrafi and Murtaza, 2008

Table 2.4: E-business enablers by author

2.4.2 Barriers to e-business adoption

Although small businesses have made extensive use of electronic media to provide opportunities for direct access to international markets and customers, research shows that it is mostly larger companies that have benefited from such technology (Poon, 2002; Chaffey, 2007; MacGregor and Vrazalic, 2008). Al-Qirim and Corbitt, (2001) argue that SMEs have been affected negatively as well as positively by their adoption of e-business. The reasons for this are diverse and have been examined in various studies of the barriers that hamper SMEs from adopting, and subsequently fully reaping, the benefits of e-business (Qualye, 2002; MacGregor and Vrazalic, 2008).

There is a great deal of literature in developed countries that investigates the factors inhibiting adoption of e-commerce in SMEs, and a relative paucity of such studies in developing nations. The literature on the subject tends to clarify the overall meaning of these barriers by identifying the various categories that constitute what are known as barriers or challenges. These studies have looked at “technological barriers”,

“organizational barriers” and “external barriers”. However, this clarification of these barriers helps understand them better; there is a need to address the relationship between them and the adoption of e-business by SMEs. The next section reviews the literature on each barrier.

2.4.2.1 Technological barriers

Technical barriers can seriously inhibit the implementation and development of e-business in organizations, particularly in SMEs. Researchers in this field have identified a variety of related technological barriers, some of the main ones being the cost of implementation, security and the quality of the Internet (Lawrence 2002; Al-Qirim, 2007b; Sulcic and Lesjak 2010).

Others include concerns regarding e-business and telecommunications infrastructure, network security, and difficulties in choosing the appropriate hardware and software (Hadjimanolis 1999 ; OECD 2004; Multua and Brakel 2006; Bose and Sugmaran, (2009) The lack of secure electronic transaction capability and suitable software (MacGregor and Vrazalic 2006) and the high cost of implementation, which involves buying computer hardware and software, as well as website issues (El-Nawawy and Ismail 1999; OECD, 2004) have become a major issues for adoption.

Among these technical barriers, the major one is that of security issues (Beynon-Davies et al, 2003; OECD, 2004; Multua and Brakel 2006; MacGregor and Vrazalic 2006; Bose and Sugumaran 2009; Jahankhani, 2009). Sengupta et al (2005) acknowledge that these issues, and especially that of security, are major challenges to the use of e-commerce by SMEs. The issue of security and privacy are primary concern for business activities in any sector involved with financial transactions, a consideration that could hinder the acceptance of electronic banking and payment by businesses and consumers (Keoy et al, 2006). Doherty and Fulford, (2006) consider that e-commerce faces several kinds of security issues such as viruses and worms, fraud, hacking and various denial of

service attacks. A recent study of the adoption of e-commerce by New Zealand SMEs conducted by Al-Qirim, (2007b) finds that the main inhibitory factors are high cost and lack of security.

Many people are reluctant to give credit card details over the Internet without any assurance that details will not be available to others, a concern not without foundation. For example, For example, Jahankhani (2009) sees electronic payment as the main issue involved in security, and suggests that sensitivity about both privacy and fraud inhibits consumers from providing personal information such as credit card details. Security, protection of card information and firewall security are also of great concern for those who do use cards for online transactions.

Poon and Chau (2001) consider that smart cards are effective replacements for credit cards and will reduce fraudulent financial transactions.

An OECD (2004) report numbers among the barriers uncertainties regarding payments and contracts, and deliveries and guarantees, with a wide variety in the perceptions of these barriers from country to country. In order to build trust among business partners and consumers, organizations must overcome these barriers by building reputations as competent, technology-based e-business service providers (Westland, 2002).

Another technological barrier is the high cost of implementing e-business, involving the purchasing of hardware and software, the setting up of Internet structures, and maintenance (Hadjamanolis, 1999; OECD, 2004). Amit et al (2002) point out that e-commerce is still being hindered by high call charges that limit the amount of time able to be spent online. Many SMEs believe that there is no sufficient financial return to justify the initial outlay. In an early study of SMEs' adoption of electronic technology in Cyprus, Hadjamanolis (1999) notes that e-commerce is still being hindered by

financial issues regarding the high cost of obtaining technological information, as well as difficulties in choosing the appropriate hardware and software. A more recent study by the OECD (2004) reports that security; cost factors and ongoing costs are the main barriers to the adoption and development of e-business in SMEs. It also demonstrated that such organizations will not adopt e-commerce if the benefits do not outweigh the costs of system development and maintenance. Turban et al (2006) emphasise that security issues and internet expenses determine whether such technology is implemented.

The quality of network also belongs in this category of barrier, a consideration that includes network reliability, bandwidth and obsolescent or obsolete technology (Cloete et al 2002; OECD, 2004; Kapurubandara and Lawson 2006).

These studies show that quality of Internet access is a key factor in organizations' implementation of e-business.

Saffu et al., (2008) indicates that many developing economies suffer from poor IT and power infrastructure. The availability of broadband connection may affect an SME's decision to adopt this technology, while broadband speed enhances the overall online experience for both customers and organizations and encourages them to spend more time online. Slow connections, on the other hand, discourage some SMEs from setting out along this road (Peet et al, 2002; OECD, 2002; OECD, 2004).

This discussion the wide range of technology barriers facing SMEs as they implement e-business. There is, however, very little research that examines these barriers. Their lack of IT expertise, limited resources and lack of Internet access means that SMEs must pay relatively more attention to these issues (Abell and Lim, 1996; Cloete et al 2002; MacGregor and Vrazalic, 2006; Sulcic and Lesjak, 2010). This will naturally influence their decision about whether or not to adopt such technology.

2.4.2.2 Organizational barriers

The wealth of literature on the adoption of e-business has identified many organizational barriers in this category. Some of the main ones are a perceived lack of fit with an organization's offerings, a lack of expert staff and a dearth of time in which to implement such technology (Hadjamanolis, 1999; Lawrence, 2002; OECD, 2004; Macgregor and Vrazalic, 2006; Kapurubandara and Lawson, 2006).

SMEs may be reluctant to adopt e-business solutions when they perceive a mismatch between such technologies and their own products or services. The OECD (2002) considers this as one of the main reasons why SMEs do not engage in e-business. Many SMEs feel that their business is not suited to the demands of electronic media, or that it is purely local, or that the complexities of e-business are too much for them (OECD, 2004, Macgregor and Vrazalic, 2006).

Hadjamanolis (1999) reinforces this point: SMEs who do not perceive a fit between e-commerce and their current business practices are reluctant to adopt it. The OECD (2004) report regarding 19 European countries states that, of those SMEs with fewer than 250 employees, around 40 per cent do not use the Internet for buying or for selling because they consider that it does not suit their type of business.

The lack of expertise staff is also an important obstacle. Tucker and Lafferty (2004) find that factors impeding SMEs from using e-business are a lack of managerial knowledge and expert staff. Skills and financial barriers do sometimes overlap (Au, 2002), however, because SMEs generally lack the qualified IT staff and the technical resources needed for e-commerce. Pavic et al(2007) argue that "Not only do SMEs have limited resources in terms of acquiring suitable technology, but they also lack human

capabilities, which contribute to a general lack of skills and knowledge within the organization to cope with new ideas, concepts and technologies". They identify these as the main issues facing the adoption of e-commerce adoption by SMEs.

The specialised technologies required to support e-commerce demand a highly trained and skilled workforce in order to be able to obtain the greatest benefits from IT (Kapurubandara and Lawson, 2006). Titi (2005) maintain that SMEs are not usually keen to invest in staff training if it means that key employees are missing from the business for any considerable period, or if the knowledge gained is not practical enough to be put into immediate use. Lack of time for implementation is another obstacle (OCED, 2004; MacGregor and Vrazalic, 2006). Lack of time means no investigation of e-business or its operation, no hiring of consultants and no appropriate consideration of system purchases. According to Stockdale & Standing (2004) SMEs are generally kept too busy with their day-to-day operations to spare any time for other activities. Beynon-Davies et al (2003) considers a lack of time for implementation as a key barrier impacting adoption levels of e-business in Wales.

2.4.2.3 External barriers

External barriers are also among the important factors hampering the implementation and development of e-business in organizations, particularly in SMEs (Hadijimanolis, 1999; Levy et al, 2005). Previous studies have identified several external barriers determining the adoption of e-business by SMEs, including the stability of government policy, cultural resistance, legal and regulatory barriers and low use of such technology by customers (El-Nawawy and Ismail, 1999; Beynon-Davies et al, 2003; OECD, 2004; Turban et al, 2006; Kapurubandara and Lawson, 2006; Mutula and Brakel, 2006). Government policy was identified as a major external barrier. According to Zhu et al

(2003), government policy plays the most important role in e-commerce adoption in SMEs. It is important to have government policies to protect consumers from unfair and deceitful trading practices by retailers and against unauthorized access and misuse of their accounts by hackers (Keoy et al, 2006). For example, telecommunication markets should be open to competition so that SMEs can choose among various technologies and services for high-speed Internet access. Government closure of such markets may affect the adoption of e-technology by SMEs (OECD, 2004). Mutula and Brakel (2006) find that the lack of government support impacts negatively on e-business adoption in Botswana, and that government support plays an important role in this regard there. Government policy can indeed hinder the progress of e-business by SMEs, especially when a country has no stable policy, a state of affairs that might delay or even prevent the adoption of e-business. Studies by El-Nawawy and Ismail (1999) and Kapurubandara and Lawson (2006) see the role of government in such areas as opening competitive telecommunications markets will give SMEs as a significant for their adoption of e-business.

Closely allied to barriers of policy are legal and regulatory ones, which are also cited as one of the most important to SMEs' uptake of new technology (Bose and Sugumaran 2009; Al-Qirim, 2007b). The OECD report of 2004 views legal uncertainties and conflicting regulatory environments for cross-border transactions, especially B2C, as having the potential to affect SMEs particularly strongly. Keoy et al (2006) emphasise that the legal system, especially in most developing countries, is not sufficient to protect those engaged in e-business. Moreover, the OECD report (2004) argues that legal definitions should be clarified by governments in order for SMEs to begin operating in the electronic environment. Sengupta et al (2005) considers the legal issues in respect of Regulation: those concerning online transactions, trust, privacy and the security of payments place major limitations on the adoption of e-business by SMEs. Quayle

(2002) argues that the government should change existing laws and regulations to favour e-business transactions, and to keep in mind the need for any future legislation regarding consumer protection laws and regulations to keep pace with developments in e-commerce. Low use by consumers and its effect on e-business adoption is another issue, which is addressed by Jones et al (2003), and Chen and McQueen (2008). They consider that such reluctance affects the adoption of e-business by organisations. While almost all customers in developed countries have easy access to the Internet, the low rate of Internet use by consumers in developing countries easily explains the weak and inadequate infrastructures there. Chen and McQueen (2008) find that insufficient Internet access directly influences the progress of e-commerce adoption.

Cultural barriers have also been extensively discussed. El-Nawawy and Ismail (1999) consider that such issues as social and psychological factors influencing the adoption of e-commerce in Egypt in a major way, a finding supported more recently by Beynon-Davies et al (2003) in their survey of the adoption of e-business adoption by SMEs in Wales. They view cultural resistance as one of the key factors restricting such adoption. Al-Qirim, (2007b) notes that these are the major barriers to the adoption of such solution by SMEs in New Zealand. This is because shopping is a social activity there: face to face contact with sellers is an important part of the experience. This review of the barriers to e-business implementation implies that SMEs face several hurdles that require a wide range of motivations and resources in order for such adoption to be successful. Little research specific to this type of organization appears to have been undertaken in this regard. As this barrier is important for the present study, Chapter 4 will deal with it in greater detail, discussing the empirical studies from other research conducted in both developing and developed countries.

These barriers are summarized in Table 2.5.

Barriers	Literature
Technological Barriers	
Security issues	Poon and Chau, 2001 ; Beynon-Davies et al, 2003; OECD, 2004; Multua and Brakel, 2006; MacGregor and Vrazalic, 2006; Bose and Sugumaran, 2009; Doherty and Fulford, 2006; Al-Qirim, 2007b
Cost of implementation	Hadjamanolis, 1999; OECD, 2004
Network quality	Cloete et al, 2002; Peet el at, 2002; OECD, 2004; Kapurubandara and Lawson, 2006
Organizational Barriers	
Unsuitability for business	OECD, 2002; OECD, 2004; Macgregor and Vrazalic, 2006
Lack of expert staff	Mehrtens et al, 2001; Tucker and Lafferty, 2004 ; Pavic et al, 2007
Lack of time for implementation	Beynon-Davies et al, 2003; OCED, 2004; Stockdale & Standing 2004 ; MacGregor and Vrazalic, 2006
External Barriers	
Stability of government policy	El-Nawawy and Ismail, 1999; Zhu et al, 2004; Kapurubandara and Lawson, 2006
Cultural resistance	Al-Qirim, 2007b
Legal and regulatory environment	Quayle, 2002 ; OCED, 2004 ; Tucker and Lafferty, 2004 ; Sengupta et al, 2005); Bose and Sugumaran, 2009
Low use by customers and suppliers	Jones et al, 2001 ; Chen and McQueen, 2008

Table 2.5: Barriers to e-business

2.5 Conclusion

This chapter has reviewed the literature associated with the main areas of e-business and SMEs. It started by defining the two concepts of e-business and e-commerce, examining other definitions and showing how both are used. It then discussed the four categories of e-business: business to business, business to consumer, consumer to consumer and consumer to business. The present research focuses on business to consumer from the organizational viewpoint. It went on to discuss the evolution of e-business, which fell into different models. Explanation the developers of these models from (information about the company products and services, customers or suppliers order placing, two way communications, taking of orders and receiving orders transaction and receiving payment on-line, after sales service from different previous models.

Definitions and characteristics of SMEs were discussed in order to highlight their importance and their contributing to national economic growth. The current state e-business in SMEs was thoroughly examined, with a discussion of enablers and barriers, in order to clarify the results of previous studies' investigations of the implementations of e-business. This in turn led to an examination of the factors contributing to the success of such implementations in the Jordanian context.

Based on the literature reviewed in this chapter, the following one will introduce the research framework designed to examine the factors that influence the implementation of e-business and the evaluation of such implementation on Jordanian SMEs. It will look closely at the methodology adopted by the present research in order to fulfil its aims.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

This chapter is concerned with the overall research strategy and methods and how they have been developed for this particular research project. It also seeks to develop and employ a research methodology that will ensure that the data collected fulfils the research aims

This chapter seeks to describe the research design and to develop an appropriate methodology by which the study can be conducted. It therefore covers the sampling design and procedures and the data collection method employed. The study was designed to investigate the enablers and barriers associated with the adoption of e-business by SMEs in Jordan through a quantitative survey. While there are a variety of alternatives for conducting research, this chapter seek to justify the choice of research methods employed.

A methodology is a set of techniques and procedures employed by the researcher to construct a systematic plan to achieve defined research objectives (Glatthorn, 1998). Gill and Johnson (1997) state that methodology is a process of interaction between the study's conceptual framework, including its questions, and the empirical world, which includes data collection and analysis. It is important to demonstrate a clear logical and reflexive relationship between research questions and field questions (Clough and Nutbrown, 2007). The study's research aims are articulated as questions in the form of a field survey, and investigates statistical significance. The purpose of a methodology is to discover and justify research assumptions as far and as practicable, and in so doing to

locate the claims which the research makes within the traditions of enquiry that use that methodology (Clough and Nutbrown, 2007).

The two main philosophical positions adopted by researchers in the 20th century are the positivist and phenomenological paradigms. Consideration by researchers of their philosophical stance on these paradigms should provide directions for designing all phases of the research study, as well as increasing the researcher's awareness of the limitations of particular approaches and ultimately leading to better research.

A paradigm is a set of shared assumptions or a way of thinking about some aspects of the world (Oates, 2006). Any research in a social or natural science discipline is dependent upon one of the philosophical paradigms known collectively as positivist or interpretive (Myers, 1999; Maxim, 1999, Oates, 2006). Crossan (2003) identifies the following reasons why philosophical perspectives are important for research methodology:

- They can help clarify the overall research strategy to be used
- Knowledge of research philosophies can help researchers evaluate various methodologies and methods and avoid using the wrong ones
- They may help the researchers to creative and innovative in either selection or adaptation of methods that were previously outside their experience

The most important philosophical assumptions are those relating to underlying epistemology, which can be defined as that which refers to assumptions about knowledge and how it can be obtained (Mayers, 1997). Both ontology and epistemology lead to methodology, which is a set of theories and methods that exhibit the same patterns or elements in common (Creswell, 2003).

3.2 Positivism

Smith (1998) de`scribes positivism in as

“Approaches to the social sciences [that] claim the label scientific, for they assume things can be studied as hard facts and the relationship between these facts established as scientific laws”

Thompson, (2000) defines positivism as a term used to describe a particular approach to science, whether natural or social. It shows that positivism has been a major influence in the philosophy of science for some time .Although less dominant now than in the past, positivism remains a pervasive influence at both an explicit and implicit level. Positivism accepts that we cannot observe the world of which we are part as totally objective and disinterested outsiders, and acknowledges that the natural sciences do not provide the model for all social research. However, they do believe in the possibility of an objective reality (Muijs, 2004). In the social sciences, the positivist approach has contributed a great deal to the philosophy of science (Maxim, 1999).

Positivists believe that reality is separate from the individual who observes it. It is assumed that reality is objective and can describe by measurable properties that are independent of the researcher. Furthermore, positivists believe that knowledge which is developed is based on the observation or experience of the real world, as in a scientific theory whose predictions can be discarded if they are not supported by empirical testing.

Positivist philosophy underpins what was often referred to as the traditional approach to scientific research (Crossan, 2003). Positivists believe that knowledge which developed is based on observation or experience of the real world. According to Denzin and Lincoln (2008), positivism contends that there is a reality that can be studied, captured and understood. Post positivists on the other hand argue that reality can never be fully

apprehended only approximated. Post positivism relies on multiple methods as a way of capturing as much of reality as possible.

Breu and Peppard (2003) point out that information systems research, of which e-commerce is part, have been criticised for the fundamental gap between theory and practice mainly because of the methodological inadequacy of the dominant positivist approach to research. This approach demands considerable rigour by minimizing the scope for subjectivity and rendering propositions testable by experimental means. Sarker and Lee (1998) have successfully used the positivist approach to disprove the current technology oriented theory of IT enabled business process redesign and to test an alternative theory. Most studies have shown that information systems research is currently dominated by positivist research methodologies (Arnott and Pervan, 2005; Stahl, 2005).

From the point of view of the present research it can be concluded that positivism is more suited to information systems research, which explores and examines human behaviour. This research adopts that approach because it is suitable for the further development and testing of the research model.

In contrast to positivist paradigms, interpretive ones assume that people create and attach their own meanings to the world around them and to the behaviour they manifest in that world (Lee, 1991). Lee points out that this paradigm emerges from the inadequacy of the methods used in the natural sciences when applied to the social ones.

Generally, the interpretive researcher collects data that describes the possible meanings and understandings of a phenomenon that occurs due to the participation of several members and social groups in their real life situations (Mayers, 1997). It sets out to subjectively understand the human constructs concerned, often through active involvement and observation, making understanding rather than predication the main role of interpretation (Pather and Remenyi, 2004). Unlike the positivists, the

interpretivists believe that reality and the individual who observes it cannot be separated (Webber, 2004). The lack of observer independent reality means that interpretive research must follow a procedure whose aim is to understand situations and give reasonable and acceptable accounts of them (Stahl, 2005).

3.3 Deductive and inductive research methods

Deductive research develops a conceptual and theoretical structure which is then tested by empirical observation. Inductive research, by contrast, develops theory from the observation of empirical reality (Collis and Hussey, 2003). Any research should use either the deductive approach to develop a theory and hypotheses and design a research strategy to test the latter, or the inductive approach, in which data is collected and theory developed as a result of the analysis of that data (Saunders et al, 2009). The choice of methods turns on whether the intent is to specify the type of information to be collected in advance of the study or to allow it to emerge from participants in the project (Creswell, 2003). It also suggests that the type of data may be numeric information or the recording and reporting of the participants' voices.

All methods contribute to a research approach that tends to be more quantitative or qualitative; a study dominated by the former approach uses theory deductively and locates it in the first the plan for the study, while a qualitative one would be more inclined towards the inductive approach of building from the data through broad themes to a generalized model or theory (Creswell, 2003).

Inductive research is rooted in the researcher's personal knowledge and experience of the truth, while deductive research is based upon logic and structure. The hypothetic-deductive approach emphasizes the use of deductive reasoning to test hypotheses. This approach requires that observable data be consistent with the rational outcome of a theory and its hypotheses (Routledge and BScN, 2007).

The quantitative approach has implications for the placement of a theory in any study using a quantitative approach. For Creswell (2003) those using such research methodologies place the theory in their introductions, their literature reviews, immediately after the presentation of their hypotheses or research questions, or in a separate section of their studies. Some researchers conducting qualitative research, on the other hand, regard the aim of their work as the generation of theory. The difference between the two types of research can be summarized thus: deductive investigation proceeds from general ideas (usually existing theories), infers specific expectations from these ideas, and then tests these expectations using empirical data (Chambliss and Schutt, 2009). Inductive research, on the other hand, employs specific data to develop generalisations or theories that explain this data. Collis and Hussey (2003) maintain that inductive research develops a theory from the observation of empirical reality, while the deductive method begins by developing a conceptual or theoretical framework which is then tested by empirical observation. However, both inductive and deductive approaches have been criticised. The highly structured research typical of deduction ignores the presence of human subjectivity because a deductive researcher, based on his external logic, formulates a theoretical framework to understand the phenomenon under investigation without taking into account the internal human logic involved (Gill and Johnson, 1997).

Researchers relate quantitative research with positivism and qualitative research with interpretism (Myers, 1999; Thompson, 2000). Creswell (2003) describes the two research approaches as follows:

- **Quantitative research** uses post-positivist investigation for developing knowledge and strategies of inquiry such as experiments and surveys, testing

a theory by specifying narrow hypotheses and the collection of data to support or refute those hypotheses. Data collection is performed using predetermined instruments that represent data statistically.

- **Qualitative research** uses participatory narrative design and open ended interviewing. Its strategies include narratives, phenomenologies, ethnographies, grounded theory studies or case studies.

The researcher will not begin with preconceived ideas in the form of testable hypotheses, a procedure which is inappropriate for determining the barriers and enablers of e-business adoption by SMEs in Jordan. Far better would be the present quantitative approach using a survey strategy based on questionnaires. Such a survey was conducted in order to gather data from a random sample of 55 SMEs in Jordan, for the purpose of verifying and extending the research findings across a wider area. The deductive approach was employed because it is suitable for investigating the social context, for comparing the way people perceive that context with the body of relevant theory. By contrast, the inductive approach is unstructured and allows access to human subjectivity, taking due account of people's internal logic regarding the phenomenon under study.

3.4 Research design

The research design provides a conceptual framework for the study, while the methods are the tools used to evaluate each specific aim. It provides a framework that guides data collection and analysis. According to Collis and Hussey (2003) research design is the science of planning procedures for conducting studies so as to get the most valid findings. Yin (2008) defines it as "the logic that links data to be collected and the conclusions to be drawn from initial questions of the study" and "a plan for assembling, organising, and interpreting information and its results in a specific product". For

Bryman and Bell (2007), research design relates to the criteria employed when evaluating business research. They also stress that the framework for the generation of evidence must be suited both to a certain set of criteria and to the research question.

Research design covers strategic decisions including the choice of data collection methods as well as more tactical choices regarding measurement and scaling procedures, questionnaires, samples and data analysis (Zikmund, 2003). Generally, the methodology and research design are determined by the purpose of the research (Clough and Nutbrown, 2007).

Research design is a general plan of how to answer the research questions. It is based both on those questions and on the researcher's aim of meeting the objectives (Saunders et al, 2007). Selecting a research design (either qualitative or quantitative) for a particular study is not always easy.

Cooper and Schindler (2003) suggest the following essentials that should be included in the research design:

- The design is an activity and time based plan
- The design is always based on the research questions
- The design guides the selection of sources and types of information
- The design is a framework for specifying the relationships between the study variables
- The design outlines procedures for every research activity

Glathorn (1998) defines research methodology as a set of techniques and procedures employed by the researcher to construct a systematic plan by which to achieve specified research objectives. Cooper and Schindler (2003) define it as an approach to a problem that is put into practice in a research process, which could be formally defined as an

operational framework within which facts are placed so that their meanings may be seen more clearly. Galliers (1992) lists eight major research designs used in IS research: laboratory experiments, field experiments, surveys, case studies, action research, simulations, forecasting and phenomenological studies.

While the process of conducting research can be classified as qualitative or quantitative, the purpose of conducting a research can be classified as exploratory, descriptive, analytical or predictive (Collis and Hussey, 2003). Exploratory research is conducted when there are few or no earlier studies to which reference can be made. This research is exploratory in that it seeks to determine the barriers and enablers associated with the implementation of e-business by SMEs, and to investigate the stages of growth of such adoption in Jordan. According to Walliman (2006), the experimental approach is generally used to examine causality (causes and effects). It manipulates one or more independent variable and measures the effects of this manipulation on dependent variables (those which register effects), while simultaneously controlling all other variables.

This research investigates the effect of relationships between variables. Bryman and Bill (2007) explain that the latter are directly caused by other variables, while the former are independent of any others. The objectives of the present study's design were to ensure that the hypotheses could be rigorously tested and that the results could be generalised. Primary data collection was necessary to meet these objectives, as no sufficient secondary data sources were publicly available in Jordan.

3.5 Selection and justification of the research methodology

Babbie (2004) maintains that the research method depends on the nature and the structure of the research problem. The choice of research methodology must not be influenced by scientific approaches that happen to be currently popular; researchers

must select the most appropriate methodology to fulfil their goals. The aim of this research is to investigate the relationship between the stages of growth of e-business enablers and barriers. This relationship will be determined by the key enablers and barriers seen from the managerial viewpoint, and by evaluating the stages of growth of such adoption using the six-stage model develop in order to discover the stages of growth of e-business in the Jordanian context. To achieve this aim, the researcher must obtain the various perceptions of the key Jordanian managers engaged in this activity.

3.5.1 The rationale for a positivist approach

There is no one best research methodology, the choice of which depends on the research objectives and questions. There are always options and choices in determining the research methodology (Zikmund, 2003).

This research uses the positivist approach, which is one of the dominant paradigms in research. Many social science researchers also prefer this approach, in which positivists generally assume that reality can be objectively described and used for the testing of theory. According to Tsoukas (1989), this approach means that the purpose of science is simply to accept only observable and quantifiable facts; knowledge of anything beyond these is impossible. In IS, research is classified as positivist if there is evidence of formal propositions, measurements of variables, testing of hypotheses and the drawing of inferences about a phenomenon from the sample to a stated population (Orlikowski and Baroudi, 1991).

The aim of this research can be achieved through survey questionnaires distributed to participants with the aim of revealing their individual understandings, the meanings behind the stages of growth of e-business and the factors associated with them. A deductive approach is consequently the most appropriate one for this research. As the implementation of e-business can influence, and is influenced by, the context (for

example, by the stages of growth of e-business), it is very important to gain an in-depth understanding of the barriers and enablers regarding this implementation and the factors involved, which deductive research provides the researcher with a greater opportunity to examine.

From the comprehensive review of the literature it is evident that there is a scarcity of empirical work attempting to determine those key enablers and barriers in the context of the Middle East and, indeed, anywhere in Africa. Certainly, no empirical work focuses on Jordan to evaluate the maturity of e-business growth. It is therefore important at this stage to obtain a broad overview of the state of affairs. A positivist study would be eminently suited for this purpose, whereas an interpretive one would be better for a more in depth investigation.

3.5.2 The rationale of a quantitative approach

Quantitative methodology extracts data from respondents and converts them into statistical representation rather than directly portraying a phenomenon. According to Walliman (2006), this approach relies on collecting numerical data that is amenable to such analytical methods as statistical correlations, often in relation to hypothesis testing. The research processes in this study are objectively constructed and the findings are usually representative of the population being studied.

The present research attempts to identify factors associated with SMEs' adoption of e-business, including barriers and enablers impacting on this adoption. Using the six-stage model developed specifically for this study, it also tries to identify the stages by which Jordanian e-businesses grow. It is only through quantitative research that the main factors involved in SMEs in Jordan can be appreciated. The adoption of e-business by

SMEs generally and within Jordan in particular is still a relatively new phenomenon (Al Nsour, 2007; Titi, 2005). Implementation is still very much in its initial stages (Lawson, 2003; Daniel, 2002). As a result, quantitative research is the appropriate choice for this study, since it describes the phenomena (Cornford and Smithson, 1996). More recent studies find that quantitative research is objective in nature and concentrates on measuring phenomena (Collis and Hussy, 2003). Naoum (2007) agrees that quantitative research focuses on objective fact finding based on evidence and records, in order to test theories and concepts of research with hard, reliable data.

Consequently, quantitative research is the appropriate vehicle for the main aim of this research, which is to determine the factors associated with e-business adoption. This is because it allows the researcher to investigate the relationships among those factors.

3.5.3 Justification for the selected data collection techniques

The researcher plans to gather enough data to satisfy the objectives of this research and to give the reader a full picture of the phenomenon under study. The survey method will be chosen for this purpose.

The survey questionnaire is one of the most important sources of information for quantitative research. Given a large population, it should provide rich data by focusing directly on the subject under study (Collis and Hussey, 2003). Survey is widely used as research method in IS in a social setting. It is considered as the most suitable and productive method of answering exploratory questions related to a particular context (Gilliers, 1992)

The questionnaire is presented to respondents to enable them to respond without intervention by the researcher. Kraemer and Dutton (1991) maintain that this is both the most widely used and most controversial method in management information systems.

The selection of the data collection method is highly significant in design, as it impacts on research survey design and the quality of the data collected. The selection of the data collection tool will be influenced by sample size and location. Direct questionnaires are more appropriate than any other survey method such as Internet and telephone surveys. Questionnaires are usually administered in a structured format on paper or through computer networks. According to Oppenheim (2001) they must elicit all the information desired by the researcher and not be biased and easy for the respondent to understand. He also suggests that the content must be in good presentation and the words suitable (Oppenheim 2001).

The questionnaire as a data collecting instrument has the following advantages:

- It allows for the collection of significant amounts of data and is capable of covering large sample sizes and geographical areas
- It is cheaper and less time consuming than interviews, allowing for very large sample sizes
- It is quicker to administer, since self completed ones can be sent out by post or otherwise distributed in very large quantities at the same time
- There is no variability due to interviewers asking questions differently
- It is suitable for statistical analysis because the raw data collected can be easily interpreted using various types of statistical method
- It permits anonymity
- It is relatively inexpensive
- It is a very useful data collection tool, as it can be used to gather specific, key pieces of information
- It is convenient for respondents
- Respondents have time to check facts and think about their answers

- Its format is structured

On the other hand, it also has disadvantages: questionnaires are open to misinterpretation, for example. They can lack clarity, and the response rate can be low. Dillman (2000) points out that respondent may be deterred from answering personal questions of, say, a sexual or financial nature, thereby affecting the response rate. Bryman and Bell (2007) and Collis and Hussey (2003) argue, however, that careful design can ameliorate these weaknesses.

The survey used in this research was specifically developed for this study to capture information on the adoption of e-business. It was designed and distributed explicitly for this research, making it more appropriate than any other method such as face to face, mail, telephone and Internet survey.

3.6 Questionnaire design

Good questionnaires ease the task of responding to their questions, thus minimizing the respondent's burden. Bad questionnaire design means that the research's conclusions are insufficient, which negates the format's advantage of eliciting responses without the time and effort involved in one-to-one contact (Walliman, 2006).

Researchers devise questionnaires to assess attitudes in various social circumstances, to measure opinions on a wide range of social and political issues and to explore various demographic permutations (Creswell, 2003). Very large samples are consequently made practicable, which enhances the probability that statistically significant results will be returned, even when multiple variables are investigated; standardized surveys ensure that uniform data from various groups can be collected, interpreted and compared in a precise manner (Creswell, 2003; Babbie, 2004).

The nature of this study demanded the use of the survey research method, one that is considered to be an effective and professional way of gathering enough data to examine the present status of e-business use by SMEs and to determine the barriers and enablers associated with e-business adoption by SMEs in Jordan. Delivery and collection of the questionnaire has been chosen as the most appropriate distribution method for the following reasons:

- In the context of Jordanian culture, respondents are less likely to respond to survey questionnaires sent through the mail by people they do not know
- The problem of poor response rates can be reduced by handing questionnaires directly to respondents
- The highly complicated postal addresses in Jordan means that non-receipt of mail items is quite likely
- This approach is widely used in Jordan, so respondents are familiar with it

Consequently, a number of parameters were set in the questionnaire's design. The questions must be geared towards answering the study's aims and objectives, they should cover the range of possible answers reflecting different situations, and they should not be confusing. The questionnaire was built and designed to obtain information specific to this study.

3.6.1 Types of questionnaire

Questionnaires can be administered in three ways:

1. **Digital questionnaires** are distributed and returned electronically using either email or the Internet.
2. **Postal questionnaires** are sent by post with return envelopes included. This type is most appropriate for a large number of respondents dispersed over a wide geographical area
3. **Hand-delivered and collected** questionnaires, by which the researcher can sometimes check at the time of collection who has answered the questions (Saunders et al., 2009).

The present research regards the delivery and collection of questionnaires as the most appropriate survey tool, taking its advantages and disadvantages into account.

English was used throughout the questionnaire. Choosing the appropriate language is important to insure that respondents are able to use their understanding and experience to answer the questions. In Jordan, English is the second language; it is used by most the people, particularly in business and IT.

Respondents would not have difficulty in understanding e-business vocabulary and other technical terms. This was an added advantage, as only one language was used throughout the study. This avoided the need to translate the questionnaire into other language such as Arabic, which would be time-consuming as well as posing the risk of errors occurring in translation.

Another aspect of questionnaire structure is the use of the response format. Two options are generally available: closed or open questions. The disadvantages inherent in the latter usually mean that closed questions are more likely to be used, as the following discussion suggests.

The advantage of open questions is that respondents are able to give their opinions as precisely as possible in their own words. Such answers can, however, be difficult to analyze. They must be coded, which is very time consuming, and they require greater effort from respondents (Bryman and Bell, 2007). Closed questions, on the other hand, allow respondents to effectively classify themselves, as well as being a very convenient format in which to collect and analyze factual data, since the range of potential answers is limited. They also enhance the comparability of answers, making it easier to demonstrate relationships between variables and to make comparisons between respondents or types of respondent (Bryman and Bell, 2007; Collis and Hussey, 2003).

Rating or scale questions are often used to collect opinion data. The most common approach is the Likert-style rating scale in which respondents are asked how strongly they agree or disagree with a statement or series of statements, usually on a four, five or seven-point rating scale (Saunders et al, 2009). According to Creswell (2003), integration of two types of data might occur. For example, in data collection open-ended survey questions might be combined with closed ones. In this research, most answers were specified on a five-point scale to ensure maximum respondent specificity on the Likert scale:

Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
5	4	3	2	1

Table 3.1: Summarises the Five Liker scale

3.6.2 Structure of the questionnaire

The questions used in the questionnaire were taken from the previous literature and included all variables discussed in Chapter 4. The questionnaire was structured into five sections. Most questions were closed – i.e. participants were asked to select one answer from a set list of responses. The remaining questions asked for free answers or comments that gave participants the chance to add their own observations and to express their own points of view regarding certain issues.

Dillman (2000) proposes four guidelines that would encourage respondents to answer:

- Order questions in descending order of usefulness and importance
- Place questions with similar content together
- Build a sense of flow and continuity through the questionnaire by taking advantage of the cognitive links that respondents are likely to make between groups of questions
- Position the questions that are most likely to be difficult to answer after those that are easier

These points were adhered to in the design of the questionnaire, which was structured into five sections.

1. **Section A:** includes several questions to draw information from the respondents. Dillman (2000) believes that although demographic questions are easy to answer, they are not particularly interesting, as opposed to personal questions about the respondents. For this reason, questionnaires rarely begin with demographic questions.
2. Those regarding respondents' backgrounds have the merit of being interesting and easy to answer, and so were included in the first section.

2. Section B: is designed to draw out information related to organisational profile. Following Dillman's (2000) guidelines, company and respondents information should be in the first section because these questions are easy to answer.

3. Section C: measures the stages of e-business adoption by SMEs. The questions for this section were specifically developed for the purpose of this study, and are present in the 12 items discussed in Section 3.6.4. These include information about the participant's business, communication via email, information about the business's products and services, email form orders that customers can print out and fax or email (without including online payment), online billing, online payment, online enquiries, online order tracking, targeting customers, customer support, integration of e-processes and integration of B2C or B2B. The five-point Likert scale was used. This section was comparatively easy to answer.

4. Section D in this section 21 items measure the factors associated with the adoption of e-business in SMEs, such as enablers and inhibitors. The order of questions in this section followed the flow of cognitive links from one question to the next. Responses were measured on a five-point Likert scale.

5. Section E is designed for any comments and suggestions, giving respondents the chance to express their own opinions concerning specific issues.

The various sections of the questionnaire are summarised in Table 3.2. Each one is discussed in Section 3.6.3 of this chapter.

Section	scheme	No. of Questions
A	Information about the respondent	5
B	Information related to organisational profile	4
C	Current states of use of e-business in SMEs	12
D	Factors associated with the adoption of e-business by SMEs.	21
E	Comments	1

Table 3.2: Sections of the questionnaire

3.6.3 Information about respondents and organizations

Sections A and B concerned information relating to respondents and their organizations and general information about respondents, the majority of whom were senior managers. Respondent were asked to answer the five following questions:

1- Gender

Respondents were asked to state their gender

2- Age

Respondents were asked to identify their ages using 10-year bands, except for "over 60".

3- Experience Years

Respondents were asked how many years they had been working in the organization, the answers being in 5-year bands except for "over 20years".

4- Highest Level of Education

The respondents were asked whether their highest level of education was secondary school or college, undergraduate or postgraduate.

5- IT Training

Respondents were asked whether they had attended any training courses on using computers. Many researchers have demonstrated a significant relationship between the amount of training undertaken in an organization and the impact of e-business adoption within that organization.

Section B had several questions designed to elicit understanding of the respondent's organizational background.

1. Organization's age

Respondents were asked to indicate how many years the organization had been in business.

2. Number of employees

The respondents specified the number of employees in their organizations. This question was used to determine organizational sizes for the completed samples (Ang et al, 2003).

3. Annual sales turnover

Respondents specified approximate annual turnover from four choices: 1) up to JD100,000 2) JD100,000- 250,000 3) JD250,000-500,000 4) more than JD500,000.

4. Source for the initial of use e-business.

Respondents indicated the main party responsible for using e-business in organizations from one of five choices: the top management/owner, employees, customers, suppliers, business partners.

3.6.4 E-business applications

The questions in this section were written especially for this survey. They aimed to seek the respondent's current use of each application. Twelve e-business applications identified from the literature were included; they were information about the respondent's business, communication via email, information about services and products, online ordering, online billing or invoicing, online payment, online billing, online tracking, targeting customers, customer support, integration of e-processes and integration of B2B or B2C. These questions investigated the extent and nature of an organization's use of e-business by SMEs in the Jordanian private sector.

A six-stage model was developed from the related literature and used to gather information about the stages of growth of e-business in SMEs. Each group of applications measures the aspects related to the stage it belongs to. This section identified the six-stage model and the extent of usage, since the purpose of this study is to examine the relationship between the stages of e-business growth and the enablers and barriers associated with e-business adoption. In order to determine the associated key enablers and barriers, it was very important to identify the stages of e-business and to highlight which stage each respondent's organization was in.

Items were scored on a 5-point scale from 1 ("strongly disagree") to 5 ("strongly agree").

3.6.5 Factors in the adoption of e-business

This section aimed to identify factors associated with the adoption of e-business. It consists of the two contexts identified in the literature:

- 1- Enablers that motivate the adoption of e-business
- 2- Barriers that hamper the adoption of e-business

3.6.5.1 Enablers of e-business

The purpose of these questions was to identify each enabler's motivating effect on the adoption of e-business by SMEs. The questions designed to measure the importance of 11 enablers that were categorised into three groups: market, external and organizational. These were extrapolated from the literature on the extent to which SMEs drive to adopt e-business.

1- External enablers were customer demand, supplier requirements, competitive pressures and government incentives.

2- Market enablers were the reaching of new customers, enhancement of customer service, the entering of new business areas and markets, and the enhancement of the customer/supplier relationship.

3- Organizational enablers were enhanced revenues, cost reduction and management support.

Respondents were asked to evaluate each of the many enablers on a 5-point scale ranging from 5 ("strongly agree") to 1 ("strongly disagree").

3.6.5.2 Barriers to e-business

These questions aimed to identify barriers to e-business adoption by SMEs. Respondents were asked whether and to what extent they agreed that each of ten barriers discouraged them from adopting e-business. Barriers were identified from the literature.

The barriers were grouped into three contexts:

1-Technological (costs of implementation, security issues, and network quality)

2- Organizational (unsuitability for business, lack of expertise staff, lack of time for implementation).

3- External (customers and suppliers, legal and regulatory barriers)

Each item was measured on a 5-point Likert scale ranging from 5 (“strongly agree”) to 1 (“strongly disagree”).

3.7 Population and Sampling design

At the conclusion of the exploratory phase of the research, preparations were made for conducting a survey of SMEs in the Jordanian communication sector. Defining the target population and obtaining and selecting a sample are important tasks at this stage of the research process. These tasks are reviewed in this section.

3.7.1 The population

The first stage in sample design is to define the target population. Population is a collective term used to describe the total quantity of things or cases of the type which is the subject of the study (Walliman, 2006). Creswell (2003) sees a population as “a set or subset of entities that comprise the group we are interested in”. The population element refers to an individual member of the population. Saunders et al (2009) defines population as the full set of cases from which a sample is taken. The specific nature of the target population depends on the research problem being investigated. In this study the focus of the research was on SMEs in the Jordanian communications sector.

The communications sector has been targeted for this study because it is one of the main contributors to GDP and increased IS development. SMEs comprise around 95 per cent of communication sector establishments in Jordan, the rest being large communication organizations. An important issue in SME research is that there is no single, uniformly acceptable definition of such organizations. Despite having certain features in common, countries do not use the same definition for classifying their SMEs. The terms ‘small’ and ‘medium’ are relative terms, varying from one country to another and from sector to

sector within the same country. These differences have led to radical variations in the size-based definitions of SMEs. For example, maximum cut-off points, in terms of numbers of employees, have historically ranged from 10 to 500 and even 1,000. Furthermore, there are several definitions within each country due to the diverse characteristics of SMEs in each sector and in each economy (for more detail see, Chapter 2).

The definition of SMEs in Jordan is no easier than elsewhere, as there is a diversity of descriptions available. In this study we will take on the definition used by the Ministry of Trade and Industry in Jordan: “10-250 employees”.

3.7.2 The sample

A sampling frame is a complete list of all the cases in the population elements from which a sample can be drawn (Saunders et al, 2009; Collis and Hussey, 2003; Walliman, 2006). A sample is a subset of a population and should represent the main interest of the study (Collis and Hussey, 2003).

Sampling techniques provide a range of methods that enable reduction of the amount of data required by considering only data from a subgroup rather than all possible cases or elements (Saunders et al, 2009). In a positivist study, a representative, or good, sample is one in which the results obtained for that sample can be taken to be true for the whole population. In other words, generalizations can be drawn from the results. Collis and Hussey (2003) suggest several criteria for good sampling:

- The sample should be random (every member of the population must have an equal chance of being chosen)

- It should be large enough to satisfy the needs of the investigation being undertaken
- It must contain a list of members of the defined population
- It must be complete and up to date
- No element must be listed more than once
- Information given on the sample should provide sufficient means for stratifying that sample

The sample size is vital in achieving statistical significance. Saunders et al (2009) state that larger sample sizes reduce errors in generalizing to the whole population. The sampling process involves the drawing of individuals or entities in a population in such a way as to allow an overview of the phenomena of interest from that sample.

The most important aspect of the sampling process is to ensure that it should be assembled in such a way as to be representative of the population from which it is taken (Malhotra, 2009). Sampling is used where the population is too large or where the researcher's time, financial or human resources is too limited to be able to investigate each and every element of the whole population.

The population of the present survey was defined as Jordanian communication companies. The sampling process resulted in the selection of parties to whom the questionnaire would be administered and on whom the study. Lists of 55 companies in the communication sector with their contact information were obtained from the Jordanian Ministry of Communication and Information Technology.

Jordan is a developing country that has started to explore the use of e-business to enhance the development of its economy and to achieve successful integration with the

global environment. Some efforts have already made to build an IT structure to encourage the adoption of e-business. The communication sector has been targeted for this study because it is one of the main contributors to economic and e-commerce and growth in Jordan.

The communications sector has the full support of King Abdullah II, putting Jordan in a favourable position relative to its neighbours regarding telecommunication facilities. It has applied the latest technologies in telephone and Internet services, and organizations are beginning to develop websites. Online selling and buying is comparatively static, however, although in the last five years organizations have been showing significant improvements in conducting e-business.

The Jordanian communications sector is one of the country's main priorities. Technology is a key component of economic growth and the quality of public institutions. It is crucial to their role in ensuring the protection of property rights, the objective resolution of contract and other legal disputes, the efficiency of government spending in public services and the very visibility of the government to the public.

Senior managers in communication sector organizations were selected to answer the research questions for this study. These managers are defined as managers below CEOs or owners. Top managers (CEOs and owners) were excluded because of the difficulty of arrange meetings with them.

3.7.3 Piloting of the study

The researcher conducted a pilot study to seek more clarification regarding the wording of questionnaires. According to Dillman (2000) the pilot study plays an important role in the questionnaire. This phase of the research was carried out to identify defects in the

survey design and to evaluate the questionnaire to ensure that it fulfils the study's objectives.

In the literature, pre-testing has been defined as an activity related to the questionnaire or measurement instrument to be used in a survey or an experiment (Saunders et al, 2009; Collis and Hussey, 2003). It provides a critical means for reducing ambiguity and bias in determining the meaning of measures. The purpose of the pilot is to refine the questionnaire so that respondents will have no problems answering the questions, and to eliminate difficulties in recording the data. Bryman and Bell (2007) note that the desirability of piloting such instruments is not solely to do with trying to ensure that survey questions operate well, but that it also has a role in ensuring that the research instrument as a whole functions well.

The pilot questionnaire was conducted prior to the official launch of the survey research aiming at developing a structured questionnaire by conforming to the concepts as revealed by the literature review. The aims of pre-testing the questionnaires was:

- To estimate how long the questionnaire would take to complete
- To determine if respondents would find any questions difficult to answer
- To test the adequacy of the language
- To estimate how reliable the questionnaire was
- To identify which, if any, questions were unclear or ambiguous
- To see whether the layout was clear and attractive .

After designing an early draft of the questionnaire, it was piloted twice in order to ensure that the questions were easily understood. The first test saw the distribution of five drafts to students in Hallam University. The second was done by sending the questionnaire to 15 pilot respondents, composed of academics and managers from Jordan. They were contacted beforehand and asked to respond to the questionnaire as logically as possible, as well as being requested to complete a form commenting on the

clarity of the questionnaires wording, its ambiguity, validity and consistency, any difficulties encountered and a statement of the time required for completion. The feedback was collected face to face. It should be noted that the responses from the pilot study were not include in the analysis.

3.8 Bias, reliability and validity

In this study, the anticipated problems concerned bias, reliability and validity. Actions taken to extensively reduce the effects of these problems, as discussed below.

3.8.1 Response bias

The response bias is a possible difficulty that can occur in questionnaires. A non-response bias is caused by the difference between those who respond to a survey and those who do not (or who refuse to answer a subset of questions). Non-response may introduce an element of bias, as respondents and non-respondents may differ from each other in terms of characteristics relevant to the research (Bryman and Bell, 2007).

The response rate for this study was 86 per cent. Considerable care and attention was taken in the design and administration stages of the questionnaire. However, the researcher judged it important to estimate the effects of the non-response bias, as it might affect the generalizability of the survey results. Reliability and validity are important in any research project in order to ensure that the results have been collected in a scientifically and methodologically sound manner. This following two sections explain the key issues relating to validity and reliability and how these are have been dealt with in the study.

38.2 Reliability

Collis and Hussey (2003) and Bryman and Cramer (2008) note that reliability is "the consistency of a measure", because it focuses on the internal consistency of the items forming the scale. In assessing reliability the researcher tries to establish whether the study can be repeated by another researcher or at another time with the same results (Bryman and Bell, 2007; Walliams, 2006; Hair et al, 2005). There are common methods of estimating the reliability of the responses to questions in questionnaires.

The commonly used method is Coefficient Alpha, the favourite among reliability tests and the most common measure of scale reliability (Field, 2009). It is generally considered to be at 0.8 (i.e. a result of 0.8 and above is considered to be acceptable).

In this study the Alpha Test was used. This was because the value of the test at the scale Alpha was 94.7 per cent, which is above the accepted value for reliability.

3.8.3 Validity

It is important to assess validity in order to determine the extent to which a particular indicator and relates to others in a manner consistent with theoretically derived hypotheses. Validity evaluates whether all variables measuring a construct cluster together. It is concerned with the integrity of the conclusions generated from a piece of research (Bryman and Bell, 2007; Walliams, 2006). Hair et al (2005) and Thietart (2001) state that validity is the extent to which the research findings accurately represent what is really happening, and assessing the extent to which researchers can generalize from results through the extensive process of using factor analysis to evaluate data. Factors analysis is a statistical approach used to describe large numbers of

variables by means of smaller sets of composite variables. The factors derived from factor analysis are also used to indicate the correlation between variables.

3.9 The data analysis process

There were various stages of data analysis. The data collected from the respondents had to be coded, entered, cleaned and transformed in order for Statistical Package for Social Sciences (SPSS), configurable for Microsoft Windows and the most common and powerful package for statistical analysis of data, could be applied (Field, 2009). Investigation of the data involved various levels of analysis. The first level consisted of a general description of the respondents according to demographic data. The second level involved exploration of the two research questions related to the growth of e-business using the six-stage model and the frequencies of the various sizes of SMEs in Jordan. This will be presented by descriptive statistics and bar charts. The third level of analysis was of e-business enablers and barriers, and was carried out by factor analysis. The final level analyzed the relationship between all variables, and was carried out through bivariate analysis (Pearson correlation).

These analyses present a rich, detailed overall picture of the adoption of e-business by SMEs in Jordan, enabling the aim of this study to be achieved. SPSS 17 was used to analyse data from the questionnaires. It proved very useful at all levels of analysis within the scope of this research.

3.10 Ethical considerations

Bryman and Cramer (2008) emphasises that ethical considerations are critical and proper for any research process. Through all the research stages, particularly during the survey phase of this research, ethical issues were taken into account. The researcher has

certain rights and obligations. While researchers should maintain high standards to ensure that data is accurate, and should not misrepresent data, they are also required to protect research participants' right to confidentiality (Zikmund, 2003). It is thus considered that the primary ethical consideration of researchers is to protect participating organisations and individuals from any possible disadvantages or adverse consequences that may result from the research (Zikmund, 2003; Bryman and Cremar, 2008).

Throughout this research, the participants were informed of the objectives of the project before being asked to answer the questionnaire. They were shown an official letter from the University of Al-Balqa confirming that the aim of the data collection was for scientific purposes only. The respondents were also assured that their responses would be kept confidential. They were not asked to provide their names or that of their organizations, thus ensuring anonymity. Individual differences concerning understanding and interpretation of the questionnaire were respected.

This conformity to ethical practices has enhanced the quality of this research. There were two reasons for this procedure: one was to maintain the confidentiality of the respondents, some of whom declined to participate, and the second was that the present research is not intended to have a marketing research focus, presenting the organizations' services, products and histories in a way that would promote them in a thesis whose aim is to provide a record of scientific and academic research.

3.11 Conclusion

This chapter has explained in detail the research methodology adopted for the study, which predominately adhered to a post-positivist research paradigm. The survey method was adopted for the main empirical study.

For the main survey, the target population was SMEs in the Jordanian communications sector. The definition of SMEs adopted by this study was based on that of small and medium-sized firms used by the MICT of “10-250 employees”. The sampling was obtained from Jordanian Ministry of Communication. All companies in the sampling were surveyed. The survey instrument as well as the delivery and collection of questionnaires was piloted and pre-tested. The response rate to the survey was 86 per cent (306 returns, of which 301 were usable). The advantages of using the research instrument were evaluated and the rationale for selecting this research instrument justified.

The questionnaire employed closed questions, which forced respondents to agree or disagree with specific e-business applications, enablers and barriers. Key issues relating to validity and reliability were reviewed. The chapter concluded with a detailed overview of the advantages and disadvantages of the survey methods.

CHAPTER 4

RESEARCH FRAMEWORK

4.1 Introduction

Based on the review of background literature on the nature of e-business adoption by SMEs, a number of factors that will determine such adoption have been identified. This chapter explores the research that has been conducted and will identify current gaps by considering empirical contributions.

Researchers in developed and developing countries who have studied e-business adoption by SMEs have identified a number of empirical contributions relating to enablers and inhibitors.

This study explores the nature of the adoption of B2C e-business by SMEs in the communication sector in the stages of e-business applications adopted. This adoption is examined from three perspectives: the organizational size, the enablers motivating such adoption, and the barriers inhibiting it. In order to operational these three dimensions, the relationships between them, and stages of growth will be tested. This will provide a rich picture of the nature of e-business adoption.

4.2 A review of the stage models of SMEs' adoption of e-business

Various models are used by different commentators, a contrasting selection of which is now presented to demonstrate that they actually represent similar ideas. This section discusses the literature on the most well-known stage models; it points out some shortcomings in these maturity models, and suggests a new model that attempts to provide a standard characterization of the features common to each stage.

A review of the literature relating to the subject of this study shows that studies typically proceed in a set of sequential stages conducted by Burgess and Cooper (1998), Earl (2000), Daniel (2002), Parish et al (2002), Rao et al (2003) and Teo and Pian (2004a). These studies have recognized the e-business applications commonly adopted by organizations such as SMEs. The staged models developed in previous studies were found to be simplistic, because many SMEs never reach the advanced stages (Levy et al, 2005; Mendo and Fitzgerald, 2005; Kapurubandara and Lawson, 2009; Mendo et al 2009; MacGregar and Kartiwi, 2010). It suggests that the higher the stages that a business reaches the greater will be the benefits obtained. These models help us develop an understanding of the various processes that are used to improve and maintain the adoption of e-business.

Burgess and Cooper (1998) have proposed a three-stage model:

1. **Promotion** is the provision of basic information, such as products and services, through the internet
2. **Provision**, which involves emails for communication as well as online enquiry
3. **Processing**, this entails most online business activities such as sales, payment and ordering.

These three stages are similar to the idea behind Daniel et al's (2002) model, as the

initial one in both cases focuses on sharing business information and maintaining business relationships. Daniel's adoption model, however, is in four stages:

1. **Development** in the form of email communication with customers and suppliers and the provision of information about the company, its products and its services is the basis of operational e-commerce service
2. **Communication** at this stage uses email to communicate with customers and suppliers for more extensive electronic document exchange and design
3. **Web Presence**, which adds electronic order making and receipt
4. **Transactions** entails the whole process, including payment receipt, ordering and digital delivery of goods

This model specifies email as the initial stage because it is considered as the most basic and convenient method of adopting business practices. The first three stages of this model coincide with Burgess and Cooper's model (1998).

Rao et als' model (2003) also proposes four stages, but these highlight the evolutionary nature of e-business development for SMEs:

1. **Presence:** the company has established a website that provides information about its products and services, as well as primary one-way communication for any contact information
2. **Portals:** the introduction of two-way communication, the placing of orders by customers or suppliers, and the use of profiles and cookies. At this stage no financial transactions are conducted.
3. **Transaction integration:** financial transactions are introduced at this stage, with the important characteristic that interaction can be for selling as well buying.
4. **Enterprise integration:** this stage is characterized by high levels of collaboration

between customers and suppliers. This stage includes full integration of B2B, B2C and supply chain

The first three stages of Rao et al's (2003) model coincides with those of the previous two, while the fourth one corresponds to Teo and Pian's (2004a) five-stage model:

1. **No website; email only:** the firm only has an email account that they use to establish connectivity with customers and business partners
2. **Web presence:** a website of a non-strategic nature providing information and brochures is added at this stage
3. **Prospecting:** this involves limited use of the internet. Most companies at this level establish websites to provide customers with product information such as news and events, and with email support
4. **Business integration:** web adoption is incorporated into the business model and business processes are integrated
5. **Business transformation:** the highest level of web adoption. It will transform the overall organizational business model from top to bottom

Teo and Pian's five stages can be grouped into informational and transactional categories. The first three stages focus more on information distribution, and can thus be characterised as informational. The last two, by contrast, can be classified as transactional, because they involve online transactions.

- **Earl (2000)** constructs a six-stage model:

1. **External communications** which focuses on Internet communication, and involves the realisation that the Internet is a potential channel for communication to external stakeholders such as investors, analysts, customers, potential recruits and suppliers.
2. **Internal communications**, characterized by website development. Management at

this stage is controlled by IT professionals, and the Internet is perceived more as a technological solution than as a business opportunity

3. **E-commerce**, which involves activities such as online buying and selling
4. **E-business** adds key capabilities. Untested business models are created, but many problems must be dealt with, such as products not arriving on time and an inability to track the status of orders.
5. **E-enterprise**, in which companies are able to identify and eliminate inefficient processes that prevent the implementation of new business models.
6. **Transformation**, in which the new business and management solutions required for the e-enterprise are embedded.

Earl's model is highly comprehensive, incorporating all the stages of previous models but with particularly emphasis on its last stage involving business transformation.

Six-stages model	Email exchange	Information exchange	Web presence	Transaction	Personalisation	Integration
Models stages Burgess and Cooper	Promotion (1)	Provision (2)	Processing (3)			
Daniel	Developers (1)	Communicators (2)	Web presence (3+4)	Transaction (5)		
Rao	Presence (1+2)	Portals (3+4)	Transaction integration (5)	Enterprise integration (6)		
Teo and Pian	E-mail (1+2)	Presence (2+3)	Prospecting (4+5)	Business Integration (6)	Business Transformation (6)	
Earl	External communications (1)	Internal communications (2+3)	E-commerce (4+5)	E-business (6)	E-enterprise (6)	Transformation (6)

Table 4.1: A six-stage model, constructed by synthesizing the stages of the other models

The conclusions to be drawn from this table are

1. Information and communication are the main business processes at the early stages in order to disseminate information about the organization's products, services, policies and corporate mission to internal and external parties before conducting trade over the internet.
2. These models all examine the patterns and the extent of Internet adoption from the first stages to full implementation or integration of e-commerce with the rest of the organization's systems in order to establish linkages with internal and external parties.
3. Cost, technological demands and complexity increase in the later stages of adoption because of the technological demands for organizations to integrate e-business applications with their back-office operations.

Past research shows that there is no consensus between descriptions of the nature of e-business adoption, although characterisations of the process that are based on activities conducted over the internet provide useful indicators for such descriptions. Also, these models only identify which functions are being adopted, but do not reflect the extent to which they are implemented or used.

In order to compare these models, six separate stages have been synthesised from previous models. These stages bear some resemblance to those presented in the study, which will subsequently be used as a basis for classification of previous models. This model provides a basis on which to understand how businesses progresses from relatively simple to more complex e-business activities. In Jordan, however, where development of e-business is relatively limited and in its infancy, the present study uses

Chapter 1 Framework
a synthesised six-stage model. This model will be used in Chapter Five to evaluate e-business growth in the context of research. The six stages of this synthesized model are as follows:

1- Email exchange: this adopts a basic communication perspective compared to the other stages. It concerns itself mostly with developing email communication with customers and suppliers. Organizations use email to establish connectivity with customers and business partners. At this stage it is used to send or receive message and files using the Internet. The low cost advantage of email encourages its use for business communication and document transfer regardless of geographical boundaries. The website contains basic information and brochures about the organization at this stage, as well as contact numbers and locations.

2- Information exchange: the homepage is developed to enable the exchange of information about the company and its products via email. Extensive organizational and product information and personalized content are added. This stage also allows the possibility of downloading order forms online and emailing them.

3- Web presence: this incorporates sees the website provide details of products and services, and prices and availability, as well as enabling financial transactions and online ordering and payment. This stage makes it convenient for customers to order products or services and transactions online.

4- Transactions: this stage adds requests and delivery and tracking of goods. It could consist of two levels; one-way interaction, in which there is a request or inquiry from customers via email, and two-way interaction in which such a request is answered by the organization. Customers at this stage can track orders online 24 hours.

5- Personalisation: the website provides extensive information and targets customers with product information, newsletters, events and individual interest as well as offering services or further assistance to potential customers via a personalised front end to the website.

6- Integration: business processes are fully integrated to the extent that business conducted in the traditional manner is indistinguishable from online business. Collaboration between customers and suppliers is at a high level. Processes are fully integrated into the business model. This stage also utilizes e-business systems to practise Customer Relationship Management (CRM) and Supply Chain Management (SCM).

It is obvious from this explanation that the six stage model functions as a paradigm that can describe the evolving stages of e-business, since each stage is characterised by a range of features as shown in Table 4.2. The model can be used to assess the adoption of e-business by SMEs and to give a comprehensive idea of what e-business looks like at each stage.

In this study these stages are synthesized and integrated into the model as shown in Table 4.2, which provides a basis for understanding how e-businesses progress from the simpler, lower levels to the higher, more complex ones.

Six-stage Model	Main e-business activities
Stage 1 Email exchange	<ul style="list-style-type: none"> • Information about the business • Communication via email
Stage 2 Information exchange	<ul style="list-style-type: none"> • Information about products and services • Email form for ordering
Stage 3 Web presence	<ul style="list-style-type: none"> • Online ordering and billing • Online payment
Stage 4 Transaction	<ul style="list-style-type: none"> • Online order tracking • Online enquiries
Stage 5 Personalisation	<ul style="list-style-type: none"> • Targeting customers • Personalised promotion
Stage 6 Integration	<ul style="list-style-type: none"> • Integration of e-processes into the business • Integration of business model

Table 4.2: Summary of the six-stage model

Given that aim of this research is to investigate the relationship between the stages of e-business, organization size, enablers and barriers, the stages of growth in e-business (Table 4.2) can be used to further formulate the first research question:

Research Question 1

Identify the pattern of adoption of e-business by SMEs in the telecommunications sector related to the stages of growth?

4.3 Organizational size

Organizational size by number of employees is the most common characteristic used in the literature to determine the level of growth of e-business adoption (Fallon and Moran, 2000; Teo and Pian, 2004b; Jeyaraj et al, 2006; MacGregor and Vrazalic, 2008; Cheong et al, 2009; Zeng et al, 2009). El-Nawawy and Ismail (1999) find that one of the main factors contributing to the adoption of e-business in Egypt is business size; their results reveal that there is correlation between the stages of e-business and business size. Raymond (2001) considers that SMEs are perceived as more innovative and quick to change than larger organizations, precisely because of their size.

Organizational size is the most common characteristic used by researchers to discover the relationship between company size and the adoption of e-business technology (Al-Qirim, 2005, Cheong et al, 2009). The larger firms are more likely to adopt e-business technology, invest more money in website development and develop websites earlier than are smaller organizations (Teo and Pian, 2004a ; MacGregor and Vrazalic, 2008)

Grandon and Pearson (2004) detect a significant relationship between business size (in terms of number of employees) and e-business adoption in their survey of e-business adoption by SMEs in the USA, and MacGregor and Vrazalic (2008) observe that the sizes of SMEs in term of numbers of employees appears to have a bearing on the importance of the level of adoption and implementation of e-business. Teo and Pian (2004b) show that the smaller the organization, the more likely it is to be at a lower level of e-business. It is obviously a common perception that organizational size can be related to the stages of adoption of e-business practices.

These arguments will help formulate the second research question, developed from the previous discussion of organizational size:

Research Question 2

Determine the distribution for various size of SMEs e-business in Jordan?

4.4 Enablers related to e-business

The background literature, discussed in Chapter Two, identified some of the factors that motivate e-business adoption by SMEs in developed and developing countries (Pflughoeft et al, 2003; Al-Qirim, 2005; Pearson and Grandon, 2004; Jennax et al, 2004; Levy et al, 2005; Stockdale and Standing, 2004) and also provided evidence of a relationship between e-business enablers with the level of this adoption.

Seyal et al (2004) find that government support and incentives are significant in influencing the adoption of e-business by SMEs in Pakistan. Pearson and Grandon (2004) discern managerial support, compatibility and external pressure to be the main enablers of e-business adoption by SMEs, for Chen's (2004) Taiwanese study they are reduced costs and increase sales, and for New Zealand SMEs Al-Qirim (2005-2007b) sees manager support in the same light, while playing down the importance of pressure from suppliers and buyers.

More recently, in a survey conducted in Germany, the US, France and Denmark, Beck et al (2005) point out that improved customer service and increased sales, are the main enablers of e-business adoption. Kaynak et al (2005) suggest that reaching new customers and markets and reducing costs are the most important enablers, while increased sales, time savings and customer satisfaction are of no significant for motivating the adoption of e-business by SMEs in Turkey. A qualitative study by Stockdale and Standing (2004) investigating enablers and barriers finds that owner/manager support and government initiatives are the crucial motivators in this regard.

Chapter 1 Framework

Chong and Pervan's (2007) survey of Australian SMEs shows that competitive pressure and government initiatives are the most significant factors determining the extent and deployment of e-business adoption there, followed by the opening of new markets and the reduction of costs, while organizational factors played no role whatsoever. Chen and McQueen's (2008) investigation of the motivators and inhibitors affecting e-business adoption by SMEs in New Zealand also see owner/manager support and external pressure in the form of competitors, trading partners, the improvement of customer relations and efficiency, the expansion of the customer base and time savings, as the most important motivators, while saving communication costs, improving customer satisfaction and coordination with suppliers are of no importance. They also point out that owner/managers are the most significant players driving such adoption.

Scupola's (2009) survey of SMEs in Denmark and Australia indicates that top management support (including CEOs) is the most significant enabler in both countries; the next most important are employees' IS knowledge and pressure from customers. The survey finds competitor and supplier pressure to be of no great significance, however. The role of government incentives is of great weight for Australian SMEs, but did not feature for Danish ones. A number of researchers (Grandon and Pearson, 2004; Raymond et al, 2001) divide e-business enablers into four groups: activity enablers, managerial enablers, competitive enablers and organizational enablers. For Drew (2003) and Keoy et al (2006), however, there are only two: external and internal.

The present study aims to explore the motivation for e-business adoption by Jordanian SMEs in the communications sector. In order to group the characteristics of such enablers, the present author proposes different classification built on the findings of the literature review and related to the Jordanian context. He suggests three categories: market enablers, external enablers and organizational enablers. Table 4.3 summarises

these. This supports a focus on the factors chosen for this investigation and provides a rational attempt to identify which of these factors are significant. The focus leads to the following research question:

Research Question 3

Identify the significant enablers of e-business adoption by SMEs in Jordan?

Market Enablers	
Reaching new customers	Kaynak et al, 2005; Chen and McQueen, 2008
Enhancing customer/suppliers relation	Chen and McQueen, 2008
Entering new markets	Levy et al., 2005; Kaynak et al, 2005; Chong and Pervan, 2007
Enhancing customer service	Beack et al, 2005
External Enablers	
Customer demand	Scupola, 2009
Supplier request	Pearson and Grandon, 2004
Competitive pressure	Chong and Pervan,2007; Chen and McQueen, 2008
Government incentives	Seyal et al, 2004; Stockdale and Standing, 2004; Chong and Pervan, 2007; Scupola, 2009
Organizational Enablers	
Reducing costs	Chen, 2004; Kaynak et al, 200; Chong and Pervan, 2007
Management support	Pearson and Grandon, 2004; Al-Qirim , 2005/2007b; Stockdale and Standing, 2004; Chen and McQueen, 2008; Scupola 2009
Enhanced revenue	Chen, 2004; Beck et al, 2005

Table 4.3 A summary of the three dimensions of e-business enabler

4.5 Barriers related to e-business

SMEs report a range of barriers that they perceive to be detrimental to their attempts to access e-business markets (OECD, 2006, 2004). Several researchers also find that e-business adoption by SMEs is still at a low level (Kapurubandara and Lawson, 2006, 2009; Pavic et al, 2007 Al-Qirim, 2007b; Scopla, 2009; Mendo et al 2009;).

Chapter Two discussed the literature on e-business barriers. Researchers have found evidence that there is a relationship between such barriers and the adoption of e-business, especially by SMEs. Cloete et al's (2002) survey of SMEs in South Africa reveals a number of perceived barriers to e-business including security and legal issues and a lack of IT skills are the major factors inhibiting the adoption. Another finding by Lawson et al' (2003) quantitative study to determine the main factors affecting e-business adoption by Australian SMEs finds that security is the greatest barrier, followed by cost and the lack of government initiatives. This is supported by a more recent study by Asing-Cashman et al, (2004) investigating the levels of e-business adoption by Malaysian SMEs. They show that lack of security, high cost of implementation and the lack of expertise staff, in that order, are the major inhibitors. The OECD's (2004) report on SMEs in 19 European countries shows that the unsuitability of the Internet and e-business and the lack of IT skills are the main barriers there, but security issues were of no consequence. Chen's (2004) survey of e-business adoption by SMEs of less than 250 employees in Taiwan finds a number of barriers, with cost and the lack of IT skills being the two foremost.

Wymer and Regan (2005) find that US SMEs regard the cost of implementation, security and government rules and regulations to be respectively the three most important barriers. According to Levy et al, (2005), UK SMEs see concern about the risk of fraud (i.e. security) and the costs of technology are the most significant barriers,

while lack of management support and employee expertise is of no significance. MacGregor and Vrazalic (2005) find that the greatest barriers among Swedish SMEs are the unsuitability of e-business for a company's products and services, but other factors such as security issues, the high costs of investment and the lack of knowledge did not figure. Kartiwi and MacGregor (2007) similarly find that Swedish and Indonesian SMEs see unsuitability as a barrier, as well as lack of technical knowledge, security and the time to implement such solutions. Kapurubandara's and Lawson (2006) survey of Sri Lankan SMEs puts political barriers and lack of skills at the top of the list, while Chen and McQueen's (2008) qualitative study of New Zealand SMEs highlights the inhibitory aspects of security issues, costs of implementation and insufficiency of customer access to the Internet as acting to curb the growth of e-business uptake more than other factors such as lack of skills and compatibility.

To classify the characteristics of barriers, the present author has proposed different classificatory techniques. Based on the literature review, a model that modifies those of Kuan and Chau (2001), Zhu et al (2003), Wymer and Regan (2005), Del-Aguila and Melendez (2006) and Kapurubandara and lawson (2006) has been develops the three categories of technological, organizational and external barriers. Technological barriers are subcategorized into security issues, costs of implementation and network quality. Organizational barriers are classified into unsuitability, lack of expert staff and lack of time for implementation, while external barriers comprise low use by customers and suppliers, the stability of government policy, a concern for the cultural environment, and legal and regulatory barriers. The results of the literature review regarding business barriers are shown in Table 4.4.

Technological Barriers	
Security issues	Lawson et al 2003 ; Levy et al, 2005; Wymer and Regan 2005; Kapurubandara and Lawson, 2006; Kartiwi and Macgregor 2007; Chen and McQueen 2008
Cost of implementation	Levy et al, 2005; Wymer and Regan 2005; Kartiwi and Macgregor 2007; Chen and McQueen 2008
Network quality	Kapurubandara and Lawson 2006
Organizational Barriers	
Unsuitability for business	OECD 2004; MacGregor and Vrazalic, 2005; Kapurubandara and Lawson 2006 ; Kartiwi and MacGregor 2007
Lack of expert staff	Cloete et al 2002; OECD 2004; Chen 2004; Asing- Cashman et al 2004; Kapurubandara and Lawson 2006; Kartiwi and MacGregor 2007
Lack of time for implementation	Kartiwi and MacGregor 2007
External Barriers	
Low use by customers	Chen and McQueen 2008
Stability of Government policy	Lawson et al 2003; Wymer and Regan 2005; Kapurubandara and Lawson 2006
Concern for the cultural environment	Kapurubandara and Lawson 2006
Legal and regulatory environment	Cloete et al 2002; Wymer and Regan 2005; Kapurubandara and Lawson 2006

Table 4.4: A summary the three dimensions of e-business barrier

These factors would inform the fourth research question, developed from the discussion of barriers:

Research Question 4

Identify the significant barriers to e-business adoption by SMEs in Jordan?

The purposes of the present research clearly demands exploration of the parried relationships between these four factors. This raises several possibilities, of which three are meaningful for this study. The following research questions are thus generated by the previous discussion:

Research Question 5

Is there any significant relationship between the stages of growth of e-business and e-business enablers?

Research Question 6

Is there any significant relationship between the stages of growth of e-business and e-business barriers?

Research Question 7

Is there any significant relationship between the stages of growth of e-business with organizational size in terms of number of employees?

The theoretical framework shown in Fig.4.1 was developed as a result of the literature review.

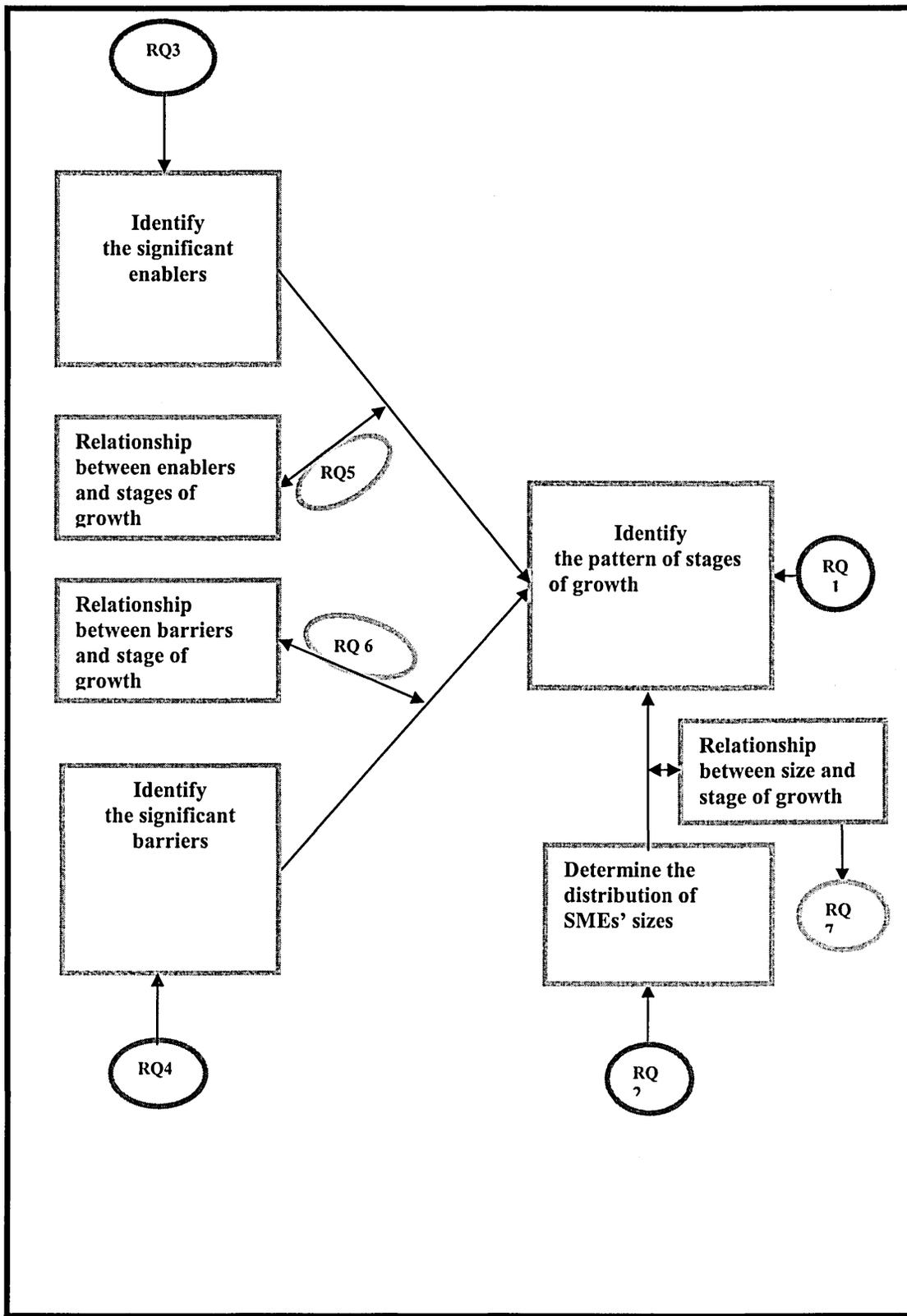


Figure 4.1 Theoretical framework

4.6 Conclusion

This chapter has discussed the research framework and its components. Seven research questions have been identified, formulated research model to investigate those that are seen as influencing the adoption of e-business.

Research questions have been proposed to investigate which factors determine the successful implementation of e-business systems in Jordanian SMEs. This chapter formulated the research questions related to each of four areas of research: stages of growth, organizational size, enablers and barriers. A rationale was presented for each research question based on previous research. A conceptual framework was developed as a result of the extensive review of the literature on existing frameworks and the research questions. Fig. 4.1 summarises the results of this process.

The next chapter explores the current stages of e-business adoption and the related enablers and barriers by analysing the questionnaire used to identify the stages of adoption and the factors involved.

INTERPRETATION OF RESULTS

5.1 Introduction.

This chapter describes in detail the findings of the fieldwork, analyzes the data gathered from the respondents' perspectives and interprets the results to provide answers to the research questions posed in Chapter Four.

The analysis has been conducted in three phases. The first involves examining the respondents' demographics in terms of personal details, organisational details, and the proposed six-stage model in relation to the sizes of the organisations; these are presented in Sections 5.2 to 5.5. The second phase determines whether there is a three-factor structure as the literature and the proposed model suggests for both enablers and barriers; the result is presented in Section 5.6. The final phase involves a detailed examination of the relationship between the key factors of growth stages, barriers and enablers, and organisational size; these are detailed in Section 5.9.

The survey administration was finalized in August 2008, 14 weeks after the initial distribution of questionnaires. A total of 350 potential respondents from the various sampling frames discussed earlier were eventually identified and targeted for the survey. A total of 306 questionnaires were returned, of which 301 were useable.

The rate of response for questionnaires is not easy to anticipate or to control. Walliman (2006) characterizes a response rate of over 85 per cent as excellent, 70-85 per cent as very good, 60-70 per cent as acceptable, 50-60 per cent as barely acceptable and less than 50 per cent as unacceptable. The pattern of non-response can have a serious effect

on the validity of the sample. Fortunately the response rate in the present case translates 87 per cent, with a usable response rate of 86 per cent. This represents a relatively high response rate, and ranks as “excellent” on Walliman’s scale.

The overall response rate was lower than the 90 per cent achieved by Hjoui- Btoush (2009) in his study on the evaluation of e-government services in Jordan, but higher than the 76.6 per cent obtained by Adaileh (2003) in his study in Jordan. The responses from the pilot study were not included in the final total of returns. This clearly represents an excellent overall response, comparable to those achieved by other surveys conducted in Jordan.

5.2 Respondents’ demographic profiles

This section describes the participants’ backgrounds. Analysis was carried out through the use of descriptive data analysis involving percentage distribution.

5.2.1 Respondents’ genders

Respondents were asked to provide information pertaining to their gender. Both males and females took an active part in this study. It can be seen from table that the division of responses of male to female was approximately two thirds to one third respectively. This ratio was comparable to that of Hjooj- Btoush (2009) in his study on the evaluation of e-government services in Jordan, by lower than those of Aldojan (2007) and Adaileh (2003). Table 5.1 shows the distribution of the sample.

Gender	Percentage
Male	68.1
Female	31.9
Total	100

Table 5.1 Sample distribution according to gender

5.2.2 Respondents' ages

Respondents were asked to state their ages. The resulting profile is shown in Table 5.2. The research is representative of Jordan in this respect because, like the sample, nearly two thirds of the population is 30-39 years old. About a fifth (18.6 per cent) of respondents were between 20 and 29, while approximately half of them (43.9 per cent) were aged 30–39 and more than a third (37.5 per cent) more than 40. The Fig. of 43.9 per cent for the most common age group of 30-39 is similar to that of Hjouj-Btoush's (2009) 36.8 per cent, and to the 40.6 per cent obtained by Adaileh (2003). Table 5.2 shows the distribution according to age.

Age	Percentage
20-29	18.6
30-39	43.9
40-49	15.9
50-59	14.3
Over 60	7.3
Total	100

Table 5.2 Sample distribution according to age

5.2.3 Respondents' experience

Table 5.3 below shows that more than half of respondents (51.2 per cent) had between six and ten years' experience. This could indicate that more of the younger generation than the older are SMEs managers. The results are not surprising, considering that approximately 65 per cent of the population in Jordan consists of young people. Indeed, the results show that around a quarter of the respondents have between one and five years' experience. These findings are in line with those of Aldojan (2007) and Hjouj-Btoush (2009). The result implies that most of the responding SMEs have experienced staff, which can be explained by the attractive working conditions for qualified employees in the private sector. The results also provide evidence that the majority of respondents have IT experience. The results are shown in Table 5.3.

Experience	Percentage
1-5 years	22.6
6-10 years	51.2
10-15 years	10.3
16-20 years	7.3
Over 20 years	8.6
Total	100

Table 5.3 Sample distribution according to length of experience

5.2.4 Respondents' educational levels

Each respondent was asked to provide information about their education background. About a third of the respondents had college and school education, while the smallest group, just under half, had postgraduate qualifications. These results reflect those of Hjoui-Btoush (2009), more than half of whose respondents had undergraduate degrees. These figures in both studies are higher than Al-Hayari's (2009) at 43.0 per cent but lower than the 61.9 per cent obtained by Adaileh (2003). This profile strongly suggests that SMEs in Jordan are increasingly run by graduates. The result shows in Table 5.4.

Education level	Percentage
High school and college	33.2
Undergraduate	49.2
Postgraduate	17.6
Total	100

Table 5.4 Respondents' educational levels

5.2.5 Respondents' IT training

The results show that most organizations made an effort to improve employee's skills. The findings showed that the majority of the respondents, nearly three-quarters (74.4 per cent) had already received IT training. This implied that managers had been trained in the use of IT, but also led to the conclusion that some SMEs have yet to play a significant role in providing IT training to their managers. The results provide evidence that the majority of top and middle managers in the sample had been trained in IT. Table 5.5 shows the results.

IT Training	Percentage
Yes	74.4
No	25.6
Total	100

Table 5.5 Respondents' IT training

These findings can be summarized thus: about two thirds of respondents were male, nearly three quarters were under the age of 40 and had been trained in IT, and half had undergraduate qualifications with 6-10 years' experience in e-business. This distribution is comparable to other surveys conducted in Jordan.

5.3 Organizational profiles

This section provides background information on the SMEs whose staff participates in the survey. It includes the number of employees, turnover, source of motivation of e-business use and the year each organization was established.

Number of employees

Among researchers, the most popular measure of organizational size is the number of employees. For the present sample, this ranges from 10 to 250, a range adapted from the definition by Jordan's Ministry of Trade and Industry. This factor was chosen for the conceptual framework as one of those associated with the adoption of e-business. The importance of this factor will be considered in the discussion of the second research question later in this chapter.

5.3.1 Annual turnover

Table 5.6 presents the annual turnovers of the respondents' organizations. It can be observed that the turnover of about four fifths of responding SMEs is more than JD250,000; that of the remaining fifth is less than JD250,000. This finding supports the size of the responding SMEs and the higher proportion of the sample are medium-sized SMEs with annual turnover more than half a million. Table 5.6 shows the organizations' turnovers.

Annual Turnover	Percentage
Up to 100,000 JD	6.0
100,000-250,000 JD	14.3
250,000-500,000 JD	32.2
Over 500,000 JD	47.5
Total	100

Table 5.6 Organizations' annual turnovers

5.3.2. Organizations' ages

More than two-thirds of the SMEs who provided respondents had been operating for less than 10 years. Only a fifth (20.9 per cent) had been operating from 11 to 15 years, and even fewer (about tenth) for more than 15. Thus, almost all the respondent SMEs (90 per cent) had been operating for less than 15 years. The result implies that most of them are still new, which is understandable given that Jordan is a small, developing resource-poor country that has only recently adopted the new technology (Al-Qirim, 2007a). The results are shown in Table 5.7.

Organization Age	Percentage
Less than 5 years	39.9
6-10 years	28.2
11-15 years	20.9
Over 15 years	11.0
Total	100

Table 5.7 Organizational ages

5.3.3 Sources of motivation for the adoption of e-business

The results show various such sources. Overall, it can be observed that more than half (54.5 per cent) of the responding SMEs agree that top management is the main source for motivation, whilst a very small percentage thought that employees. About a third of SMEs thought their business partners to be the main source for motivating. This finding support previous study by Al-Qirim (2007b) and Besheshti and Sangari (2007), who find that the top management is clearly the most influential motivator. The results are shown in Table 5.8.

Main motivator	Percentage
Top Management/ CEO	54.5
Employees	3.3
Customer	9.0
Supplier	6.3
Business partner	26.9
Total	100

Table 5.8 Source of motivation for e-business adoption

This previous discussion presents the analysis of SMEs' responses. The results are that the significant majority, over 90 per cent, of the respondents SMEs were medium-sized (between 50-250 employees), and four fifths of them had more than JD250,000 turnover; more than two third had been operating between one and ten years. Interestingly, top management were found to be the main motivator of adoption of e-business in SMEs. This implies that the majority of SMEs are motivated by top management to adopt new technology. This finding echoes previous studies conducted by Gilmore et al (2001), Kapurubandara and Lawson (2009), Scupola (2009) and Ramdani et al (2009), all of whom found that decisions adopt are usually made by managers or owners.

5.4 Distribution of Jordanian SMEs according to the six-stage model of e-business adoption

The first research question is concerned with the evaluation of the stages of growth within Jordanian SMEs using the six-stage model, to determine at what stages they are already adopted. Respondents were asked to state how their organizations current use Internet technology, and the answers were measured using the descriptions of the five-step Liker scales as shown in Chapter Three. Respondents were asked to choose the applications mostly responsible for reaching the present level of e-business at which their organizations are operating. The first research question therefore was:

RQ1: Identify the pattern of adoption of e-business by SMEs in the telecommunications sector related to the stages of growth?

Table 5.9; shows the percentage of e-businesses that have achieved one or more stages of the six-stage model in the Jordanian context.

Table 5.9 represents the summary of the analysis of the questionnaire in terms of e-business activities. It shows the percentage of the stages of growth of e-business in the Jordanian context using descriptive data analysis. The empirical result from this finding suggests that the current state of adoption and use of e-business in SMEs is not sophisticated. Surprisingly, the results in Table 5.9 clearly show that nearly all SMEs (94 per cent and 86 per cent) have reached the email and information exchange stages respectively, while over a quarter utilize the presence stage of maturity, although none have reached the personalisation stage.

From this analysis it is reasonable to focus the present investigation only on the first three stages, as they capture over 80 per cent of the respondent data.

Six Stage Model	Percentage
Email Exchange	94
Information Exchange	86
Web Presence	28
Transaction	12
Personalisation	0
Integration	6

Table 5.9 Proportion of respondents who reached each stage of the six-stage model

This analysis demonstrates that nearly all SMEs have adopted the first stage of email exchange, which means communicating via email, is available on line and providing online general information about the organization’s business, together with email links. Processes are also being considered to ensure that email exchange is used to establish contact between customers and the organization.

The second, Information, stage involves online ordering and provision of information regarding the organization’s products and services. The organization at this stage updates customers with new products and services, while receiving order forms online. The evaluation found that at this stage some organizations provide partial information exchange, where the customers can communicate online with the organization by downloading basic order forms that can be printed out and faxed or emailed. In some cases forms can be submitted online, although payments cannot be made in this fashion. Some organizations, however, provide full information exchange facilities. In any case,

customers can browse the full range of information relating to the organization on its website. Over a quarter of Jordanian SMEs had reached the third stage, the maintenance of a web presence, in which customers can carry out full online financial transactions, from billing to payment. The results for this stage show that organizations' abilities to receiving and send bills online are in its infancy. The facility may range from completing and updating orders electronically to processing payments. This stage also allows e-payment options and provision of electronic receipts. Customers can submit orders, pay online, check billing and update orders.

The fourth stage is Transaction; only about one eighth of Jordanian SMEs have reached this stage, which allows customers to track orders online and send enquires or requests. It was found that only a few organizations provide a partial transaction stage, in which enquires or requests can be received from customers. Some organizations could also respond to queries online, by phone or by fax, while order tracking in the few cases in which it was used, was at a very primitive level.

The data revealed no tangible online Personalisation presence in any Jordanian SME. Organizations at this stage began targeting customers by providing all embracing information about products and services together with news or events, and maintained contact with customers by email and customer support. Organizations in this stage gave customers passwords and user names and provided assistance or offered services. Like bill ordering and receipt at the third stage, this activity is only in its initial stages.

The last stage is integration, which had only been reached by six per cent of Jordanian SMEs. These organizations had only just begun to fully integrate their systems between customers and suppliers. Those few organizations that had reached this stage had done so only on a trial basis. Overall, the evaluation showed that Jordanian SMEs had almost all reached the first and second stages of e-business. A similar trend can be observed for

the third stage, although this is still at a fairly rudimentary level, these processes mostly being run in tandem with traditional business transaction methods. By contrast, most organizations have not reached the last three stages in fact, for many it does not even seem to be within reach.

One explanation for these results is the general availability of email and organizational information, which can be considered as the basic stages of the low cost adoption and use of e-business. Another is that these initial stages can usually be operated by relatively inexpert staff and at low cost, making it easier for this technology to be disseminated throughout an organization. This low level of adoption may be due to the complexity of the systems involved or the country's inadequate financial infrastructure and the consequent low use of credit cards and lack of legal regulation to protect transactions. This may be part of a vicious circle: SMEs in Jordan do not accept credit cards and have low levels of transactions because of online fraud and higher levels of security risk. The cultural value placed on face to face shopping is also a factor militating against Internet use. For example, El-Said and Galal-Edeen (2009) point out that culture could hamper the adoption of e-business in the Arabic world because of the highly social and family oriented nature of the its culture.

Most of the organizational representatives questioned used traditional financial transaction methods because of worries about online fraud. The low numbers who had reached the last stages can be explained by Brown and Locket's (2004) analysis of SMEs' adoption of e-business: they suggest that few SMEs are engaged in the more complex applications because they form part of an existing supply chain, many components of which will have had previous EDI links. This finding supports Bharadwage and Soni's (2007) study of e-commerce usage by Pennsylvanian small businesses in which it was concluded that SMEs using e-commerce principally for

advertising and for communication by customers. The present results also support a survey conducted by Ashrafi and Murtaza (2008) regarding ICT adoption by SMEs on Oman, which finds that most such organizations do not use any form of e-commerce. The results are also consistent with a more recent study by Eriksson et al (2008) of e-commerce development in Sweden SMEs, in which the researchers concluded that most organizations use the Internet and e-commerce as a static information board on which to market their products and services and engage in two-way communication with customers and suppliers. The results confirm previous studies showing that e-business adoption by SMEs is still low and used mainly for email and for advertising products or services (Brown and Locket, 2004; Ramadani et al, 2009).

5.5 Distribution of SMEs by size

Organizational size is a major indicator of organizational complexity, a subject that has been covered in several studies regarding the number of employees. Organizational size, the most researched independent variable, influences the adoption of e-business.

There is no universally accepted measure for capturing organizational size; several indicators have been used by various commentators to measure it. The most popular are the number of employees and sales volume. Since the majority of size measures are likely to be highly correlated, the present research uses the number of employees as an indicator of organizational size, according to the definition of SMEs in Jordan. This results in the second research question:

RQ2: Determine the frequencies for various size of SMEs e-business in Jordan?

The survey results indicate that over 90 per cent of the SMEs employed 50-250 employees, making them medium-sized SMEs according to the definition adapted from

Jordan's MOTI (2006). The most popular category, into which more than a third of participating organizational representatives fell, was 100-149 employees. Only 7.3 per cent were in the 10-49 range classified as small-sized SMEs. All of the organizations fell into the Jordanian government's definition of SMEs (see Chapters Two and Four). The results are shown in Table 5.10.

Numbers of employees	Percentage
10-49 employees	7.3
50-99 employees	23.6
100-149 employees	36.2
150-200 employees	19.3
201-250 employees	13.6
Total	100

Table 5.10 Numbers of employees

5.6 Analysis of SMEs' perceptions of e-business enablers and barriers

5.6.1 Review of factor analysis

This section presents an analysis of factors perceived to be associated with e-business in Jordan. It aims to provide answers to Research Questions 3 and 4, those concerned with identifying the enablers that motivate adoption and the barriers impeding it. The analysis is based in the use of factor analysis to assess the appropriateness of the

questionnaire in determining the enablers and barriers associated with e-business adoption from the SMEs' perceptions. This section will therefore provide answers to the third and fourth research question proposed in Chapter Four.

Factor analysis is a statistical technique used to group variables into a smaller number of dimensions or factors. The constructs used in this research include a significant amount of items defined in the previous chapter. Factor analysis is applied in order to handle them more easily, since one of the aims of this technique is to reduce the data into a number of latent factors based on common patterns. Field (2009) defines factor analysis as a technique for identifying groups or clusters of variables, It is used to understand the structure of a set of variables by reducing a data set to a more manageable size while retaining as much of the original information as possible. Factor analysis is a statistical technique involving data reduction that allows simplification of the correlation relationship between a numbers of continuous variables (Miller et al, 2002).

According to Hair et al (2005) factor analysis is used in two main ways:

- 1 **Summarization**, which enables the data to be summarises into a much smaller number of concepts than the original individual variables.
- 2 **Data reduction**, which can be achieved by calculating the scores for each underlying dimension and substituting them for the original variables.

There are actually two discrete classes of factor analysis. The one most commonly reported is the exploratory kind in which the relationships between variables are examined without determining the extent to which the results fit a particular model (Bryman and Cramer, 2008). These analyses require that the researcher must have specific expectations regarding the number of factors, which variables reflect given

factors and whether the factors are correlated. It also compares the solution found against a hypothetical one (Bryman and Cramer, 2008).

The purpose of factor analysis in the present study is to reduce the data set and explain the observed correlation using as few factors as possible, since an acceptable sample size encompasses at least ten times as many observations as there are variables to be analysed (Hair et al, 2005). Factor analysis was employed in the present research to manage the relatively large dataset composed of 12,642 pieces of data from the 42 questions answered by 301 respondents effectively and reliably. In this study, the sample size is 301 respondents, and the highest number of variables to be analyzed using factor analysis is no less than ten items.

Fig.5.1 shows the stages by which the dimensions of e-business enablers and barriers in Jordan were extracted using factor analysis.

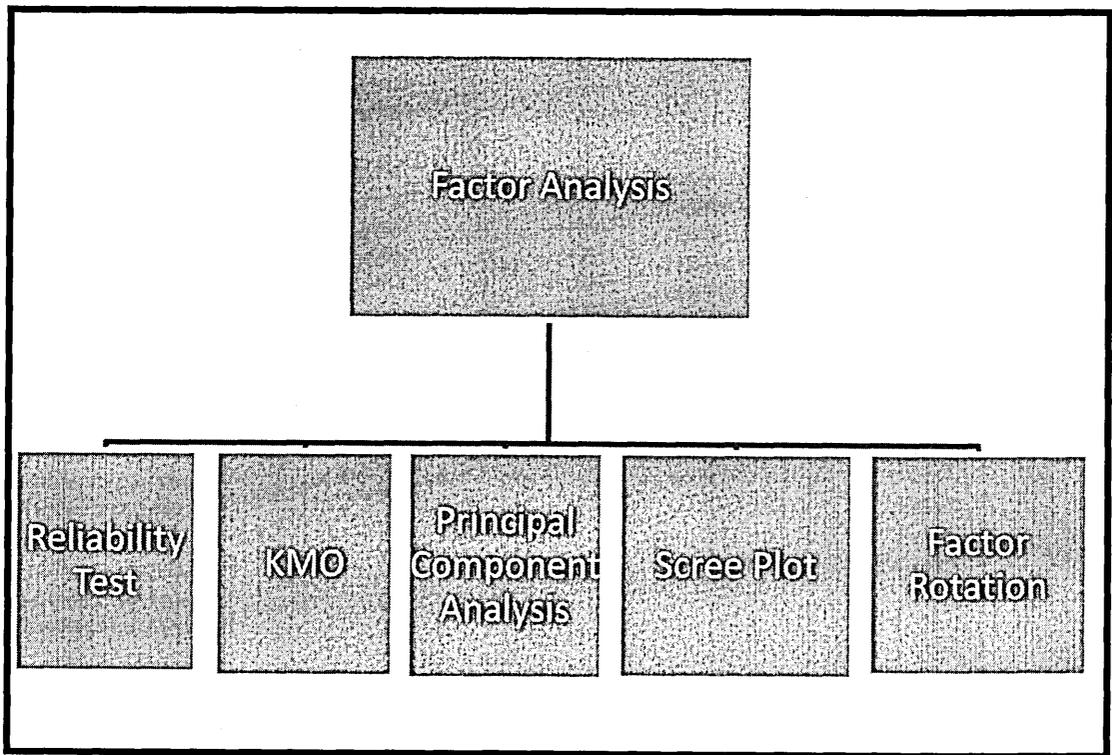


Fig.5.1 Stages of factor analysis to extract dimensions of e-business enablers and barriers

Reliability test

To assess the reliability of the questionnaire, the Cronbach Alpha test was used. For more details see Chapter Three. The value of test on this scale (α) was 94.7 per cent for the questionnaire used for collection of data for the research, which is above the accepted 60 per cent, reflecting the high reliability of the research scale. This was considered as an acceptable level of internal reliability, as the rule of thumb is that the result should be 0.80 or above (Bryman and Cramer, 2008).

Kaiser-Meyer–Olkin(KMO) measures

Kaiser-Meyer–Olkin (KMO) allows researchers to ensure that their data has sufficient correlation to justify the applications for factor analysis (Hair et al, 2005). For this study, the techniques were used to test whether or not factor analysis can be a suitable option. According to Kinnear and Gray (2004), KMO measures of more than 0.5 should be considered appropriate to proceed with factor analysis, while measurements above 0.80 are regarded as meritorious and those below 0.50 as unacceptable. The KMO value for the “enablers” factors was 0.905, indicating that the data was highly appropriate for factor analysis. The KMO value for “barriers” was 0.928, likewise indicating appropriateness.

Principal Component Analysis (PCA)

Extraction techniques allow determination of the factors underlying the relationship between a numbers of variables. There are many extraction procedures, the most common being PCA (Hair et al., 2005; Miller et al., 2002). In carrying out confirmatory factor analysis, it is advisable that a PCA be performed. The central idea of PCA is to reduce the dimensionality of a dataset consisting of a large number of interrelated variables while retaining as much as possible of the variation present in that dataset

(Jolliffe, 2002). The first principle component is the combination that accounts for the largest amount of variation in the sample. The second accounts for the next largest amount of variance and is uncorrelated with the first (Hair et al, 2005).

According to Colman et al (2006) PCA is a technique used to combine two or more correlated variables into a single factor. The correlation between each item and the total score of its dimension is obtained through the examination of the component matrix using PCA.

A further decision must be made at this stage regarding which factor loadings are to be considered. The practical approach is that a factor loading of less than 0.30 is considered to meet the minimum level; loadings of more than 0.50 are considered to be more important, and loadings of more than 0.70 are regarded as of great significant (Hair et al, 2005). According to Bryman and Cramer (2008), an item's or a variable's loading of less than 0.3 excludes it from consideration. Accordingly, the higher the loading of the item is the more important it is in measuring its dimension.

Scree plot

A Scree Plot is derived by plotting the latent roots or eigenvalues against the number of factors in their order of extraction, and the shape of the resulting curve is used to evaluate the cut-off point or the number of factors to be extracted (Hair et al, 2005). Typically, a plot has a distinct break between the steep slope of factors with large eigenvalues and the gradual tailing off associated with the other factors (Bryman and Cramer, 2008; Field, 2009). Empirical evidence indicates that the point at which the Scree Plot begins denotes the true number of factors (Field, 2009). According to Stevens (1992), since the sample size represents more than 300 participants, and the highest number of variables to be analyzed using factor analysis is no less ten items, the Scree Plot provides a fairly reliable criterion for factor selection.

Factor rotation

Factor rotation is another technique often used to support the Scree Plot results in deciding which factors are to be retained (Bryman and Cramer, 2008). It is also designed to give an idea of how the factors initially extracted differ from each other and to provide a clear picture of which items load on which factor (Hair et al, 2005; Miller et al, 2002). Factor rotation involves moving the factor axis measuring of the loadings of the measured variables in the factor space so that the nature of the underlying constructs becomes more obvious to the researcher (Thompson, 2007). There are two basic types of rotation technique:

- 1 **Orthogonal rotation**, which is mostly used when factors are unrelated to one another. The most commonly used algorithm for orthogonal rotation is the Varimax method, which attempts to minimize the number of variables that have high loadings on a factor (Miller et al, 2002).
- 2 **Oblique rotation**, which identifies the extent to which each of the factors is correlated (Hair et al, 2005).

For the purpose of this research, the Varimax-Orthogonal rotation technique has been employed. In an attempt to derive a theoretically meaningful pattern from the variables of enablers and barriers, the factors were orthogonally rotated using varimax rotation. This technique, the most widely used, simplifies the columns of the factor matrix and helps make the pattern of “enablers” and “barriers” associated with a given factor more distinct. However, items or variables whose correlation with a factor is less than 0.3 are not considered (Bryman and Cramer, 2008).

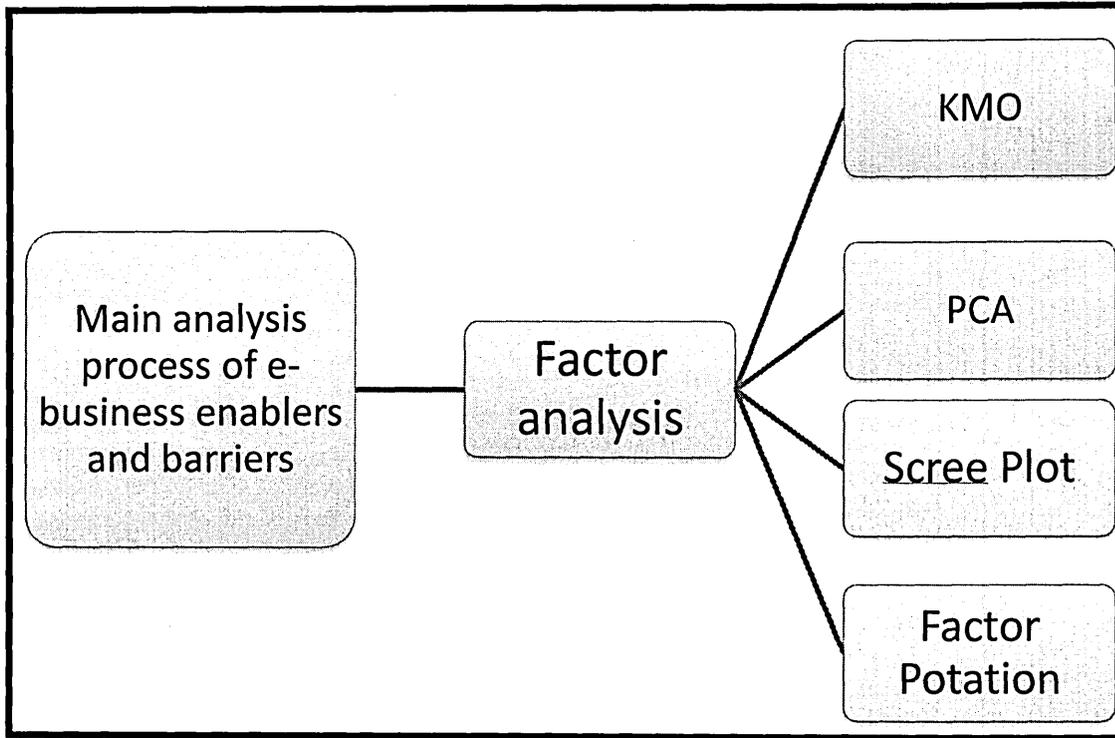


Fig.5.2 The stages of extraction of the dimensions of e-business enablers and barriers using factor analysis

Having briefly reviewed the appropriate statistical methods to be employed, they will now be applied to e-business enablers and barriers.

5.7 Testing a three factors structure for e-business enablers

5.7.1 Research Question Three

In this section the answers to the questionnaire that aims to explore SMEs' perceptions of e-business enablers in Jordan are analysed. This analysis will provide answers for the third research question posed in Chapter Four.

RQ 3: *Identify the significant enabler's s of e-business adoption by SMEs in Jordan?*

As mentioned before, the analysis is conducted using factor analysis, and aims to identify dimensions related to e-business enablers.

In order to find out the trends and behaviour of SMEs towards e-business, and in order to identify the most important enablers of e-business for Jordanian SMEs, the use of factor analysis will test whether there are three types of enablers below, as suggested in the literature as discussed in Chapters Two and Four. The following enablers have been tested.

- **Market Enablers**
- **External Enablers**
- **Organizational Enablers**

To test whether factor analysis was appropriate for the 11 e-business enablers, KMO was carried out on the variables.

The KMO value for the e-business enablers is 0.905 with a significant level of 0.000. It implies that the data is very close to 1.0, indicating that it is a highly appropriate subject for factor analysis. The results of the KMO clearly indicate that the 11 variables fulfil the conditions required and are thus suitable for subsequent factor analysis, and also that the data satisfies the prerequisites for factor ability.

5.7.2 Examination of the three dimensions of e-business enablers

Hair et al, (2005) suggest a PCA that is concerned with determining the minimum number of factors in order to account for the maximum amount of variation in the data. A PCA with an eigenvalue of greater than 1.0 is considered significant and can be used to determine the factors that should be extracted. According to previous studies, the research suggests three different enablers associated with e-business adoption by SMEs.

These enablers include the market enablers of reaching new customers, enhancing customer service, entering new business areas and enhancing customer relations, while external enablers refers to customer demand, supplier requests, competitive pressures and government incentives. Organizational enablers refer to enhanced revenues, reduced costs and management support. The correlation between each item and the total score of its dimension was obtained by a component matrix using PCA to assess the internal reliability of the items that measure each dimension.

The loading of the items (i.e. questions) on the general factor representing the three dimensions mentioned previously are shown in Table 5.11. Items with a loading of less than 0.30 are targeted for possible elimination, while the selection of 0.30 as a salient loading is supported by the relatively large sample size (Hair et al, 2005). However, no elimination of any of the items in the questionnaire was needed, confirming that all the items do represent these extracted dimensions. All the 11 items were found to have higher loadings than the 0.50 that was considered as a highly significant loading in the factor solution for the items used in the measure of e-business enablers; this is reinforced by the relatively large sample used in this research.

Table 5.12 presents information regarding the 11 possible variables and their relative explanatory power as indicated by their eigenvalues. The results of the initial run factor analysis indicate that there are two principal components with eigenvalues of more than 1 (Table 5.12). Using the latent root criterion, two components could be retained. This is supported by an inspection of Scree plot. The Scree plots graphically represents the eigenvalues for each component. It shows the curve beginning to flatten out after the second component, which provides an initial indication that there are only two components present (Fig.5.3).

Component Matrix

The General Factor	
Market Enablers	
Reaching new customers	0.778
Enhancing customer/suppliers relations	0.755
Entering new business areas	0.606
Enhancing customer service	0.809
External Enablers	
Customer demand	0.768
Supplier requests	0.657
Competitive pressures	0.758
Government incentives	0.814
Organizational Enablers	
Reduced costs	0.577
Management support	0.816
Enhanced revenues	0.714

Extraction Method: Principal Component Analysis

Table 5.11 Loading of items representing e-business enablers

A strict interpretation here of the principal component analysis indicates that there are two factors. However, the present approach is both exploratory and confirmatory. The extensive literature survey as discussed in Chapter Two and the distilled model in Chapter Four leads to the conclusion that there are three factors. Taking a confirmatory approach and using a less stringent value for the eigenvalue of > 0.7 rather than 1, and wishing to explain 70 per cent rather than 60 per cent of the variation, it can reasonably be concluded that there are three components.

Total Variance Explained

Component	Initial eigenvalues			Extraction sums of squared loadings		
	Total	Percentage of variation	Cumulative percentage	Total	Percentage of variation	Cumulative percentage
1	5.543	50.393	50.393	5.543	50.393	50.393
2	1.298	11.801	62.194	1.298	11.801	62.194
3	.750	6.817	69.010			
4	.694	6.310	75.320			
5	.584	5.310	80.630			
6	.516	4.691	85.321			
7	.415	3.770	89.091			
8	.372	3.379	92.470			
9	.319	2.898	95.368			
10	.278	2.523	97.891			
11	.232	2.109	100.000			

Extraction Method: Principal Component Analysis

Table 5.12 Results of extraction of components for enablers

As mentioned before, the Scree Plot determines how many items should be retained for the subsequent analysis.

Scree Plot

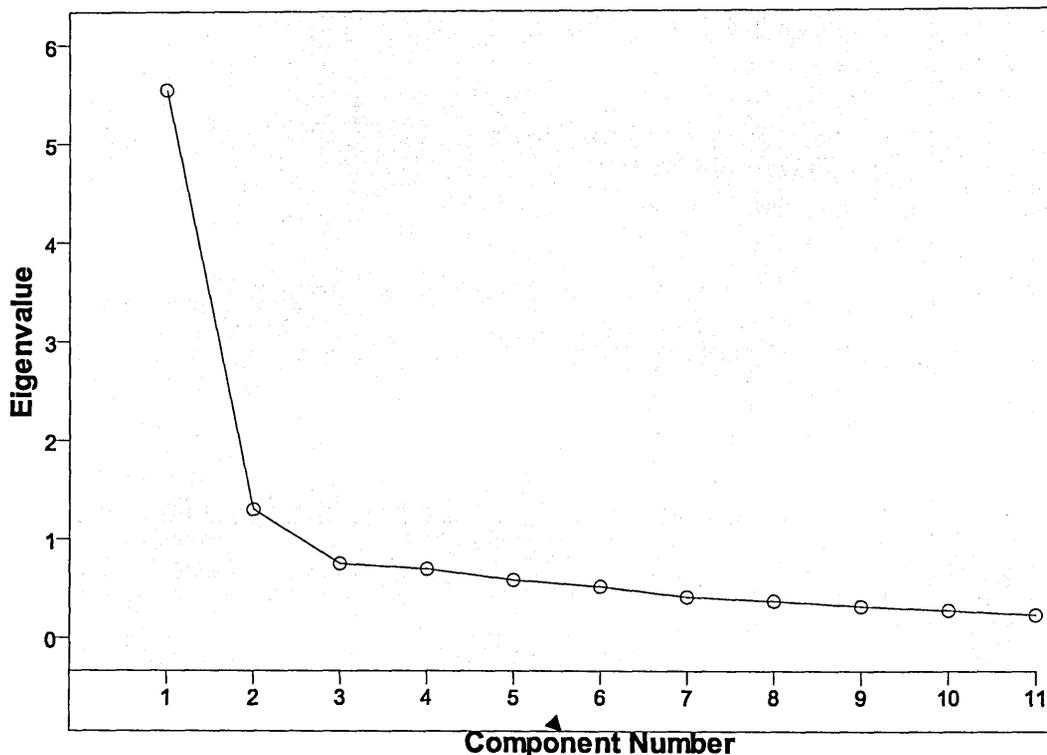


Fig.5.3 Scree Plot for e-business enablers

For the 11 variables, rotated varimax rotation had extracted two factors with a value of more than 1.0. However, factor one does not make sense as the variables loaded onto this factor measure different concepts. An alternative approach was adopted that uses the a priori criterion suggested by Hair et al (2005) as a stopping criterion for deciding the number of factors to be extracted was adopted. He also indicates that an a priori criterion is used when the researcher knows how many factors to extract before undertaking the factor analysis. However, no significant differences were found when using the correlated factor method of rotation.

All 11 rotated “enablers” variables are retained, as these variables have a factor loading of more than 0.4 and there is no cross-loading of variables after the rotated factor matrix (Table 5.13). Again the strict interpretation of the varimax rotation confirms two factors, as one of the values in the organisational enabler is 0.4. However, as a less stringent interpretation based on literature survey has been adopted, the value has been relaxed from 0.5 to 0.4, which allows the reasonable conclusion that there is a three factor structure.

In this study, Factor 1 (market enablers) relates to reaching new customers, the enhanced relationship between customers and suppliers, entering new business areas and enhancing customer services. Factor 2 (external enablers) relates to customer demand, supplier requests, competitive pressures and government incentives. Factor 3 (organizational enablers) reflects reduced costs, management support and enhanced revenues. Table 5.13 represents the results of the loading of each variable (i.e. questions) on its factor.

This analysis tends to suggest that there is empirical evidence that SMEs’ perceptions of enhanced customer services are the most significant market enablers for adoption that government incentives are by contrast the greatest external enablers, and that management support is the greatest organizational enablers. These results will be discussed in more detail in the following chapter

Rotated Factor Matrix

E-business enablers			
	Market	External	Organizational
Market enablers			
Reaching new customers	0.771		
Enhanced relations	0.852		
Entering new business areas	0.729		
Enhance Customer Service	0.883		
External enablers			
Customer demand		0.811	
Supplier requests		0.545	
Competitive pressures		0.707	
Government incentives		0.857	
Organization enablers			
Reduced costs			0.446
Management support			0.856
Enhanced revenues			0.669

Extraction Method: Principal Component Analysis Rotation Method: Varimax with Kaiser Normalization

Rotation converged in 3 iterations

Table 5.13 Loading of each item on its e-business enabler's dimension

5.8. Testing of the three factors structure for e-business barriers

5.8.1 Research Question Four

This section presents an analysis of SMEs' perceptions of the barriers that impede the implementation and the development of e-business in Jordan. Factor analysis was used to assess the appropriateness of the questions posed to determine the barriers that hamper the development of e-business from the SMEs' viewpoint. The result will answer our fourth research question:

RQ 4: Identify the significant barriers of e-business adoption by SMEs in Jordan?

As in previous analyses, KMO tests were conducted to establish the appropriateness of the ten variable barriers for the factor analysis. The KMO value for the e-business barriers was 0.928, which is a significant level of 0.000. It implies that the data was very close to 1.0, indicating a high appropriateness for factor analysis. The results of the KMO values indicate that the variables again clearly fulfilled the required conditions and were thus suitable for subsequent factor analysis.

5.8.2 Examination of the three dimensions of e-business barriers

Similarly, to determine the minimum number of items, PCA was used, with an eigenvalue of greater than 1.0 being considered significant. The research suggests the existence of three barriers to the implementation and development of e-business by Jordanian SMEs. These are technological (concerned with security issues, the high cost of implementing IT and the quality of networks), organizational (referring to the lack of expert staff, unsuitability for business, and a lack of time for implementation) and external

(which are mainly concerned with government policy, the cultural environment, low use by customers and legal and regulatory matters). All the items that measure the ten variables were found to have higher loadings than 0.40 on the general factor that represents these dimensions. Table 5.14 shows the factor values ranging from 0.631 to 0.844, which indicates that there is a high degree of confidence in the factor solution for the items used in the measure of e-business barriers. Table 5.14 represents the loading of the 10 items on the general factor.

Principal Component Analysis

	Barriers	The General Factor
Technological	Cost of implementation	0.721
	Security issues	0.844
	Quality of network	0.783
Organizational	unsuitability for business	0.631
	Lack of expert staff	0.821
	Lack of time for implementation	0.635
External	Low use by customers and suppliers	0.803
	Stability for government policy	0.829
	Concern with cultural environment	0.800
	Legal and regulatory issues	0.680

Component Matrix. Extraction method: Principal Component Analysis

Table 5.14 loading of items that represent e-business barriers

Table 5.15 presents information regarding the 10 possible items and their relative explanatory power as indicated by their eigenvalues. The results of the initial run factor analysis indicates that there are two principal components with eigenvalues of more than 1.0 (Table 5.15). Using the latent root criterion, two components can be retained. However, the Scree Plot which displays graphically the eigenvalues for each component shows the curve begin to flatten out after the second component, which is an initial indication that there are only two components that can be extracted using factor analysis

(Fig.5.4). In view of the low eigenvalues of the two items relative to the latent root criterion value of 1.0, these components were excluded. Similarly for enablers: a strict interpretation here of the PCA indicates that there are two factors. However, the approach here is both exploratory and confirmatory. The extensive literature survey in Chapter Two and the distilled model in Chapter Four lead to the conclusion that there are three factors. Taking a confirmatory approach and using a less stringent value for the eigenvalue of > 0.5 rather than 1 and wishing to explain more than 70 per cent rather than 50 per cent of the variation, it can reasonably be concluded that there are three components.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	Percentage of Variance	Cumulative Percentage	Total	Percentage of Variance	Cumulative Percentage
1	5.754	57.541	57.541	5.754	57.541	57.541
2	1.017	10.171	67.713	1.017	10.171	67.713
3	.589	5.886	73.599			
4	.569	5.688	79.286			
5	.510	5.105	84.391			
6	.387	3.869	88.260			
7	.365	3.651	91.912			
8	.284	2.837	94.748			
9	.274	2.743	97.491			
10	.251	2.509	100.000			

Extraction Method: Principal Component Analysis

Table 5.15 Results for extraction of components for barriers

Scree Plot

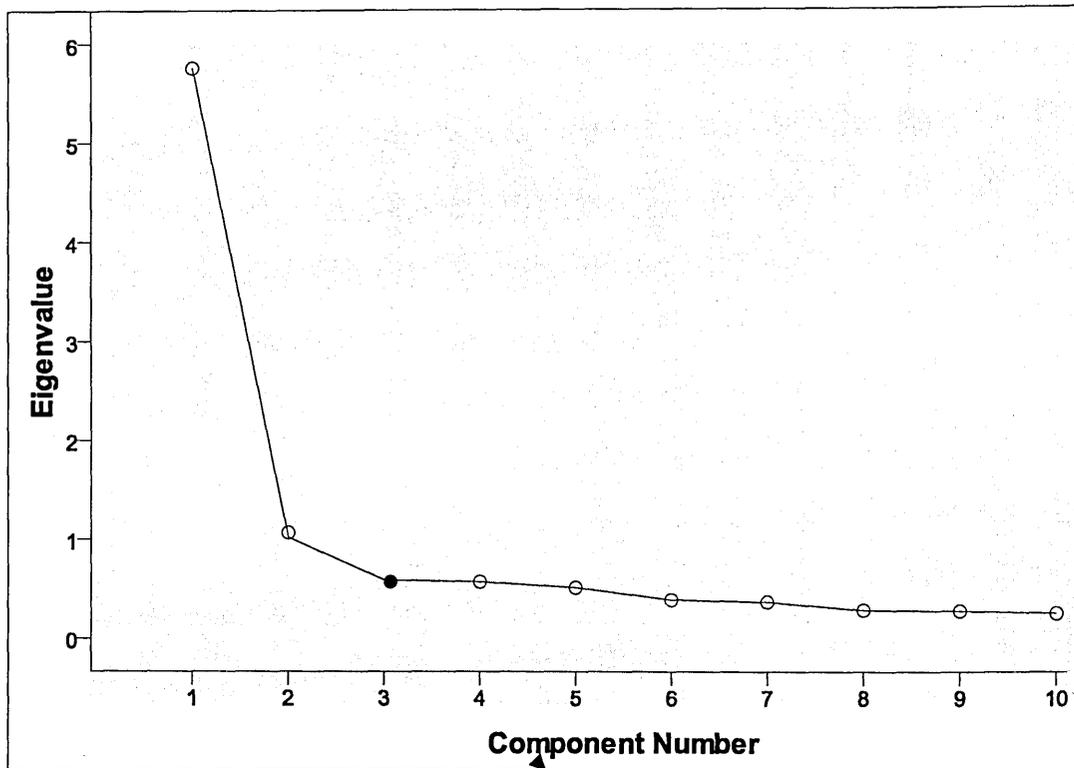


Fig.5.4 Scree Plot for e-business barriers

The use of varimax rotation managed to extract two items with eigenvalues of more than 1.0. For the 10 variables, factor analysis had extracted two factors. However, factor 1 does not make sense as the variables loaded onto this factor measure different concepts. All 10 rotated “barriers” variables are retained, as these variables have a factor loading of more than 0.5 and there is no cross-loading of variables. Again, the strict interpretation of the varimax rotation confirms that the two factors as one of the values in the organizational barriers are 0.5. However, as previously, based on literature survey the study takes a less stringent interpretation, using a value of 0.4 which allows the reasonable conclusion that there is a three factor structure. In this study, Factor 1

(technological barriers) relates to costs of implementation, quality of networks and security issues. Factor 2 (organizational barriers) relates to unsuitability for business, lack of expert staff and lack of time for implementation, and Factor 3 (external barriers) reflects low use by customers and suppliers, the stability of government policy, the cultural environment and legal and regulatory issues. Table 5.16 represents the results of the loading of each variable (i.e. questions) on its factor.

As with e-business enablers, the results of this analysis of e-business barriers tends to suggest the presence of empirical evidence that security issues, lack of expert staff and legal and regulatory issues are the most important barriers among the three factors. The results here make sense for SMEs in a developing country such as Jordan, in the infancy of ICT and e-business. These results will be discussed in more detail in the following chapter

Rotated Component Matrix

E-Business Barriers			
	Technical	Organization	External
Technological barriers			
Cost of implementation	0.668		
Security issues	0.746		
Quality of networks	0.627		
Organisational barriers			
unsuitability for business		0.552	
Lack of expert staff		0.868	
Lack of time for implementation		0.792	
External barriers			
Low use by customers and suppliers			0.842
Stability for Government policy			0.865
Concern to culture environment			0.687
Legal and Regulatory			0.717

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

Table 5.16 Results of the loading of e-business barriers

5.9 Testing the relationship between key factors

In this stage, the analysis consists of investigating the possible relationships between stages of growth, size and the enablers and barriers. These investigations correspond to Research Questions 5, 6 and 7, which were tested individually by using bivariate analysis techniques using Pearson correlation (the idea of correlation being one of the most fundamental concepts in the elaboration of bivariate relationships (Bryman and Cramer, 2008; Field, 2009)). Kinnear and Gary (2008) define bivariate analysis as a means of showing or measuring an assumed linear relationship between two variables by showing that relationship's strength and direction.

In this research bivariate analysis was employed using the Pearson correlation method to identify the correlation between the variables. This section will explore Research Questions 5, 6 and 7 and the hypothesis developed from them (Fig. 5.12). It is assumed that e-business factors have a positive impact on business development. The aim of this analysis is to evaluate evidence for the relationship between e-business stages with the e-business enablers, barriers and organizational size.

However, in relation to the level of association between variables, the present research follows Field (2009), who suggests that $r = 0.1$ represents a small correlation, $r = 0.3$

represents a moderate one and $r = 0.5$ represents a strong one. Moreover, while the testing in some cases revealed a level of statistical significance corresponding to significant (0.05) or highly significance (0.01), the value of r is what actually determines the strength of the association. This will be demonstrated in the analysis that follows. The detailed hypotheses that are tested correspond to Research Questions 5, 6 and 7 and are shown in Fig 5.5.

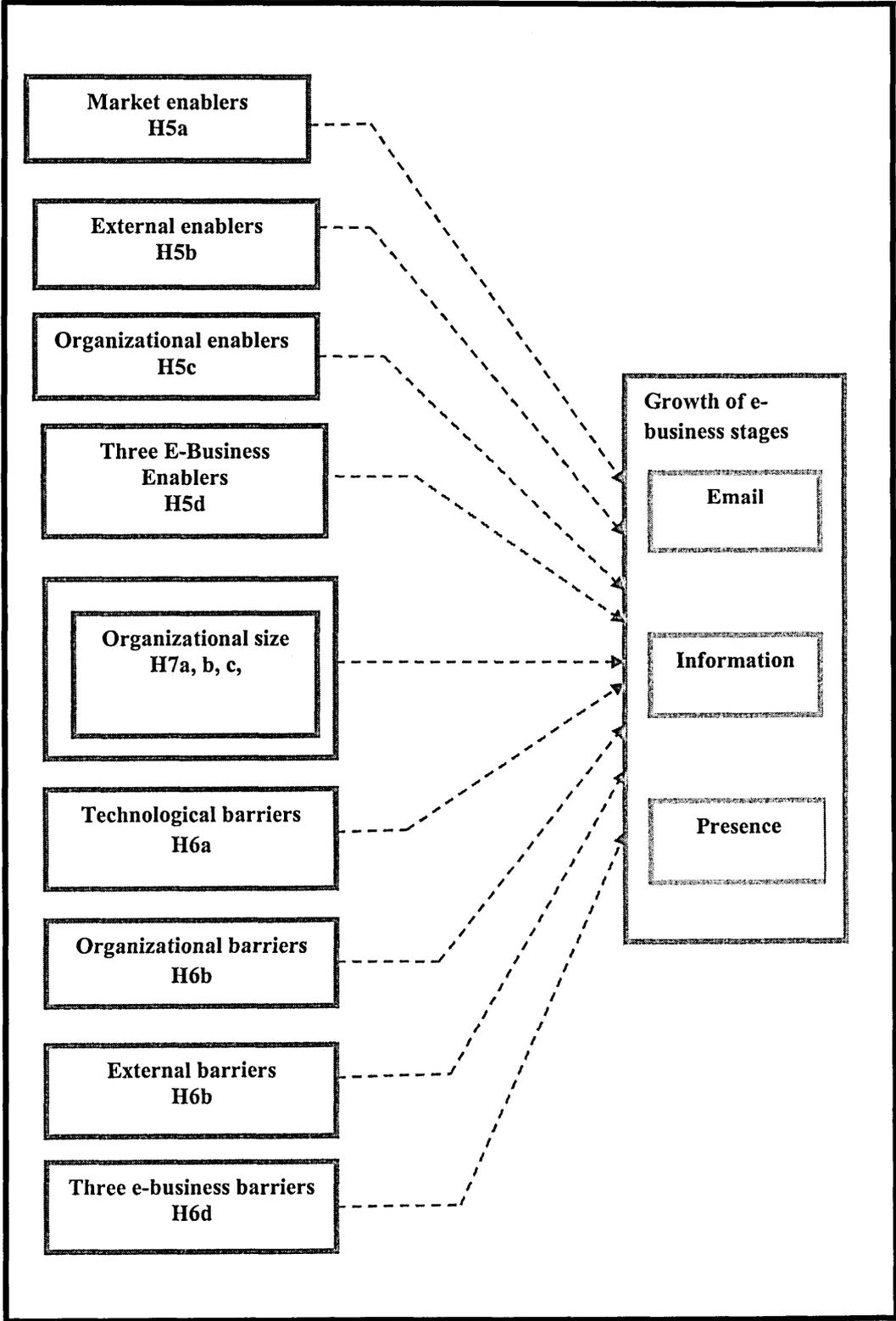


Fig.5.5 The proposed hypotheses framework

The analysis in this section begins by measuring the association between enablers and stages of growth. In order to explore a more detailed understanding of this association the various associations between each of the individual enablers and the stages of growth, and then each of the enablers with the individual stages, will be systematically explored. This process is then repeated for stages of growth and barriers. Finally the strength of association between stages of growth and organisational size is explored

5.9.1 Strength of the association between stages of growth and enablers

To assess the current stages of e-business adoption by SMEs, each time a research question was proposed to find out any significant relationship between the stages of e-business adoption and e-business enablers. The fifth research question therefore is:

RQ 5: Is there any significant relationship between the stages of growth of e-business and e-business enablers?

A Pearson correlation test was conducted that revealed the statistic $r = 0.468^{**}$. This is a highly significant, albeit highly moderate, positive relationship. From this positive correlation it can be said that there is a highly moderate association or relationship between the three primary stages of growth identified earlier (e-mail, information and presence), and the three key enablers identified earlier (market, external and organisational). One can reasonably say that, as e-business progress occurs in these three stages, the three enablers can be said to play role in this progression.

5.9.2 Strength of association between stages of growth and individual enablers

Several hypotheses covering the three categories of e-business enablers (market, external, organizational) were tested to explore their relationship with the stages of growth.

H5a: *There is a significant relationship between the e-business stages and e-business market enablers*

H5b: *There is a significant relationship between the e-business stages and e-business external enablers*

H5c: *There is a significant relationship between the e-business stages and e-business organizational enablers*

Bivariate correlation was employed to test hypotheses H5a, H5b and, H5c as shown in Table 5.17.

Correlation

		Stages model	
H5a	Market Enablers	Pearson correlation Sig. (2-tailed)	0.487**
H5b	External Enablers	Pearson correlation Sig. (2-tailed)	0.401**
H5c	Organizational Enablers	Pearson correlation Sig. (2-tailed)	0.379**

**Correlation is significant at 0.01 (2-tailed)

Table 5.17 Correlation between the six stages model and the three individual enablers

According to Table 5.17, the three hypotheses covering the three categories of e-business enabler reveal a highly significant, positive relationship with the six-stage model. However, the strength of the association ranges from high to moderate. Once more, the market enabler seems to have a marginally higher correlation. This test

provides evidence of support for the three hypotheses. The respondents' attitudes provide evidence that the higher an organizations level of e-business adoption, the greater the number of motivators it is likely to have. In other words, the growth of e-business is positively related to e-business enablers. Interestingly, the result indicates that in relation to stages of growth, the market is more important for the adoption of e-business than are other enablers. The interesting result is that the majority of e-business initiatives for the respondents are market enablers such as the improvement of customer service and the reaching of new customers. That is to say that the result indicates that those organizations looking to improve customer services or reach new customers are more likely to adopt e-business at a higher level. It seems that the higher this level, the greater the need for market motivation. The reason may be that organizations establish their websites and adopt e-business so as to establish and maintain contact with customers or to expand globally and advertise their products or services online. These results generally reinforce the idea that these three enabling factors are important influencers of e-business adoption.

5.9.3 Strength of association between each stage of growth and each enabler

This section explores the relationship between the three individual stages and the three individual enablers. This will test the next hypothesis

H5d: There is a significant relationship between the three individual of e-business stages and the three individual of e-business enablers

Another bivariate correlation analysis was used to test H5d. Table 5.18 illustrates the results of H5d of this analysis.

Correlation

		Market enablers	External enablers	Organizational enablers
<i>H5d</i>	<i>Email exchange</i>	<i>0.368**</i>	<i>0.366**</i>	<i>0.346**</i>
	Pearson correlation Sig. (2-tailed)			
	<i>Information</i>	<i>0.494**</i>	<i>0.496**</i>	<i>0.480**</i>
	Pearson correlation Sig. (2-tailed)			
	<i>Presence</i>	<i>0.410**</i>	<i>0.392**</i>	<i>0.388**</i>
	Pearson correlation Sig. (2-tailed)			

**Correlation is significant at 0.01 (2-tailed)

Table 5.18 Correlation between the three individual stages of growth with the three individual enablers

Table 5.18 shows high levels of significance for e-business enablers (market, external and organizational enablers) with the first three stages (email exchange, information and presence); the strength of association ranges from high to moderate. The respondents' attitudes suggest that different enablers have different effects on the various categories of e-business stages. Interestingly, the information stage was found to be of the greatest significance for e-business enablers out of all the stages. The need for e-business enablers is particularly prevalent for the organizations in the first three stages, and there may be a strong emphasis on the need for motivators in order to progress through these stages. One possible explanation is that organizations' advertising of their products or services on their websites allows more customers to find out about them; this could be a motivation for adoption. The results also suggest that respondents' attitudes at the second stage focus more on motivation from external enablers (0.496**), such as

support from government or competitive pressures. One possible explanation is that organizations at the different stages may have different goals they want to achieve or benefits they want to attain, and may expect more support from government and more training to encourage them to adopt e-business.

This finding agrees with previous research by Auger and Gallaaugher (1997), Qalaye (2002), Levy et al, (2005), Keoy et al (2006), Powell et al, (2006), Chong and Pervan (2007), Ashrafi and Murtaza (2008) Harindranth (2008), Scupola (2009) and Alam (2009), all of whom find that these enablers motivate the adoption of e-business SMEs, and that SMEs still tend to use e-business before receiving its benefits such as reduced costs, enhanced revenues and improved customer services.

The results suggest that these enablers influence the level of adoption and use of e-business. For example, Daniel et al (2002) finds that a significant factor in e-business is organizations' desire to minimize costs, which leads to them increasing their access to the global marketplace by developing e-business services to a greater extent so that they can benefit from a wider customer base. Pavic et al (2007) suggest that there is a synergy between e-business growth within SMEs and the creation of competitive advantage. Many SMEs invest heavily in e-business to fill full customer demand and improve customer relations (Chibelushi and Costello, 2009).

5.9.4 Strength of association between the stages of growth and e-business barriers

The next research question is concerned with the relationship between e-business barriers and the stages of growth of e-business adoption by SMEs. The sixth research question is therefore:

RQ 6: Is there any significant relationship between the stages of growth of e-business and e-business barriers?

Conducting a Pearson correlation test on the respondents' attitudes reveals a high level of significance between the model's stages of growth and overall e-business barriers, and that there is therefore a clear and significant relationship between stages of growth with e-business barriers of $r \pm 0.476^{**}$, as indicated by a positive correlation between them. The strength of the statistical association corresponds to a highly moderate correlation, however, and there is a relationship between the three primary stages of growth identified earlier (e-mail, information and presence) and the three key barriers (technological, external and organisational). One can reasonably conclude that, as e-business progress is through these three stages, the three barriers play a role in this progression.

5.9.5 Strength of association between stages of growth and individual barriers

The same analysis, bivariate correlation, (Pearson correlation) was employed to test hypotheses H6a, H6b and H6c as shown in Table 5.19.

H6a: There is a significant relationship between the stages of growth of e-business and technological barriers.

H6b: There is a significant relationship between the stages of growth of e-business and organizational barriers.

H6c: There is a significant relationship between the stages of growth of e-business and external barriers.

Table 5.19 below shows the results of the bivariate correlation analysis.

Correlation

			Six-stage model
H6a	Technological barriers	Pearson correlation Sig. (2-tailed)	0.469**
H6b	Organizational barriers	Pearson correlation Sig. (2-tailed)	0.414**
H6c	External barriers	Pearson correlation Sig. (2-tailed)	0.455**

**Correlation is significant at 0.01 (2-tailed)

Table 5.19 Correlation between the six-stage model and the individual barriers

Table 5.19 shows that the three specific hypotheses (H6a, H6b, and H6c) covering the three groups of e-business barriers exhibit highly significant positive relationships with the stages of growth. The strength of association with e-business stages is high to moderate. E-business barriers have been involved in e-business adoption and seem to have an impact on the stages of growth of e-business adoption by SMEs. The results therefore suggest that e-business barriers influence the levels of growth of e-business.

The respondents' attitudes provide empirical evidence that organizations at higher levels of e-business adoption are more likely to face more barriers, and that according to the stages of growth, technological barriers are more important for the adoption of e-business than are other barriers. Technological barriers may be more of an issue where the objective is to develop a new level of e-business. One possible explanation could be that insecurity is aroused by the perceived risks of e-business, its lack of privacy and

confidentiality, and the lack of trust in online transactions. Another possible explanation for this is that SMEs are aware that technological barriers are more important for the adoption of e-business, particularly in developing countries like Jordan where there is no adequate structure that enables secure online payments. SMEs also find that technological barriers are more important because of the lack of a security system for transactions; this is because of the low use of credit cards and the high costs of implementation.

5.9.6 Strength of association between each stages of growth and each barrier

This section explores the relationship between the three individual stages and the three individual barriers. This will test the next hypothesis.

H6d: There is a significant relationship between three individual stages of e-business with the three individual e-business barriers?

Table 5.20 below shows the results of bivariate correlation (Pearson correlation)

analysis:

Correlation

		Technological Barriers	Organizational Barriers	External Barriers
H6a	Email	0.449**	0.244**	0.372**
	Pearson correlation Sig. (2-tailed)			
	Information	0.498**	0.449**	0.405**
	Pearson correlation Sig. (2-tailed)			
	Présence	0.458**	0.475**	0.467**
	Pearson correlation Sig. (2-tailed)			

**Correlation is significant at 0.01 (2-tailed)

Table 5.20 Correlation between the three individual stages of growth and the three individual barriers

As with enablers, the early stages of growth shows high levels of significance as relates to all three barriers. The respondents' attitudes show high levels of significance for e-business barriers (technological, external and organizational) with the three stages (email exchange, information and presence). The strength of association ranges from high to moderate. The respondents' attitudes suggest that the different barriers have different effects on the various stages of e-business growth. Interestingly, a relationship of low significance was found between email exchange and organizational barriers. This is perhaps an anomaly. One possible explanation is that organizations are at this level still in the initial stages of using e-business activities such as email, and their staff are familiar with these activities. Respondents' attitudes provide empirical evidence that organizations in the first three stages of e-business adoption found technological barriers such as security issues, quality of the Internet and cost of implementation to be the most prominent. Unfortunately, organizations at these levels cannot develop e-business without contact with these barriers. This hinders them from moving to the next stage. The lack of secure websites and the costs of initial implementation make them even more reluctant to develop e-business to the next level. The present results also reveal that organizations that have reached the third stage view organizational barriers such as lack of expert staff and lack of time for implementation to be the most prominent barriers to the adoption of e-business. It may be noted that the higher stages need highly skilled IT staff to develop from the simpler to the more complex e-business processes, and that the lack of expert staff, lack of time for implementation and a perceived lack of fit between higher levels of technology and an organization's offerings affects decisions as to whether or not to move to the next stage of e-business. Organizations at the third stage find that all barriers are of the highest significance, which inhibits organizations at stage three from moving on. However, Jordanian SMEs

are still at the lower stages of adopting e-business because Jordan is a developing country that only started using the Internet a few years ago.

These findings agree with previous research by Jones et al (2003), Cloete et al (2002), Lawson et al (2003), OECD (2004), Chen (2004), Wymer and Regan (2005), Levy et al (2005), MacGregor and Vrazalic (2005), Kapurubandara and lawson (2006,2009), Katiwi and macGregor, (2007) and Chen and McQueen (2008). They all find that there are significant relationships between the levels of e-business adoption by SMEs with the e-business barriers that hamper such adoption.

5.9.7 Strength of association between stages of growth and organizational size

The seventh research question is concerned with the relationship between stages of growth and organizational size:

RQ 7: Is there any significant relationship between the stages of growth of e-business with organizational size in terms of number of employees?

Conducting a Pearson correlation test reveals the statistic $r = 0.413^{**}$, showing that there is a highly significant positive correlation between stages of growth and organizational size; however the measure of association is highly moderate. Three specific hypotheses were developed from this research question to test the relationship between stages of growth and organizational size:

H7a: There is a significant relationship between the first stage (email exchange) and organizational size

H7b: There is a significant relationship between the second stage (information) and organizational size

H7c: There is a significant relationship between the third stage (presence) and organizational size

Table 5.21 shows the results of this analysis.

Correlation

			Organizational Size
H7a	Email Exchange	Pearson correlation Sig. (2-tailed)	0.409**
H7b	Information	Pearson correlation Sig. (2-tailed)	0.379**
H7c	Presence	Pearson correlation Sig. (2-tailed)	0.438**

** Correlation is significant at 0.01 (2-tailed)

Table 5.21 Correlation between the three individual stages of growth and organizational size

Respondents' attitudes show that the three hypotheses relating to the three individual stages exhibit a highly significant positive relationship with the stages of growth. The strength of the association ranges from high to moderate as regards e-business stages. Interestingly, however, presence and the first stage (email) show a higher level of association than email stage.

Chapter 5 Interpretation of Results

The results provide empirical evidence that organizational size defined by number of employees is associated with the higher levels of adoption of e-business. It is apparent that the greater an organization's number of employees, the more likely it will be to adopt e-business. One possible explanation for this is that larger organizations have more expert staff and more resources for progressing to increasingly complex levels than smaller ones. The results reveal that organizational size is more important to the "presence" stage than to the others, possibly because this stage involves staff experience of the previous ones, implementation of which will have been found to have been relatively simple.

The empirical results indicates that smaller organizations are more likely to be involved in lower levels of e-business adoption, whereas larger organizations are more likely to have reached higher levels of e-business adoption. The results of the respondents' attitudes therefore indicates that larger organizations are more likely to have higher levels of e-business adoption.

These findings agree with previous research by El-Nawawy and Ismail (1999), Fallon and Moran (2000), Martin and Matlay (2001), Levy et al (2005), Grandon and Pearson (2004), MacGregor and Vrazalic (2008) and Eriksson et al (2008), all of whom find that organizational size in terms of number of employees plays a critical role in the adoption and development of e-business technology. For example, Van-Beveren and Thomson (2002) argue that organization size by number of employees has been consistently noted as being a factor in determining whether businesses apply and utilize e-commerce. According to Lee and Xia (2006), organization size has long been considered as an

important predictor of e-business adoption. These results will be discussed in more detail in the following chapter.

5.10 Conclusion

The results reported in this chapter reveal that e-business adoption by Jordanian SMEs is still in the early stages. A literature review shows that the present study is the first comprehensive one to investigate Arabic Middle East countries, and more specifically Jordan. It is important therefore to understand the factors that influence the adoption of e-business by organizations, and more especially by SMEs, and to determine the current use and growth of such activity. This chapter has provided a profile of a sample of 301 respondents to a survey questionnaire.

A demographic analysis of the respondents' profiles revealed that two thirds were male, under forty years of age and had graduate or post-graduate qualifications, while three quarters had IT training and up to 10 years of experience. Similar demographic analyses of the organizational profiles shows that most (90 per cent) of SMEs employed 50-250 staff, with more than half having turnovers of more than a quarter of million (JD), and had been operating up to 10 years. More than half thought top management to be the motivating factor for the adoption of e-business. Both these results lead to the conclusion that for a developing country the organisations were relatively mature and the respondents' professionally educated.

In relation to the first research question covering the pattern of e-business adoption, it was clear that about 90 per cent said that the first two stages of e-business (email exchange and information exchange) were present in their businesses, while only about a quarter thought they had reached the third stage. This indicates that only the first three stages are represented in the sample. In relation to the third research question concerning the identification of the significant enablers for e-business adoption, factor analysis confirmed that market, external and organizational factors were both key and independent ones. The results indicate empirical evidence that the top three e-business

enablers in Jordan, according to the respondents, were enhancement of customer services, government incentives and management support.

The fourth research question concerns the identification of barriers to e-business. In this respect, factor analysis reveals that these barriers are external, organisational and technological factors, and that they are independent of each other. The results also indicate that the three most significant barriers are security issues, lack of expert staff and the stability of government.

Bivariate analysis methods were used to explore the relationships between the various e-business factors such as size, stages of growth, enablers and barriers that relate to questions 5, 6 and 7. The result reveals that there is a highly significant positive relationship between stages of growth (email, information and presence) and certain barriers, both in combination as well as individually, a situation that also obtains as regards the relationship between stages of growth and enablers. Results for the stages of growth and enablers and barriers revealed a highly significant relationship between the three stages of growth and the enablers and barriers; however our strength of association was highly to moderate.

Finally, investigation reveals a highly significant positive relationship between stages of growth and organizational size, but again with a highly moderate strength. The following chapter will discuss the results and conclusions. The main implications of the research findings and its limitations will also be presented.

6.1 Introduction

The previous chapter analyzed the survey results. The purpose of this chapter is to summarise the research process, and discuss the findings. The analysis draws extensively on the quantitative method to evaluate the growth of e-business and the factors influencing its adoption from the perspective of the participants in the survey.

In this chapter the discussion and implication of the research finding is followed by a summary of the respondents' profiles, the stages of growth of e-business in the SMEs represented by the survey participants using the six-stage model, and factors influencing e-business adoption, including enablers, barriers and organizational size.

6.2 Summary of the research process

This study as whole investigates the stages of growth of e-business adoption by Jordanian SMEs and the factors that influencing that adoption and use. The results take account of the gaps in the current research. It identifies the levels of growth, which it categorises into the six stages of email, information exchange, presence, transaction, personalisation and integration in SMEs in developing countries, particularly in Jordan.

The results also determine the key findings emerging from the analysis of the enablers and barriers associated with e-business adoption, and the various sizes of SME in the sample. The main purpose of this study is to discover if any positive relationship exists between the stages of e-business growth and relevant factors. This is accomplished by developing a six-stage model from previous literature, and designing a framework specifically to investigate these issues. In order to do so, it is important to present a review of the related literature concerning the development of e-business among SMEs

Chapter 2
Discussion

and the factors associated with its adoption, which was done in Chapter Two. Pursuant to this, Chapter Four discussed in detail the development of e-business growth among SMEs and the factors influencing that growth, and proposed a framework and the main research questions by which to address the research objectives.

The research design and methodology were presented in Chapter Three, which outlined the main method used in this research and the questionnaire design and execution. Chapter Five analyzed the results from our respondent's attitudes. The present chapter interprets and discusses the empirical results in relation to the literature, according to the key findings.

The implications and findings of the first five chapters are now considered in order to answer the research questions and test the hypotheses regarding the positive relationship between the proposed e-business factors incorporated in the six-stage model. The research results are discussed by providing an illustration of the useful nature of the e-business stage model and considering an interpretation of the implications of e-business adoption in the context of enablers, barriers and organizational size (in terms of the number of employees).

This research has successfully demonstrated the various relationships between the three factors of e-business adoption in relation to e-business growth. 11 hypotheses regarding these relationships between variables were tested. The results confirm that successful e-business adoption requires the three factors of enablers, barriers and organizational size.

The results of this research echo previous studies in literature. While e-business and SMEs have received some attention, many studies have focused on the more simple measures of key barriers and enablers, and few have investigated the stages of growth. There was a paucity of studies on developing countries or the Middle East, especially ones exploring the relationship between various factors and stages of growth.

6.3 Discussion and implications of the findings

This study has shown how SMEs mostly use e-business. It has presented the findings of a piece of quantitative research that gives a deeper understanding of the main factors influencing SMEs' decisions to adopt e-business technology and has developed a framework for conceptualising this adoption. The results indicate that the three factors of enablers, barriers and organizational size influence decisions to adopt e-business. The findings and the framework articulated here have important implications for both researchers and practitioners. This research provides the frequency distribution of each variable for the sample respondents. Chapter Five analyzes respondents' demographic data and SMEs' profiles including age, gender, experience, level of education, IT training, the number of employees, turnover, source of adoption of e-business and length. This study is dominated by SMEs; this may be for several reasons. With the current global publicity given to e-business there is a vital need to conduct research on Jordanian SMEs and the impact of e-business there. SMEs are seen in Jordan as important economically in terms of the number of SMEs, the percentage of the workforce employed by them and the fact that they constitute 99 per cent of the organizations in the country by number, as well as their critical role in the domestic growth of the country's economy. Finally, SMEs are usually willing to understand that one way to develop their business is to engage with various research projects such as the present one. The communications sector was selected because SMEs there are more familiar with e-business activities and are seen as pioneers in this area in Jordan.

The study managed to cover a variety of SMEs in terms of number of employees. The main sampling targets were senior managers who were involved in decision making. The results of the analysis of respondents' demographic data made it evident that the significant majority (about two thirds) were males, nearly a quarter were under the age of 40 and been trained in IT, and half had obtained undergraduate qualifications and had

six to ten years' experience. Moreover, similar demographic analysis of the organizations reveals that the term "medium" covers about 92 per cent of the sample, while the remaining 7.3 per cent are small enterprises. One fifth of the SMEs represented by the survey's respondents had annual turnovers of more than JD250,000, and more than two thirds had been operating for up to a decade.

The results of the SMEs profiles reveal the interesting fact that the majority of SMEs are motivated by top management to adopt new technology.

With respect to the second research question regarding organizational size measured by the number of employees, it was found that the most popular category, accounting for over a third of the organizations, fell into the range of 100-149 employees. The results illustrate that all the organizations are within the Jordanian government's definition of SMEs (see Chapter Two), confirming that the target audience of SMEs were in fact those who completed the survey. The results also provide evidence of the generalisability of the sample. Following the research questions presented in Chapter Five, the finding of this research will be divided into four categories: stages of growth, enablers, barriers and organizational size, together with general information regarding the respondents and organizational profiles. The empirical results will be discussed in detail in the following sections, each of which will cover one of the factors presented in the conceptual framework (see Chapter Four). The following sections will discuss the findings.

6.3.1 Implications for stages of e-business growth

The focus of the first research questions was to find out the pattern of the stages of growth within SMEs in Jordan. The literature revealed several combinations of levels of Internet and e-business adoption (Burgess and Cooper, 1998; Earl, 2000; Daniel et al,

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2002; Reo et al, 2003; Teo and Pian, 2004a). (For more details, see Chapter Four). In particular, most previous research has extensively discussed e-business development in the context of mature markets and industrialised countries.

These models need to be re-examined in the context of developing countries, particularly Middle Eastern ones, because they may operate in very different economic and regulatory environments. This research has therefore developed a comprehensive framework and body of data by which to measure e-business growth in Jordan using a synthesized six-stage model as developed from the previous literature, and determines the important factors that influence SMEs' e-business adoption and development.

According to the data analysis, e-business adoption and development is still in the early stages. Chapter Five, Section 5.4 observes that most SMEs have already adopted the first three stages (email exchange, information exchange and presence), but that their representation in the other three stages is insignificant.

The majority of SMEs respondents used e-business for acquiring or providing information and communication by email rather than for the actual support of transactions. It is noteworthy that few had reached the web presence stage. The transaction and integration stages are still far from being represented to any degree in the sample. The results of this evaluation of the stages of growth show that e-business applications are still relatively new, as would be expected in a developing country such as Jordan. Our synthesised model represents the historical view of the stages of maturity which companies have undergone through and our data shows that almost all the respondent SME's have the first three stages.

In order to consider the implications of these findings on how a typical e-business could/should progress we will consider an operational view of a typical e-business transaction involving the first three stages of maturity. The rationale for doing this is

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that the majority of companies in the developed world and from our data for SMEs in Jordan all these three stages are present. For our purposes we consider the purchase of an airline ticket. In particular the steps involved in buying an online ticket from Royal Jordanian Airlines. Currently one would visit the website via a URL or search engine and the system takes you through the following steps:

1. **User select** your *language of Communication* - from a limited choice
2. **User register** as *new customer*, or **log in** with *existing password and user name*
3. User **fill in/select:** *From and To Destinations*
4. **User Select** *Departure and Return Dates* and
5. **User Select** *number of adults & children.*
6. **System offers** *flights and fares with other possible days*
7. **User fills in** *personal details name, date of birth, passprt number etc*
8. **System requests** *acceptance of terms and receipt information by emails*
9. **System requests** *payment details and the billing adress*

After confirmation of payment an email sent to your address to confirm transaction and at some later time your e-ticket is sent to you by email to print.

We can see from this illustration that the majority of the steps clearly correspond to Stage 1 to 3 of our proposed maturity model, in fact the entry point in this series of steps is not first Stage of maturity model but the third stage namely web presence and the exit point is the first stage of maturity namely email exchange.

We now consider what the implications are for a SME company wishing to adopt e-business. From the above with current state of available technology it would not make sense to start from Stage 1 of maturity and progress through the next two stages. It would be reasonable to recommend that we start with adopting all three stages of maturity as it would be difficult to imagine e-business without a web-presence.

This is the start point for most businesses and it is getting to the point where these stages are almost a basic requirement for any business that is looking to adopt a e-business presence and promote itself locally or internationally. Incorporating these stages, potential customers will be able to find the website and have sufficient information to contact the company by telephone or email, furthermore, incorporating more than the first two stages including the online billing, payment and delivery corresponds to the current state of e-business that is widely available in developed countries such as UK with a highly developed security systems and delivery infrastructure. This operational view is in contrast to our stages of maturity of view which explain the maturity growing of e-business, from the basic to more complex.

The temptation to leapfrog and incorporate all three stages is very appealing however experience from other works shows that certain cultural barriers can prohibit such gains. According to our empirical study companies face problems when they wish to make online payment and this refers to different barriers such as the low use by credit cards in developing countries, particularly in Jordan. For example AlQirim (2007a) pointed out that people are not yet convinced of the advantages of doing activities or making payments online let alone using credit cards which is not popular in Jordan yet. Another barrier as we found in developing countries to hamper corporate these stages the security payments and which found. According to Al-Qirim (2007a) there was no Web security service in Jordan covering e-commerce infrastructure, and there are no standards or legal systems to regulate the online arena in Jordan.

The model provides verbose natural language descriptions of goals for every maturity level. Following these descriptions organizations are able to examine their achieved maturity stage by comparing the current situation of the organization to described levels of maturity. The model assists organizations in recognizing their current capabilities as

well as in planning future e-business initiatives in general. From our empirical results we found that a partial vision of the model involving first three stages exists in Jordan and can be used and adapted in developing and developed countries because it is beneficial to have a maturity model that describes a logical evolution of electronic commerce and which involves various stages of development. This model will be a guide which helps the company to progress towards more advanced maturity stages.

The cost and the technology demand and the complexity increases progressively during the last phases of the model. Companies could begin with any phase skipping certain stages of the model. Indeed, the organizations that are aware of the importance of information technologies and electronic commerce could begin with a later maturity phase. The six proposed stages are presence; email exchange, information exchange, presence, personalisation and integration. Each stage was further discussed in terms of facilitators and barriers to development within each stage. It was further pointed out that the model is not proposed as a progression that requires a company to successfully complete each stage but allows for leapfrogging into a later stage. However after examining these stages, we found that were differences in the degree of adoption of these stages in Jordan as a developing country with the level of adoption of e-business maturity in developed countries. For example our findings echo those of Brown and Lockett (2004) finding in their empirical study of e-business adoption by UKSMEs:

“Most SMEs appear to be highly comfortable with email and web access (low complexity), and tentative with the use of the internet for online buying and selling (medium complexity), but have little or no engagement with the high or very high complexity applications.”

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They are consistent with similar research in developing countries such as Seyal et al's (2004) study investigating electronic commerce in Pakistani SMEs; the authors found that most SMEs used the Internet and e-commerce for advertising and emailing purpose, or simply for contacting customers or suppliers. The results also conform to Teo and Pian's (2004b) finding that most Singaporean SMEs have already reached the first three stages of a five-stage model of e-business growth, while the last two stages are still in their infancy.

The findings support previous studies conducted by Bharadwage and Soni (2007), who conclude that small Pennsylvanian SMEs use e-commerce mainly for advertising and communication by customers, and reflect those of a survey conducted by Ashrafi and Murtaza (2008), who find that most Omani SMEs do not use any form of e-commerce. Eriksson et al (2008) observe that most Swedish SMEs use the Internet and e-commerce as a static information board on which to market their products and services and as a platform for two-way communication with customers and suppliers, and Hunaiti et al (2009) finds that Libyan SMEs' adoption of e-business is still in the early stages: while most have implemented email, they still do not support online shopping or other applications. The results of Eshun and Taylor's (2009) study of e-commerce adoption by Ghanaian SMEs shows that most are still at the lowest level of adoption, only using email. They also state:

“Most SMEs in developing countries are at the email adoption level with very few at the internet presence.”

With regard to Jordan in particular, the results are also in line with Al-Debei and Shannak's (2005) study of the current state of e-commerce in all sectors, in which the authors find that e-business activities in Jordanian organizations is still at a low level,

being implemented on an ad hoc basis. The results are also in line with those of Titi (2005):

“Most Jordanian SMEs still in the infancy of e-business and use websites for promotional purposes by presenting information about products and services that customers may request, and SMEs have started to plan and look at e-business as a possible option for marketing their products and services online.”

In interpreting the responses in the present study as regards the growth of e-business, it has been noted that the first three stages of email exchange, information and presence are present. This result is clearly a very positive one for Jordanian SMEs.

Studies by Quayle (2002), Grandon and Person (2004), Brown and Lockett (2004), Titi (2005), Beshti and Sangari (2007), Ashrafi and Murtaza (2008), Eshun and Taylor (2009) and Hunaiti et al (2009) all find that SMEs use the Internet for email and advertising, with only a few going further to take full advantage of e-business technologies, as opposed to large organizations.

6.3.2 Implications for e-business enablers

The focus of the third research question was to discover the factors affecting e-business adoption in Jordan. The literature confirms the presence of various factors which can be grouped into two, three or four categories (see Chapters Two and Four). These factors influence the motivation of e-business adoption by SMEs. The present study groups them into the categories of external, market and organizational enablers. The findings set out in Chapter Five delineate the various e-business enablers using factor analysis. The respondents' attitudes as revealed in the survey indicate that all three enabling factors have a significant relationship within the Jordanian context. In order to

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understand the importance of the enablers in motivating the adoption and development of e-business by Jordanian SMEs, however, it is necessary to understand these enablers. The following sections will provide such an understanding.

6.3.2.1 External enablers

Based on the data analysis, external enablers were found to be significant for the adoption and development of e-business by the SMEs represented in the present survey. It seems that SMEs in Jordan perceive external enablers to be vital to their decisions to adoption. The different external enablers of such adoption, all of which were found to be of significance, include government incentives, customer demand, competitive pressures and supplier requests. These results confirm the previous findings discussed in Chapters Two and Four.

The respondents' perceptions are evidence that government incentives are an important external enabler of e-business adoption. The better the government's motivation as perceived by an organization, the higher the likelihood that organization will adoption e-business. This may be because Jordanian organizations expect more support and training from government to encourage them in this direction. This comes as no surprise, as the Jordanian government has invested a great deal of money to encourage ICT-enabled services. This initiative has the support by his Majesty King, Abdullah II, who has pushed for the development of goals and strategies for the adoption of ICT in Jordan. He regards ICT as of the utmost potential for Jordan's future success and development, saying:

"We have followed a path that would allow the technological revolution to harness our available talent into productive sectors that can fuel and sustain economic growth" (MOICT, 2005)

In 2000 the government of Jordan made ICT a national priority. This decision was translated into what is known as the 'REACH' initiative, supported by both public and private sectors, whose goal is to develop "a vibrant, export-oriented, and internationally competitive ICT sector that can successfully attract investment and generate high value jobs" [www.intaj.net]. The government was the first country in Middle East and North Africa to privatize the telecommunications market and to develop ICT to make it easier for organizations to engage in activities involving electronic technology (Kanaan, 2009). Tahat (2005) explains this:

"Jordan was the first Arab country to enact legislation to regulate online contracting with electronic transactions."

The Jordanian government has made promising overtures to encouraging e-business and ICT adoption, investing in a high quality, comprehensive education system designed to meet the demands of the evolving workplace in the country. For example, the initiative to put a PC in every home, launched in 2004, aiming at raising the level of Internet penetration, especially in poorer areas. Another example is the aim of providing a laptop for every student, launched in 2007 with support from the Ministries of Communication and Higher Education, which seeks to develop the use of the Internet and provide the public and the private sector with highly skilled staff, as well as ECDL training for all employees in the public sector, an initiative launched in. The present findings are consistent with Seyal et al's (2004) study determining the uptake of electronic commerce by Pakistani SMEs. The author concludes that government support is significant in determining the level of e-business adoption by such organizations, stating:

"The greater government incentives as perceived by an organization, the higher are the likelihood of an organization to adopt."

The results echoes those of Keoy et al (2006), whose empirical study of the key e-business enablers and barriers in Malaysia and the UK concluded that government initiatives must lead the way in adopting e-business if various business and private sector-related activities are to be encouraged to move online. Bharadwaj and Soni (2007) argue that, in a federal structure, a state government can launch initiatives to build broadband infrastructures throughout the state.

In Jordan, the present findings agree with those of Kanaan (2009), which indicates that the government is one of the main encouragers of the spread of the Internet by its example of switching to online services for its own transactions. He also suggests that government support can be manifested by the provision of clear information and communication technology policies and action plans for extending ICT benefits across the board, by providing equal access to information and by improving existing ICT services. The present study contrasts with that of Titi (2005) who finds that government incentives are not very important motivators of e-business adoption, as well as with Scoupla's (2009) who finds that government initiatives in Denmark and Australia are not significant motivators of e-business adoption among SMEs.

In fact, the respondents representing the SMEs in the present study considered competitive pressures to be the significant motivator for e-business uptake by Jordanian SMEs. "Competitive pressure" refers to the degree of outside competition, a dynamic that encourages the adoption of new technology in order to avoid comparative decline (Zhu et al, 2003). Organizations may adopt e-business technologies due to the influences exerted by their business competitors (Kuan and Chau 2001). Looi (2005) suggests that businesses in a more highly competitive environment would feel comparably greater pressure to turn to the Internet and e-business to gain competitive advantage. In other words, competitive pressure greatly influences SMEs' decisions to

adopt e-business. SMEs operating in an environment that is more competitive would feel a greater pressure to turn to e-commerce to gain a competitive advantage.

As Chong and Pervan (2007) state:

“Competitive pressure has been found to provide the “push” for SMEs to set up their existing capabilities.”

They also indicate that the importance of competitive pressure is the key motivator of the integration of business operations, both internally and externally, with those of trading partners. Most SMEs have felt local competitive pressure to use e-business, since more competition, promotes e-business. The results echo Al-Qrim's (2005) study of the adoption of e-commerce applications by New Zealand SMEs. He finds that competitive pressure is an important enabler of this technology. They also reflect Chen and McQueen (2008), who conclude that competitive pressure has a positive impact on the development of e-business in New Zealand. In Jordan the results agree with Titi's (2005) finding that greater competition is one of the main motivators of e-business adoption. Other studies, however, find competitive pressures to be unimportant in this respect. Lee (2004) sees small organizations as being more concerned with other aspects of technology than that of competitive power, while Scoupla (2009) concludes that competitive pressure is not very significant as an enabler of e-business adoption.

Customer demand was another enabler regarded as of great importance by the respondents to the present survey. They see support from customers as an important driver for SMEs to continue the development of e-business. Powell et al (2006) regards customer demand as the most important driver of e-business adoption in UK SMEs, pointing out that organizations have invested heavily in e-business in order to meet

customer demand to move to Internet-based systems. Scupola (2009) likewise finds customer pressure to be an environmental factor influencing the implementation and adoption of e-commerce in Denmark and Australia. As regards Jordan, Alsmadi's (2004) investigation of Jordanian customers' attitudes indicates that most of them are likely to have enough knowledge and skill to use the Internet for online shopping. The results contradict those of Titi (2005), who finds customer demand not to be significant as an enabler.

Supplier requests constitute another external enabler of e-business adoption and development, as also found by Keoy et al (2006), for whom supplier demand is a driver of e-business adoption in Malaysia and the UK, and for Chong and Pervan (2007) who find that pressure from trading partners plays a significant role in motivating small organizations to adopt and develop e-business. In Jordan Titi (2005) and Alsultany (2007) similarly find that maintaining contact with suppliers is a significant factor for Jordanian SMEs. The results are contrary to those of Al-Qirim (2005) and Scoupla (2009), who minimize the importance of this factor in the Jordanian context. Perhaps the organizations they surveyed regarded reaching new customers or entering new markets as being more important than supplier requests or demands.

6.3.2.2 Organizational enablers

Organization enablers were found by the respondents to be significant for e-business adoption and development. The three dominant enablers in this respect were management support, enhanced revenues and reduced costs, with the first named being regarded as most important. The relatively high level of top management support among respondents could be due to the sample being from the private sector, organizations in which are generally controlled by top management or owners.

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This might be because, in order to use such technology successfully, there must be a qualified manager who has the knowledge and experience to manage and support its implementation. Jeyaraj et al (2006) find top management support to be one of the best predictors of organizational adoption. As he points out:

“In SMEs the primary decision maker is the owner/top management of the business and his/her support is the key to the adoption of new IS innovation.”

According to Beheshti and Sangari (2007),

“SMEs’ management should consider e-business implementation as a capital investment decision and allocate adequate resources to the project, and top management must be involved in e-business implementation.”

This finding corroborates the study by Al-Qirim (2005) of e-commerce adoption by small businesses in New Zealand, which finds that management support is the most important enabler of the adoption and development of e-business by SMEs. It also echoes Scoupla (2009) for Denmark and Australia and Alam (2009) for Malaysian SMEs, as well as Titi (2005) for Jordan. They contradict Seyal et al (2004), who finds that management support is not perceived by Pakistani SMEs as being a significant enabler of e-business uptake.

Organizational enablers such as enhanced revenues and reduced costs were also found by the respondents to influence decisions regarding e-business adoption. Indeed, e-business has been used by organizations to streamline their processes and reduce production costs. There are many examples, including advertising and promotion

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(Kartiwi, 2006). This perhaps indicates that the respondents were generally aware of the benefits of e-business adoption and use. Beheshti and Sangari (2007) state:

“E-business implementation and adoption processes can reduce the cost of products and services provided by lowering personal requirements and reducing transactions.”

There is a need for SMEs to retain competitiveness by driving down costs with regard to e-business adoption (Levy et al 2005; Harindranath et al, 2008). The OECD's report (2004) estimates that e-business has a great potential for reducing the costs and increasing the speed and reliability of transactions. This might be due to the fact that enhanced sales concentrate SMEs' attention more on increased sales and revenues.

This echoes Chen's (2004) finding that increased sales among the most influential factors affecting the adoption and development of e-commerce in Taiwan, Kaynak et als' (2005) comparable results for Turkey and Beheshti and Sangari's (2007) findings for Sweden. Titi (2005) and Alsultany (2007) see the Jordanian situation in similar terms.

6.3.2.3 Market enablers

Market enablers were found by the respondents to be significant for e-business adoption. The four market enablers tested were enhanced customer service, outreach to new customers, enhancement of customer and supplier relations and the entering into new businesses and markets, with the first being the most important, possibly because marketing and its activities are seen as increasing efficiency while decreasing research costs, making it easier for customers to search for their desired products and services. Another possible explanation is offered by Levy et al, (2005): improved customer services in such areas as increased service delivery dispatch of goods and online support

will in turn improve effectiveness. Faster dispatch makes for better business services in the product development category and for diversifying wholesale (Levy et al, 2005). Beheshti and Sangari (2007) find similar conditions in Sweden.

In Jordan, Sahawneh (2005) states:

“Most organisations have start-up websites to promote their products and services to enhance customer service.”

Titi (2005) finds likewise, identifying those SMEs using email and e-commerce to increase customer service and satisfaction.

The study also finds that enhanced customer and supplier relations motivate the adoption of e-business by the respondent SMEs. This may be because such implementation is a way for organizations to improve customer and supplier relationships by collecting data about them in order to improve marketing strategy. Organizations using e-business are more able to promote products and services to customers, which enhances the relationship between the two. For example, according to Taylor and Murphy (2004):

“The use of the Internet and communication technology among SMEs is growing to improve their business processes and to improve customer and supplier relations.”

Kaynak et al (2005) also finds that the implementation of e-business technology leads to improved efficiency and coordination with customers and trading partners, as does Beheshti and Sangari (2007), for whom e-business adoption by SMEs improves communications between customers and suppliers on the one hand and the organization on this other; this can be translated into customer and supplier satisfaction and retention. Chibelushi and Costello (2009) find that improving customer relationships is one of the most motivators for the adoption of new technology. In Jordan, Titi (2005) indicates that SMEs use e-commerce to enhance trust with suppliers and customers and to support long-term relationships with them.

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Customer outreach is other market enablers. E-business can provide organizations with the ability to reach new customers by using the Internet to target them geographically.

Turban et al (2006) maintains that:

“Organizations using e-commerce can easily and quickly locate more customers and allow them more accessibility and convenience for shopping.”

The Internet’s global reach increases consumers’ awareness of products and brands, making it more possible for organizations to reach potential customers. Kanyak et al (2005) reach similar conclusions regarding the power of customer relations to spur the uptake of e-business by Turkish SMEs, as do Beheshti and Sangari (2007) for Sweden. Chen and McQueen (2008) certainly strongly reinforce these findings in the New Zealand context. Breaking into new markets was also reported by the respondents as an enabler motivating the development of e-business. One possible explanation is that most organizations are not interested in doing business locally and this may be referring to the small market in Jordan. On the other hand, organizations looking to expand geography are involved in global commerce by adopting e-business. It could also be because e-business presents SMEs with the possibility of entering new markets, thereby reaping increased benefits and giving SMEs a similar marketing potential to large organizations. Kaynak et al (2005), Levy et al, (2005) and Chong and Pervan (2007) all reach identical conclusions, as does Titi (2005) in Jordan regarding expanding markets for existing products and services and entering new markets. Alsultany (2007) also recognizes the importance of expanding existing markets for decisions to adopt e-business. The present study provides the empirical evidence with particular regard to Jordan to support previous findings on the most significant enablers influencing e-business adoption.

6.3.3 Implications for e-business barriers

Barriers to e-business adoption are obstacles preventing or inhibiting SMEs from adopting or using e-business. Overcoming these barriers is therefore critical to such adoption. The focus of the fourth research question is to discover what these barriers are in Jordan. Our empirical findings classify the various e-business barriers.

The analysis of the responses shows that 10 of the most common e-business barriers can be grouped into three factors. Technological, organizational and external barriers were found to be prevalent. The findings discussed in Chapter Five use factor analysis methods to highlight these various barriers.

The results of the bivariate analysis indicate that all three barriers were found to be significant in the Jordanian context. In order to understand how these barriers impede e-business adoption and development by the country's SMEs it is necessary to realize that these barriers are the outcome of different factors affecting e-business adoption. The following sub-sections will discuss these.

6.3.3.1 External barriers

It was found that a majority of our respondents' SMEs affirm that the stability of government policy, cultural issues, legal and regulatory issues and low customer use are significant barriers in Jordan, with the first-named being the most important. This is not surprising, as developing countries' government play a vital role in determining investment, as well as controlling business and internet activities. A majority of respondents agreed that political barriers have a major impact on every advance in technology. Government should play an important role in increasing investment in the communications infrastructure and organizations involved in Internet and communication by creating rules to control business conducted over the Internet and reducing the cost of broadband and Internet services. Opening competitive telecommunications markets

will reduce costs and support SMEs in implementing e-business solutions. There are many challenges for government policy: the SMEs surveyed for this study considered that government policies that aim to protect the security of traders were the most important conditions for e-business, with electronic data and credit card security also being regarded as significant in this respect. Ciborra, (2005) state that there is no clear policy in place to reduce the cost of Internet subscription in Jordan, and the diffusion of personal computers and Internet use among the population is not high.

It could also be that SMEs look to government to enhance the awareness of ICT through road shows and relevant websites, building demonstration centers, launching training programs, assisting pilot projects and providing help for SMEs looking to adopt e-business technologies. SMEs are hesitant to invest, probably due to fear of changing policies as governments change as has frequently happened. According to Al-Omari (2006) and Al-Ibraheem and Tahat (2006), Jordan missed out on enormous opportunities to positively affect online transactions by not incorporating protection instruments and principles regarding transparency, security, privacy and protection of such activity. Keoy et al (2006) points up the inevitable result in the UK and Malaysian context: government policy is a significant barrier to the adoption and development of e-business there. Kapurubandara and Lawson (2006) have reinforced this by their finding that government policy is a significant promoter of e-commerce adoption in Sri Lanka, while Bharadwaj and Soni (2007) see government policy as of critical importance in this respect in Pennsylvania. For Jordan, Titi (2005) underlines the lack of clear government policies regarding organizations' uptake of e-commerce.

Cultural issues were also found to be significant by the respondents. In the Middle East there are culture impediments to the adoption of IT (Goodman and Green, 1992, cited by Ahmed and Zink., 1998). Like most developing countries, culture in the region

controls business. The population is mistrustful of buying online because of their tradition of face to face shopping. In a study of the role of cultural acceptance of e-commerce in Iran and the UAE, Sanayei and Noroozi (2008) stresses this very factor and suggests that customers use the Internet to obtain information or conduct their transactions in-store. El-Said and Galal-Edeen (2009) state:

“culture could be hampering the adoption of the e-business in the Arabic world, due to the highly social and family-oriented nature of Arab culture.”

Lack of security and of Internet infrastructure could also hamper the widespread application of new technology. El-Said and Galal-Edeen (2009) state that in order for such implementation to occur in conditions of cultural suspicion of such methods, such as Arabic ones, relatively more attention must be paid to measures that reduce that uncertainty. Many organizations are also set in their traditional ways and means of conducting business activities, and are therefore resistant to change and to new technology. Eshun et al (2009) observes such a cultural resistance among Ghanaian SMEs.

Another external barrier ranked as strong by the respondents was the lack of legal and regulatory framework. A commonly accepted, fundamental obstacle to the adoption and use of e-business in Jordan is the inadequacy and slow rate of change and development of the regulatory environment. The law does not change fast enough and does not accommodate the rapid growth of the Internet and e-business. Regulations that change with each government could also be responsible for inhibiting IT growth in developing countries such as Jordan.

El-Nawawy and Ismail (1999) point out that many businesses and consumers are still wary about conducting extensive business activities in cyberspace because of the lack of a predictable legal environment for government transactions, which results in

concerns about contractual enforcement, intellectual property protection, liability, jurisdiction, and privacy and security. Most developing countries do not sufficient legal systems in place to protect those engaged in e-business (Keoy et al, 2006). According to Larpsiri et al (2002) organizations and customers hesitate to use e-business while there is a lack of specific laws covering such activities.

Jordanian SMEs face difficult issues with regard to regulation, such as concerns about privacy and trust, electronic signatures and contracts, so Jordanians are concerned about their rights of privacy when transacting business on an organization's website; they worry about how that organization will use their private details (Al-Omari, 2006; Al-Ibraheem and Tahat, 2006). Business law in Jordan does not protect private property such as articles, legal documents, video clips, movies and databases (Titi, 2005). Other reasons could be that changes in the legal and regulatory framework in Jordan are difficult and take time to work themselves out.

The existing legal system, especially in most developing countries, is not sufficient to protect thoses engaged in e-business. Al-Ibraheem and Tahat, (2006) stated that in the year 2001 the country's government enacted the Electronic Transaction Temporary Law No. 85 (ELT85). This law relates to the use of all electronic transaction records and signatures in cases where it is decided to adopt electronic means. This law still does not exist for e-business transactions, which effectely hinders the developemnt of e-bsuiness. Legislation and regulation is still needed to facilitate change and help guide IT implementation in Jordan (Al-Omari, 2006).

The results support Kanyak et als' (2005) study of Turkish SMEs, which finds that a lack of legal and regulatory framework is a very significant barrier to the adoption of e-business, and Kapurubandara and Lawson (2009), who reached the same conclusion for developing

countries generally. In Jordan, the results align with those of Titi (2005) indicating that legal and regulatory inadequacies are perceived as barriers to the adoption of e-business by SMEs.

He states that

“the implementation of e-business required deep changes in government regulation in Jordan.”

The result is also consistent with those of Al-Qirim’s (2007a) Jordanian study, which indicates that there are no standards or legal systems to regulate the online arena in that country. Low use by customers is another external barrier reported by respondents. The results are not surprising in the light of the aforementioned cultural bias towards face to face shopping, which in a country like Jordan is a social activity in which personal contact with sellers is an important part of the shopping experience. The low level of customer use could also reflect the low level of Internet penetration among the population generally. This is doubtless partly due to the lack of a policy to reduce the costs of broadband Internet access Ciborra, (2005). Improving the diffusion of ICT in Jordan can address this problem. Inadequate transportation and delivery networks combined with use of cash rather than credit could also hamper the use of e-business by customers.

In his Saudi Arabian study, Aleid et al (2009) find that the main reason for the reluctance to make online purchases was the slow speed and quality of the Internet. In a similar vein, Jahankhani (2009) states:

“Many consumers still lack the necessary trust in online merchants and Internet security procedures and continue to use the Web to simply browse.”

Kanyak et al (2005) reaches the same conclusions regarding Turkish SMEs, while in Jordan, Al smadi (2004) finds online transaction security to be a key factor that motivates people to shop online or inhibits them from doing so. Titi (2005) also points to a lack of customer readiness to adopt new technology as one of the greatest barriers to the adoption of e-business. His study found that around 85 per cent of customers did not use Internet technology. Al-Qirim (2007a) points to the lack of IT awareness in the region generally, and in Jordan in particular, stating:

“people are not yet convinced of the advantages of doing activities or making payments online let alone using credit cards which is not popular in Jordan yet.”

Halaweh and Fidler (2008) find that Jordanian customers still have a preconception that buying and selling over the Internet is risky. They suggest two reasons: customers' perception that the use of e-business for buying and selling is vulnerable, with a high probability that the money will be lost, and the intangible nature of online shopping, where the products cannot be physically seen or handled.

6.3.3.2 Technological barriers

Technological factors were found to be very significant barriers to the adoption of e-business in Jordan. Three dimensions of security, costs of implementation and network quality, were found by the respondents to be especially significant in this regard.

Most studies agree that technological barriers are among the main challenges. For example, Teo and Pain (2004b) state:

“technological issues seem to be a global issue facing organizations implementing e-business.”

The majority of the present respondents indicated that security issues were of the greatest concern among the technological factors that have to be dealt with in Jordan. Security concerns were expressed in terms of privacy, trust and unauthorised access, and enhanced vulnerability to hackers and computer viruses. The majority of respondents agreed that security was still the main problem preventing them from fully utilising e-business.

Most SMEs run a greater risk in this respect than do larger organizations, since they have no expert staff and resources for guarding against unauthorized access to confidential information by employees, outsiders and hackers is limited (Beheshti and Sangari, 2007). They state:

“When conducting business electronically and over the Internet, the security of data transmission of buyers, business partners and suppliers is a critical issue for businesses.”

In the Ghanaian context, Eshun et al (2009) say:

“Poor Internet security (Internet fraud) plays a big role in an organization’s inability to adopt the technology.”

Jordanian organizations seem to be extremely anxious about opening up their information systems to outside parties; the survey respondents were certainly well aware of the risks posed by this barrier in conducting transactions with partners and customers. Al-Omari (2006) and Al-Ibraheem and Tahat (2006) argue that Jordan’s failure to emplace protective instruments and principles regarding transparency, security, privacy and the protection of online activities has lost a great opportunity to affect online activities. Researchers maintain that privacy and security issues should be

addressed in strategic policy statements and that governance of privacy and security matters should be improved. Al-Qirim (2007a) states that the current unavailability of Web security and e-payments in Jordan was a barrier to successful e-commerce:

“there was no Web security service in Jordan covering e-commerce infrastructure, and there are no standards or legal systems to regulate the online arena in Jordan.”

There is no payment gateway service in Jordan to clear credit card payments (Al-Qirim, 2007a). Shafi (2002) finds that Saudi organizations use Internet technology mainly for traditional tasks such as communication and information gathering, and that because of security and access issues they are less likely to use the Internet for more advanced e-commerce roles such as sales and purchasing. Damaskopoulos and Evgeniou's (2003) study of e-business adoption by Eastern Europe SMEs likewise finds that security issues is one of the key barriers to the development of e-business, while Bharadwaj and Soni (2007) conclude that security issues are the main reasons that Pennsylvanian SMEs do not engage in e-business, as do Kapurubandara and Lawson (2009) for developing countries in general and Elahi and Hassanzadeh (2009) for Iran and Belkhamza and Wafa (2009) in Algeria. Al-Sukkar and Hasan (2005) see security issues as inhibiting the uptake of e-commerce by the Jordanian banking sector. This contradicts Titi's (2005) finding that security issues are not very significant for Jordanian SMEs: he suggests that his respondents may have been unaware of these issues, while the respondents to the present survey were obviously more cognizant of them.

Another significant challenge mentioned by the present respondents is the quality of electronic networks. There are many challenges for SMEs regarding IT in Jordan as a developing country where the Internet and e-business infrastructure is still weak (El-Naway and Ismail, 1999). Saffu et al (2008) indicates that many developing economies suffer

from poor IT and power infrastructures. The availability of broadband connections may affect an SME's decision to adopt this technology, while broadband speed enhances the overall online experience for both customers and organizations and encourages them to spend more time online. Telecommunications infrastructures must be developed and digital communicationa infrastructures created to help and support the adoption of e-business in Jordan. The steps taken by the government to improve telecommunications facilities and break telecom monopoly are noteworthy. Ahmad and Zink (1998) highlight this weakness of the Jordanian telecommunications infrastructure, pointing specifically to a dearth of optical fiber or ISDN lines.

The lack of good quality networks results in poor Internet connectivity, a lack of fixed telephone lines for end user dual-up access and the underdevelopment of Internet service providers. Al-Jaghoub and Westrup (2003) identifies incomatibility, implementation of solutions and system interoperability as challenges for IT in Jordan. Al-Omari(2006) adds the lack of an adequate civilian telecommunications network. Jordanians have insuffucient access to payphones in urban areas, and a lack of Internet connectivity in rural ones. There appears to be no difference in this respect between developed and developing countries: Bharadwaj and Soni (2007) reach the same conclusions for Pennsylvanian small business, as do Eshun et al (2009) in Ghana and Elahi and Hassanzadeh (2009) in Iran, where network speed is the significant barrier, and Waleed et al (2010) in Saudi Arabia as regards the quality of the Internet. In Jordan, Titi (2005) finds that bad IT infrastructures are perceived as strong impediments to the adoption of e-business by Jordanian SMEs.

Another challenge is the cost of implementation, which applies especially to SMEs with their limited financial resources. The results suggest that SMEs may have difficulties investing in new technology irrespective of the percieved benefits to them. This suggests that connection costs could be an issue for organizations when adopting e-

business. SMEs' lack of funds for training and investment in IT can also inhibit the implementation of e-buisness. Kartiwi and MacGregor's (2007) study of barriers to the adoption of e-commerce by SMEs in both developed and developing countries finds thatthe financial investment required to implement e-business as very significant barriers in Indonesia and Sweden. Chen and MacQueen (2008) agree as regards small Chinese SMEs in New Zealand.

Aleid et al (2009) remark on the high costs of Internet connection in Suadi Arabia and some other developing countries by comparison to develped ones. In Jordan, Titi (2005) likewise finds that connection costs hamper the adoption of e-business by SMEs. Al Nsoor et al (2007) note the insufficient access to external finnnancing and lack of finncial services suffered by Jordanian. These results are, however, contradicted by Alam et al (2009), who conclude that cost has no impact on ICT adoption by Malaysian SMEs.

6.3.3.3 Organizational barriers

The respondents reported organizational barriers to be significant ones. Three aspects of organizational barriers (lack of expert staff, unsuitability for the business, and lack of time for implementation) were tested, and the first-named was found to be the main barrier. SMEs generally do not have skills or the understanding to realize the potential benefits of e-business. The concern over this issue varied between SMEs and has received much attention in the litrature. For example, Looi (2005) writes:

“the lack of expertise staff will lead to a greater probability of low adoption”.

Chapter 5
Most Jordanian SMEs pay low salaries and give few benefits, making it difficult for them to attract skilled staff (Al Sultany, 2007; Titi, 2005), leading to a lack of training and resources as a result of low profits, all of which could explain these results.

The rapid development of e-business does not leave sufficient time for staff to develop the requisite new skills; this is exacerbated by the fact that ICT is still in its infancy in Jordan. Government, academia and industry can take leading roles in the promotion of ICT through awareness and training programs and by catering to the needs of SMEs in technical and other ways. Training programs need to be specially designed in order for SMEs to overcome this problem. Bharadwaj and Soni (2007) find lack of expertise staff to be barriers to the adoption of e-commerce by Pennsylvania SMEs, as do Chen and McQueen (2008) for New Zealand SMEs. These authors point out that a skills deficit affects subsequent decision made by small business executives as they move to the next stages of e-commerce development. Kapurubandara and Lawson (2009) reach similar conclusions for Sri Lanka Zhouying et al (2009) for Chinese and Eshun et al (2009) Ghanaian SMEs. Titi (2005) finds that most Jordanian SMEs do not have the knowledge and expertise to run the business online. Alsultany (2007) sees the difficulty of finding expert staff with computer and Internet knowledge.

Another challenge for organizations was reported as the lack of time implementation. Many SMEs simply do not have the time and resources to adopt new systems because they are too busy meeting all the day to day demands of their businesses. SMEs need support with regard to every aspect of the implementation of e-commerce, starting with knowledge, technical management and consultancy. Kapurubandara and Lawson (2009) suggest that such assistance is necessary for implementation. Stockdale and Standing's (2004) respondents also cited lack of time for implementation as a major reason for not adopting e-business.

The present respondents indicated that the unsuitability of electronic technology for their business areas was not a very important factor in their decisions to adopt e-business. This could be because management decisions to adopt made such a consideration less relevant. Another possible explanation is that the participation in the present survey were already well aware of the importance of e-commerce for their businesses and were already using it. Kartiwi and MacGregor (2007) agree on the relative unimportance of this factor, but Quaddus and Hofmeyer (2007) find to the contrary.

E-business barriers were found to be influential factors in the present study. The results for the main part corroborate and confirm earlier studies in this respect.

6.3.4 Organizational size

The results show evidence that the size of an SME is an important factor in its adoption of e-business (for more details see Chapter Five, Section 5.9.7). The present respondents provide evidence of a positive relationship between organizational size and stages of growth. Large SMEs may have a greater need than small ones to adopt and develop e-business. The present research also indicates a strong positive relationship between organizational size and the third stage, presence. The bigger the organization the more likely it is to develop IT to higher levels and the more intensively it will use e-business. The results show that organizational size in terms of number of employees has a strong influence on the growth of e-business within the respondents' SMEs. Large organizations will be more likely to adopt e-business because they will experience fewer problems than smaller ones. Powell et al (2006) finds that "Size is seen as a significant factor in SMEs' adoption of Internet technology". This can be explained by the fact that larger organizations acquire more managerial and expert staff leverage greater benefits from the adoption of e-business.

Gilmore (2001) also speculates that small organizations could face difficulties in investing in e-business technology because of limited capital and IT expertise.

The results are consistent with those of Grandon and Pearson (2004), who suggest that organizational size is a key factor for e-business adoption, those of Al-Qirim (2005) for New Zealand, for Powell et al,(2006) regarding UK SMEs of fewer than 250 employees and of MacGregor and Vrazalic (2006) and Erikson et al (2008) for Sweden.

The only study whose findings closely reflected the present one is that by Titi (2005) investigating the impact of the adoption of e-commerce by Jordanian SMEs in Irbid city. That study aims to discover whether or not these companies would be interested in adopting e-commerce. The scope of his study is geographically restricted while having no reference to definitions of SMEs by size. His sample was also smaller than the present one, and the response rate was only 36 per cent as opposed to that of the present one, which was 87 per cent from SMEs in the communications sector throughout the country. He focuses on the basic use of e-business by SMEs, while the present one validates a synthesized six-stage model based on the literature. The three stages of the proposed model have already been adapted and used by the present respondents. The present study also presents a broader picture by validating three factors relating to enablers and three to barriers, as well as organizational size which was found to be significant by the respondents. The study is more extensive than any other, with the use of statistical methods such as factor and bivariate analysis (Pearson correlation) to test the relationship between these factors and to determine the important factors influencing the stages of growth using the six-stage model. By contrast, Titi does not test the relationship between e-business growth and any other factor.

6.4 Conclusion

This chapter has provided answers to the research questions, and the hypotheses were developed to answer these questions. In addition this chapter has explored in detail the current state of maturity of e-business use by Jordanian SMEs, particularly in the communications sector, as well as identifying the main factors influencing Jordanian SMEs' decisions to adopt e-business. The study has developed a six-stage framework model which explains the levels of adoption and use of e-business by SMEs, and considered the factors influencing e-business adoption: enablers, barriers and organizational size. It thereby provided empirical evidence as to why these categories influence SMEs' decisions to adopt and develop e-business.

The next chapter presents the conclusion and recommendations for future work related to e-business adoption by SMEs



CONCLUSION AND RECOMMENDATIONS**7.1 Introduction**

This research set out to explore the maturity of e-business growth within SMEs and the factors influence the decision for e-business adoption among SMEs. The previous chapter presents a summary of findings of this research and the implications of the finding from our study. This chapter presents the contribution, limitations and suggestions for further research.

7.2 Contribution of this research

The literature survey in Chapter Two reveals many gaps in the current state of knowledge and understanding of the factors influencing e-business adoption, and in particular a lack of attention to the contextual aspect of such adoption by SMEs in developing countries, in contrast to the advanced state of research for the developed world. The present research attempts to reduce this gap by conducting an empirical study examining the stages of growth of e-business adoption and the factors influencing the decisions of SMEs. The developing of a six-stage model will contribute significantly to the field of e-business as a guide. A number of previous studies indicate that the factors influencing the decision to adopt and to develop e-business is one of the most important issues facing many SMEs. The literature review reveals, however, that despite this importance there are few studies, in particular in developing countries, as well as a lack of empirical evidence to validate the adoption of e-business by SMEs. The research in this field is still in its early stages in most developing, in particular in Jordan, while developed countries are much better served in this respect. Such research

as has been carried out on Jordan has tended to focus on adoption generally, at the expense of investigating the level of e-business use and the factors influencing decisions to adopt. This trend is consistent with the researcher's focus in other developing countries, as is the wealth of studies on developed nations. This study focuses exclusively on Jordanian SMEs' decisions to adopt and develop e-business, as well as the e-business applications they choose to use.

The contribution of this thesis can be judged from a number of perspectives. It presents a broad picture of how SMEs currently use e-business according to the six-stage model, and comprehensively examines the factors influencing SMEs' decisions to adopt.

The major contribution of this study from an empirical perspective has been to construct a theoretical framework from a synthesized a six-stage model based on previous models of e-business adoption by SMEs. The proposed model explains the stages of e-business growth within Jordanian SMEs, particularly in the communications sector. The empirical work is validated for the Jordanian context by the finding that the survey respondents report these stages actually to exist. Furthermore, the respondents noted that the first three stages have already been adopted, while some recognized that the other three stages were poorly represented if at all among the organizations they represented. This model is important in that it helps to evaluate the adoption and use of e-business by SMEs, and the findings make a significant contribution to reaching an understanding of the growth of e-business and the factors influencing decisions to adopt and use it. The finding of this study determine the relationship between the stages of growth of e-business and the associated enablers, barriers and organization sizes of Jordanian SMEs, particularly those in the communications sector. This study is the first of its kind in Jordan to focus on e-business adoption and development by determining these key enablers and barriers using the six-stage model.

The empirical research also examines the stages of growth of e-business in Jordanian SMEs and the associated factors, research that would benefit policymakers and top management by the insight and information it provides by developing their strategies in relation to adoption and developing of e-business. The Jordanian government should plan strategies to achieve a new, high quality Internet infrastructure and raise national awareness of the Internet and e-business by increasing investment in the ICT infrastructure. Secondly, because most studies on e-business adoption within SMEs deal with SMEs in developed countries, these findings can help understand whether SMEs in developing countries and in particular in Middle East and Jordan engage with e-business in a similar manner.

Significantly, this study provides rich data for these under-researched areas through its pioneering investigation of e-business enablers and barriers in Jordan and how they are seen by SMEs. It informs researchers and business planners about the growth and development of e-business in Jordan and allows them to compare and contrast developments there with the growth of e-business in other developing countries.

In summary, the research makes the following contributions:

1. The proposed framework consisting of a synthesized six-stage model and the two three-factor structure of enablers and barriers is the theoretical contribution, which has been validated by the empirical evidence of the questionnaire.
2. This is a major study seeking to test the framework in order to provide a richer source of information reflecting the nature of e-business adoption and the level of growth it has reached.

3. This research should provide a useful framework for management and policymakers to consider e-business enablers and barriers in a more effective way, and for assessing the important factors to take into account to ensure rational and informed decision making regarding the adoption and implementation of strategies and policies.
4. This study has empirically tested a theoretical model by which assess the maturity of e-businesses using a six-stage model to evaluate empirically the maturity of e-business from stages of growth in SMEs. This model can used in other developing countries, in particularly Middle Eastern ones, and makes a theoretical contribution that fills the gaps in the existing e-business adoption and developing in the literature studies particularly in developing countries with clear theoretical foundations.
5. The finding of this study is both relevant and important to SMEs in the Jordanian communications sector, and provides those in other sectors with practical contributions by which to identify the key factors that may prevent them in their progress through the stages of e-business implementation.
6. The research findings make an important contribution to the body of literature on internationalisation processes, as well as that on e-business growth within SMEs and key e-business enablers and barriers.

7.3 Limitations of the research

Like any other research, this study has recognized a number of limitations. It was limited to the communications sector in a specific, small, country, so caution must be exercised when generalising the findings. In order to increase the comprehensiveness of the picture of e-business adoption, future research could be conducted in several sectors and in other developing countries, both in the Middle East and elsewhere.

This empirical study and the research model provides a comprehensive view of business factors, but there are potentially other enablers and barriers that could influence the adoption and development of e-business. Although the research provides a wide-ranging view of the way in which organizational size influences the adoption of e-business, SMEs have several characteristics that could influence that process. The study is also limited to B2C e-business from the viewpoint of the provider. The impacts of all enablers and barriers are seen from this perspective, and it might therefore be seen as a limitation that no user input was provided. This could be addressed by further research.

The study has some methodological limitations. The quantitative approach, applied in particular in the form of a questionnaire, does indeed provide a wide scope for investigation, but perhaps less so for detailed explanation, whereas a qualitative focus would be narrower but more exhaustive. The purposes of this research were best served by a quantitative study, especially in the light of the absence of other work in this area, which therefore favoured a quantitative “broad burst” approach. Although every effort was made to ensure that all applications relevant to e-business in SMEs and to the six-stage model were included in the adoption framework, it could be that other applications which should have formed part of the framework had been overlooked. Consequently, further research could examine relevant new applications which could be included as part of the adoption framework.

7.4 Recommendations for further research

This study represents an understanding of the stages of e-business growth in SMEs and the factors influencing decisions to adopt and to develop e-business in Jordan. The limitations discussed in the previous section point the way to further research.

Related studies that can build on these research findings can be undertaken in a number of ways in order to overcome the limitations outlined above. Further research is also needed to extend the scope of this study in order to obtain a broader understanding.

This research has resulted in the development of a model that explains the relationship between the stages of e-business growth and the factors influencing the adoption of e-business by Jordanian SMEs, especially in the communications sector: enablers, barriers and organizational size. There is a need to focus on other countries and sectors and to extend the model to different areas. This suggests that the model can be used for future research to analyze and test other sectors in order to note the difference between industries and the extent of e-business adoption.

There is a need for further research to add to the benefits of covering these factors and the six-stage model in large organizations. Studies of such organizations will allow comparisons to be made between the ways organizations of various sizes treat the adoption of e-business.

It is further recommended that research apply the six-stage model and the factors influencing e-business adoption to cross-country perspective. Further research could place more focus on the examination of the factors that push adopters from one level to another, all the way from the initial step of email exchange to full integration, and that explore the different enablers and barriers related to e-business adoption.

The study is limited to the communications sector in a small country. In order to obtain a comprehensive picture of e-business adoption, future research should be conducted in many sectors. This study aims to examine the adoption pattern and to determine the relationship between factors motivating and hampering e-business adoption. These impacts are measured through the respondents' perceptions at a given point in time. There is a need for longitudinal research to be conducted. This is both expensive and

time consuming, insofar as the respondents of most projects ideally require the results as soon as possible, whereas the recommended research approach would cover a period of years.

Future research should explore other enablers and barriers in developing countries, and examine other SME characteristics influencing e-business adoption. It will benefit further research to determine the factors influencing e-business adoption from both the provider and the user, since this research only takes the former's views into account.

This thesis uses the quantitative method, and would therefore not be able to interpret the analysis findings. This may overcome by adopting a qualitative method such as case study or interview. On the other hand, the limitations of this study could be used as the bases for further research.

The contribution of the empirical results to the body of knowledge was outlined and recommendations for further research in the field identified.

7.5 Conclusion

The study has painted a picture of how SMEs currently use e-business in practice and the factors influencing their adoption decisions. Based on the research findings, the present results were found to agree with most others on this subject. The contribution of empirical results to the body of knowledge was outlined and recommendations for further research in the field identified.

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Appendix 1: The Questionnaire

Date

Address

Dear

We are conducting a survey about the use of the e-business in small and medium sized enterprises (SMEs). To help clarify the use of e-business and quantify its competitive impact we are currently hoping to get a further in sight of how e-business organizations in Jordan are coping with this. This questionnaire aims to evaluate the e-business current state and identify a comprehensive set of the key factors influence in e-business adoption within Jordanian SMEs, particularly in communication sector. This questionnaire develops to find out the maturity of e-business adoption and factors influence from providers perspective. The whole study will be documented in a PhD research.

Your contribution is sincerely and highly appreciated and it is of crucial importance to the success of this research as well as to contribution that this research aims to achieve in order to improve the adoption and development of e-business which introduce in Jordanian SMEs, particularly in communication sector. All information provide will be kept as anonymity and confidentiality.

The survey includes five sections. The first and second sections are designed to obtain general demographic data. The third section is designed to obtain some data about the current use of e-business applications. The four sections is design to obtain some data about the key enablers and barriers influence the e-business adoption and development. The five sections is design to obtain any comment or participate.

We would please to send you an executive summary of the key research finding and once again we would like to thank you for your support and kind co-operations.

All the best

Yours Sincerely,

PhD Research Student

Khalid Al-Zubi

Appendix 2: Survey Questionnaire

SECTION A: PERSONAL INFORMATION

We would like to obtain some information about you so that we can better understand your decision about e-business adoption. Please select only one answer for every question?

A1 – Please indicate your gender.

1	2
Male	Female

A 2- Please indicate your age range.

1	2	3	4	5
20 - 29	30 - 39	40 - 49	50 - 59	Over 60

A3 – Please indicate your Expertise with Internet.

1	2	3	4	5
1 - 5	6 - 10	11 - 15	16 - 20	Over 20

A4 - Please indicate your highest level of the education

1	2	3
Less than College	undergraduate	Postgraduate

A5 - Have you ever attended in any training course on using computers?

1	2
Yes	No

END OF SECTION A

SECTION B: ORGANIZATION PROFILE

B1- Please indicates how long your organization has been in business?

1	2	3	4
Less than 5 years	5-10 yrs	11-15 yrs	More than 15 yrs

B2 – Approximately how many employees are there in your organization?

1	2	3	4	5
10-49	50-99	100-149	150-200	201-250

B3 - What is your organization approximate annual turnover in JD?

1	2	3	4
Up to 100,000	100,000-250,000	250,000-500,000	more than 500,000

B4 – Please indicate the main source for the initial of use E- business in your organization?

1	2	3	4	5
Top management	Employee(s)	Customer(s)	Supplier(s)	Business partner(s)

END OF SECTION B

SECTION C: ADOPTION OF E-BUSINESS APPLICATIONS

Now, we would like to know more about your usage of e-business applications within your organization.

1. Please tick (✓) to indicate your usage of the following e-business applications.

Access to These Functions	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
Information about our business in presence					
Communication via email in presence					
Information about our product/ service in presence					
Email form in presence for ordering products/service, which the customer can print out and fax/mail to us					
Sending online bills/invoice to customer in presence					
Receiving online payment from customers in presence					
Receiving online enquiries or request from customers in presence					
Order tracking in presence					
Targeting customers in presence					
Customer support in presence					
Integration of e-process into business model in presence					
Integration of B2B or B2C into business model in presence					

END OF SECTION C

SECTION D: Enablers and Barriers Associated with E-business Adoption

D1 - This question relates to the enablers motivated E-business in your organization?

Below is a list of possible enablers which have motivated your organization to adoption e-business, please indicate to what extent you agree with each of these reasons in relation to your organization experience in adoption E- business.

Please tick (✓) to indicate the following e-business enablers

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
<u>Market enablers</u>					
Reach new customers					
Enhance customer/supplier relation					
Enter new business and Market					
Enhance customer service					
<u>External Enablers</u>					
Customer demand					
Suppliers request					
Competitive pressure					
Government incentives					
<u>Organizational Enablers</u>					
Reducing Cost					
Management Support					
Enhance Revenue					

PLEASE CONTINUE SECTION D

SECTION D: Enablers and Barriers Associated with E-business Adoption

D2 - This question relates to the barriers which are faced during adoption of E-business in your organization.

Below is a list of possible barriers which your organization may have encountered while adoption e-business, please indicate to what extent you agree with each of these reasons in relation to your organization experience in adoption E- business.

Please tick (√) to indicate the following e-business barriers

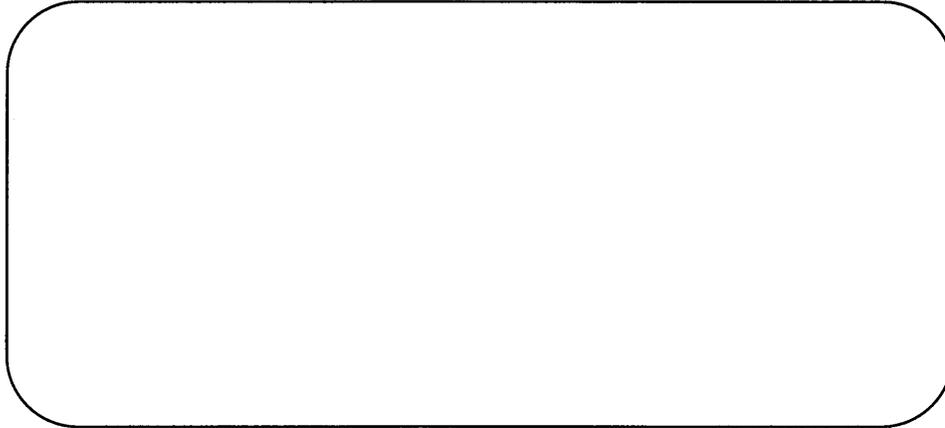
	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
<u>Technological Barriers</u>					
Security issues					
Cost for implement					
Network quality					
<u>Organizational Barriers</u>					
Unsuitability for business					
lack of expertise staff					
lack of time for implement					
<u>External Barriers</u>					
Low use by customers and suppliers					
Stability for Government policy					
Concern to culture environment					
Legal and Regulatory					

END OF SECTION D

SECTION E: COMMENTS

Do you have any comments you would like to share about this survey on E-business adoption?

Would you like to have a copy of the summary of the finding? If yes please write your name and address below.



Thank you for your cooperation.

Your contribution to this study is generally appreciated.

Appendix 3: The Companies that participated in the survey

- 1- Advanced Technology & Solutions
- 2- New Generation Telecommunication Company (Xpress)
- 3- Umniah Mobile Company
- 4- Al Bahrainia and Al Urdunia Liltaknia Wa Alitaisalat Plc (Batelco)
- 5- Tarasol Telecom
- 6- Al-Moakhaha Lilkhadamat Al-Logisteiah WA Al Itisalat (XOL)
- 7- Jordan TV Cable & Internet Services Co.
- 8- Metrobeam Wireless Telecommunications Company
- 9- Computer Networking Services; soft ware and web site solution (Primus)
- 10- Alkhomasiah for Telecommunications (Penta telecom).
- 11- Almontashira Communications and Information Technologies
- 12- The Blue Zone East/ Jordan
- 13- Middle East Communication Corporation
- 14- Comprehensive Smart Cards Company
- 15- Al-Ahliya Telecommunications Services
- 16- Jordan Mobile Telephone Services Company (ZAIN)
- 17- Petra Jordanian Mobile Telecommunication Company (Orange)
- 18- Wi-tribe limited-Jordan P.S.C. (Atco Clear wire Telecom Limited- Jordan Psc)
- 19- Jordan Dubai Information Technology and Communications PSC
- 20- Accelerator Communications - Jordan PSC
- 21- CrysTelCall
- 22- Connect Arabia Telecommunications P.S.C
- 23-Viacloud- Jordan
- 24- Jordan Advanced United Telecommunications Ltd.
- 25- Jordan Telecommunications Company
- 26- Networks Exchange Technology Co. Ltd.
- 27- International Data Exchange
- 28- Emirates for Information Technology
- 29- Al Deka for Investments and International Trade LLC
- 30- Egyptian- Jordanian Corporation for Data Transfer /TE DATA- Jordan
- 31-Viacloud- Jordan
- 32- Swiftel International Jordan Co.
- 33- Lasilkee Virtual Connetion Ltd. Co.

- 34- Digital Destinations Telecom
- 35- Pella Telecommunications Ltd
- 36- Nida & R'squo Amman for Telecommunication Services
- 22- Crystal Telecommunication L.T.D. Co.
- 37- Ali Al- Hussaini and Partner Company
- 38- Ezzeddin Abusalah and Partner
- 39- Sama Telecom
- 40- Fixed Telecom & Electronics Co. Ltd
- 41- Techno Gate for Communications and Networks Technologies Ltd
- 42- Red Sea Telecommunications
- 43- Talk Telecomm and Import
- 44- Arab American Telecom
- 45- Zajil Net International Technology Company
- 46- Middle East Communications Corporation
- 47- NewTek Solutions
- 48- Pioneers Information Technologies Co. Ltd
- 49- Connect Information Systems
- 50- Crys Tel Call
- 51- Foursan Group
- 52- Intracom (Jordan)
- 53- Jordan Data Systems – JDS
- 54- Karama Computer Services Company
- 55- Middle East Communications Corporation