

UNIVERSITY OF KWAZULU-NATAL

**Internet Adoption among Small and Micro Enterprises
in the Business-Services Sector**

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DECLARATION

I,**Reshma Subbaye**.....declare that

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*I would especially like to dedicate this dissertation to
my Mother
for being my inspiration.*

ABSTRACT

SMEs are important in any economy, because they are the key drivers of innovation, employment and economic growth. Harnessing the Internet for business purposes improves SMEs' operational efficiency and competitiveness in an increasingly global economy. While there are many studies which provide insights about factors influencing Internet adoption among SMEs, there is little data about Internet adoption in African countries. Therefore this study highlights a relatively unexplored research context, namely SMEs in the business-services sector in an emerging economy.

The aim of the study was to explore the factors that either inhibited or facilitated Internet adoption, and to describe the uses of the Internet by SMEs in the business-services sector. The study provided evidence that SMEs are aware of the advantages provided by the Internet. However, the short-term benefits were not apparent enough to SME owners for them to plan to make any significant investment in adopting Internet technologies. The results also showed that, while the majority of SMEs in the business-services sector are engaging in Internet activities, these activities are mainly e-mail and web browsing. E-commerce (use of the Internet for trading purposes) is limited. Furthermore, this study showed that external pressure, from customers, suppliers and competitors is the most significant driver of Internet adoption among SMEs in the business-services. While most SMEs acknowledged that the Internet is becoming increasingly relevant to their businesses, they identify the main barriers to Internet adoption as concerns about the costs and complexity, and issues around security and lack of support when it comes to using the Internet.

The recommendations of the study are that the government should give businesses more incentives to adopt and utilise the Internet and, SME owners/managers need to realise that as businesses increasingly engage in e-commerce, their SMEs will have more opportunities to compete in the global marketplace.

TABLE OF CONTENTS

Description	Page No.
Title page	i
Declaration.....	ii
Acknowledgements.....	iii
Abstract.....	iv
Table of Contents.....	v
List of Figures	xi
List of Tables	xii
Acronyms.....	xiii

1	CHAPTER ONE: INTRODUCTION TO THE STUDY	1
1.1	INTRODUCTION	1
1.2	BACKGROUND TO THE STUDY	1
1.3	MOTIVATION FOR THE STUDY	2
1.3.1	Who Will Benefit from this Study?	3
1.3.2	Unique Contribution of this Study.....	3
1.3.3	Focus of the Study	3
1.4	PROBLEM STATEMENT	3
1.4.1	Research Questions.....	5
1.5	AIM OF THE STUDY.....	6
1.5.1	Objectives	6
1.6	LIMITATIONS OF THE STUDY.....	6
1.7	SUMMARY OF CHAPTER ONE	8

2	CHAPTER TWO: THE LITERATURE REVIEW	9
2.1	INTRODUCTION	9
2.2	LITERATURE SEARCH	9
2.2.1	The Concept Matrix	10
2.3	THE LITERATURE REVIEW	11
2.3.1	The Internet	11
2.3.1.1	Definition of the Internet	11
2.3.1.2	Internet tools and services	11
2.3.1.3	Business use of the Internet: E-commerce	12
2.3.2	Small and Micro Enterprises (SMEs)	13
2.3.2.1	Definition of SMEs	13
2.3.2.2	Characteristics of SMEs	13
2.3.2.3	The importance of SMEs	14
2.3.2.4	SMEs in developing countries	14
2.3.3	The South African Services Sector	15
2.3.4	The South African Business-services Sector	16
2.3.4.1	Activities in the South African business-services sector	16
2.3.4.2	SMEs in the South African business-services sector	17
2.3.5	Models of Internet Adoption Among Small Businesses	18
2.3.5.1	Davis' Theory of Acceptance Model (TAM)	20
2.3.5.2	Roger's Diffusion Theory – Diffusion of Innovation (DOI)	20
2.3.5.3	Azjen's Theory of Planned Behaviour (TPB)	21
2.3.5.4	Hofstede's Cultural Frameworks (HCF)	21
2.3.5.5	Tornatzky's Technology-Organisational-Environmental Model (TOE)	22
2.3.6	The Internet and SMEs	23
2.3.6.1	The Internet and SMEs in developing countries	24
2.3.6.2	The benefits of Internet adoption	25
2.3.6.3	Factors inhibiting Internet adoption among SMEs	27

2.3.6.4	Factors facilitating Internet adoption among SMEs	30
2.4	THE THEORETICAL FRAMEWORK APPLICABLE TO THIS STUDY	32
2.5	SUMMARY OF CHAPTER TWO	32
3	CHAPTER THREE: RESEARCH DESIGN AND METHODOLOGY	34
3.1	INTRODUCTION	34
3.2	RESEARCH PROBLEM AND QUESTIONS	34
3.3	RESEARCH DESIGN	34
3.3.1	Empirical vs. Non-empirical Studies	35
3.3.2	Primary vs. Secondary Data	35
3.3.3	Quantitative vs. Qualitative Approaches	35
3.3.4	Overall Research Design	36
3.3.4.1	Types of data collection used for survey designs	37
3.4	RESEARCH METHODOLOGY	37
3.4.1	Study Population	37
3.4.1.1	Industrial sector	37
3.4.1.2	Geographical location	38
3.4.1.3	Business size	38
3.4.1.4	Population size	38
3.4.2	The Sample	39
3.4.2.1	Sampling design	39
3.4.2.2	Sample size	41
3.4.3	Ethical Clearance	41
3.4.4	Data Collection	42
3.4.4.1	The questionnaire	42
3.4.4.2	Pilot study	43
3.4.4.3	Method of delivery	44
3.4.4.4	Sources of data	45

3.4.4.5	Inclusion and exclusion criteria	45
3.4.5	Data Analysis	46
3.4.5.1	Nature of the data	46
3.4.5.2	Internal consistency and reliability	47
3.4.5.3	Non-parametric tests	48
3.4.5.4	Descriptive statistics	48
3.4.5.5	Inferential statistics	50
3.5	SUMMARY OF CHAPTER THREE.....	51
4	CHAPTER FOUR: RESULTS	53
4.1	INTRODUCTION	53
4.2	RESPONSE RATE	53
4.3	CONSISTENCY AND RELIABILITY: CRONBACH'S ALPHA	53
4.4	DESCRIPTIVE STATISTICS	54
4.4.1	Overall Sample Characteristics	54
4.4.2	Objective 1: Internet Usage	56
4.4.2.1	Internet used for e-commerce activities	57
4.4.2.2	Internet used as a communication medium.....	59
4.4.2.3	Internet used as a tool to search for information.....	60
4.4.3	Objective 2: Factors Inhibiting Internet Adoption.....	61
4.4.4	Objective 3: Factors Facilitating Internet Adoption	65
4.5	NON-PARAMETRIC TESTS	66
4.5.1	Correlation Tests: Spearman's Correlation Co-efficient	66
4.5.1.1	Factors inhibiting Internet adoption.....	66
4.5.1.2	Factors facilitating Internet adoption	67
4.5.2	Inferential Statistics: Mann-Whitney U Tests.....	68
4.5.2.1	Organisational characteristics	68
4.5.2.2	Factors facilitating Internet adoption	69

4.5.2.3	Factors inhibiting Internet adoption.....	71
4.6	SUMMARY OF CHAPTER FOUR.....	73
5	CHAPTER FIVE: DISCUSSION.....	74
5.1	INTRODUCTION	74
5.2	OVERVIEW OF THE DEMOGRAPHIC DATA.....	74
5.3	TECHNOLOGY USAGE.....	74
5.4	OBJECTIVE 1: USES OF THE INTERNET	75
5.4.1	E-mail.....	75
5.4.2	E-Commerce	76
5.4.3	Web-browsing.....	77
5.5	OBJECTIVE 2: FACTORS INHIBITING INTERNET ADOPTION	77
5.5.1	Cost and Complexity.....	78
5.5.2	Information Security	79
5.5.3	Lack of Government Support.....	79
5.6	OBJECTIVE 3: FACTORS FACILITATING INTERNET ADOPTION	79
5.6.1	External Pressure	80
5.6.2	Government Incentives	81
5.6.3	Competitive Edge.....	81
5.7	ADOPTERS AND NON-ADOPTERS OF THE INTERNET: AN ADAPTATION OF THE T.O.E MODEL	82
5.7.1	Technological Factors.....	82
5.7.2	Organisational Factors	83
5.7.3	Environmental Factors	83
5.8	SUMMARY OF CHAPTER FIVE.....	84

6	CHAPTER SIX: KEY FINDINGS, RECOMMENDATIONS AND CONCLUSIONS	86
6.1	INTRODUCTION	86
6.2	KEY FINDINGS.....	86
6.2.1	Objective 1: Internet Usage among SMEs in the Business-services Sector ...	86
6.2.2	Objective 2: Factors Inhibiting Internet Adoption.....	87
6.2.3	Objective 3: Factors Facilitating Internet Adoption	87
6.3	RECOMMENDATIONS FOR THE CURRENT STUDY	87
6.3.1	Government Support and Incentives.....	87
6.3.2	Managerial Awareness.....	88
6.4	RECOMMENDATIONS FOR FUTURE RESEARCH.....	88
6.5	CONCLUSIONs	89
7	BIBLIOGRAPHY	91
8	APPENDICES	99
8.1	APPENDIX A: Concept matrix	100
8.2	APPENDIX B: Author and publisher permission to adapt questionnaire	103
8.3	APPENDIX C: Informed consent.....	105
8.4	APPENDIX D: Research instrument (questionnaire).....	107
8.5	APPENDIX E: Correlation table- Factors inhibiting Internet adoption	109
8.6	APPENDIX F: Correlation table- Factors facilitating Internet adoption.....	111
8.7	APPENDIX G: Language competency.....	112
8.8	APPENDIX H: Kolmogorov-Smirnov (K-S) Test	113
8.9	APPENDIX I: Sum of responses (S) – Calculation and intpretation	123
8.10	APPENDIX J: Ethical approval.....	124

LIST OF FIGURES

Figure 4-1: Frequency of SMEs listed in on-line directories.....	57
Figure 4-2: Frequency of website ownership.....	58
Figure 4-3: Frequency of e-commerce activities	59
Figure 4-4: Purpose for which e-mail is used	59
Figure 4-5: Information being searched for, by SMEs	60
Figure 4-6: Inhibiting factors identified by the respondents.....	63
Figure 5-1: Adaptation of the TOE model of Internet adoption among SMEs in the business-services sector in Chatsworth.....	84

LIST OF TABLES

Table 2–1: Sources of information	10
Table 2–2: Types of services provided by the Internet.....	11
Table 2–3: Activities in the business-services sector	17
Table 2–4: Classification of South African SMEs in the business-services sector	18
Table 3–1 : Methods of delivery for self-administered questionnaires	44
Table 3–2: Constructs in the questionnaire.....	46
Table 3–3: Measurement scales used in the questionnaire	47
Table 3–4: Measures of central tendency	49
Table 3–5: Correlational tests for non-parametric statistics	50
Table 3–6: Inferential statistical procedures for non-parametric statistics	50
Table 4–1: Cronbach's Alpha (α) co-efficient.....	54
Table 4–2: Demographic representation of the SMEs	55
Table 4–3: Current and planned uses of the Internet	56
Table 4–4: Descriptive statistics of factors inhibiting Internet adoption.....	62
Table 4–5: Non-adopters' reasons for not using the Internet	64
Table 4–6: Descriptive statistics of factors enabling Internet adoption.....	65
Table 4–7: Internet adoption and organisational characteristics.....	68
Table 4–8: Comparison between adopters and non-adopters regarding the factors enabling Internet adoption	70
Table 4–9: Comparison between adopters and non-adopters regarding the factors inhibiting Internet adoption	72

ACRONYMS

α	Cronbach's Alpha Co-efficient
BIS	Business Information Systems
CIPRO	Companies and Intellectual Property Registration Office
DCC	Durban Chamber of Commerce
DCE	Durban City Engineers
DOAJ	Directory of Open Access Journals
DOI	Diffusion of Innovation
DTI	Department of Trade and Industry
E-commerce	Electronic Commerce
FMCG	Fast Moving Consumer Goods
FNC	Federal Networking Council
FTP	File Transfer Protocol
GDP	Gross Domestic Product
ICT	Information and Communication Technology
IMF	International Monetary Fund
IP	Internet Protocol
IRC	Internet Relay Chat
IS	Information Systems
IT	Information Technology
K-S test	Kolmogorov-Smirnov test
MBA	Masters of Business Administration
M-commerce	Mobile Commerce
OPAC	Open Public-Access Catalogue
p	probability
QFS	Quarterly Financial Statistics
r_s	Spearman's Correlation Co-efficient
SARS	South African Revenue Services
SCM	Supply Chain Management
SIC	Standard Industry Classification
SME	Small and Micro Enterprises
StatsSA	Statistics South Africa
TAM	Theory of Acceptance Model
TOE	Technological-Organisation-Environmental
TPB	Theory of Planned Behaviour
WWW	World Wide Web

1 CHAPTER ONE: INTRODUCTION TO THE STUDY

1.1 INTRODUCTION

This Chapter briefly discusses the importance of the Internet, as a business tool, in a globalised economy and its impact on small and micro enterprises (SMEs). It explains the motivation for the research study and the associated problem statement. Consequently research questions are identified, leading to the derivation of aims and objectives. The Chapter concludes with a discussion about the limitations of this study.

1.2 BACKGROUND TO THE STUDY

Globally, small and micro enterprises (SMEs) play a significant role because they help to diversify a country's economic base by providing it with opportunities to respond to varying market conditions (Beaver, 2007). The adoption of Internet technologies by SMEs is vital for their ongoing survival in an increasingly competitive marketplace (Porter, 2001). The reason for this is the Internet offers direct links with trading partners (customers, suppliers, distributors and creditors) by facilitating information transfer, irrespective of physical boundaries. Hence, it offers businesses the opportunity to increase their customer base without having to "physically contact customers or advertise in other parts of the world" (Kula & Tatoglu, 2003, p.325).

Porter (2001) commends this increase in customer reach as it is directly linked to improved competitiveness. He also highlights that the Internet is an enabling condition which allows businesses to operate efficiently, thereby reducing their costs and further improving their competitiveness. Thus it is widely acknowledged that staying competitive in the marketplace is imperative to a firm's success and sustainability, and this is equally true for small and micro enterprises (SMEs).

1.3 MOTIVATION FOR THE STUDY

Singh, Garg and Deshmukh (2010) identified that some of the factors constraining the competitiveness of SMEs are inadequate access to technologies, ineffective selling techniques, and limited market research. Studies conducted in the United-States (Xu, Zhu & Gibbs, 2004), Turkey (Kula & Tatoglu, 2003), China (Riquelme, 2002), Netherlands (Walczuch, van Braven & Lundgren, 2000) and Tasmania (Jones, Hecker & Holland, 2002) illustrate that the main benefits of Internet access and adoption strategies to improve small business competitiveness, are an increase in the business's customer reach and improved market research.

Tan, Chong, Lin, and Eze (2010) found that there was a significant relationship between industry type and likelihood of Internet adoption among the SMEs they surveyed. The results of their study showed that the services sector is more inclined to use and adopt Internet technologies. Furthermore, they found that the demographic characteristics of the SMEs indicated that "service sector businesses are usually small and micro in nature" (Tan, *et al.*, 2010, p.49).

Molla and Licker (2004) explored Internet adoption by South African industrial sector distribution, and showed that businesses in the business-services sector were more likely to be using the Internet than other sectors. The results of their study showed that the majority of the respondents came from the financial and business-services sector and that 40% of the respondents represented small businesses. The study also indicated that business size did not significantly affect levels of Internet use for business transactions, where small businesses appeared to have the same levels of use as larger businesses. However, the authors recommended that the relationship between business size and Internet adoption should be investigated further, because the sample that was surveyed over-represented large businesses. Hence, based on the review of the literature, it was decided that the factors influencing Internet adoption among SMEs in the business-services sector would be investigated.

1.3.1 WHO WILL BENEFIT FROM THIS STUDY?

This study seeks to provide empirical insights into Internet usage and adoption among SMEs, with a view to making recommendations to government and policy makers to facilitate Internet adoption. In addition, it provides information about the business needs of SMEs and their current uses of the Internet, which is useful for Internet service providers, Information Technology (IT) consultants and business development consultants. Finally, the study provides information for SME owners about why the Internet is important for their businesses and how to exploit the technology to remain competitive.

1.3.2 UNIQUE CONTRIBUTION OF THIS STUDY

This study is significant because it presents insights about Internet adoption among SMEs in South Africa, and currently there is little published data about Internet adoption in African countries (Boateng, Hinson, Heeks & Molla, 2008). Furthermore, this study highlights a relatively unexplored research context, namely SMEs in the business-services sector in an emerging market.

1.3.3 FOCUS OF THE STUDY

This study reviews literature about the factors influencing Internet adoption among SMEs and the use of Internet applications by SMEs. The study investigates various enabling and inhibiting factors as identified in the literature, to ascertain whether they predicted Internet adoption (or non-adoption) among SMEs in the business services sector, located in Chatsworth, Durban. The study also describes the use of the Internet by these SMEs.

1.4 PROBLEM STATEMENT

Cavaye and van Akkeren (1999) developed a model, based on the prevailing literature of that time, which described the facilitators and inhibitors of Internet adoption. They identified that the owner/manager's perception of the benefits associated with the Internet technology was a key facilitator. The results of that same study also showed that the

inhibitors of Internet adoption were: lack of internal IT expertise, lack of knowledge about the Internet, and the expenses associated with setting up Internet access.

Ten years later, Tan *et al.* (2010) showed that the main barriers to Internet adoption included the lack of networking infrastructure, and the high costs of Information and Communication Technology (ICT) hardware and software. On the other hand, they identified “new ways of doing business” (Tan *et al.*, 2010, p.30) and a reduction in operational inefficiencies as key facilitators to Internet adoption.

In South Africa, small businesses are slow to use Internet technologies for commerce purposes (Moodley, 2003; Cloete, 2002). This suggests that there are barriers to Internet adoption. Non-adoption of the Internet may impact negatively on the small business’ competitiveness in the marketplace. In an ever-widening global economy, the result of Internet non-adoption can be potentially fatal to a small business.

This research study attempts to describe the factors that influence Internet adoption by SMEs in the business-services sector, in the South African context. There is little data and analysis of any type of Internet adoption in developing African countries, including South Africa (Molla & Licker, 2004). Of those studies conducted on Internet adoption, few are industry-sector specific. A number of researchers have recommended that Internet adoption be investigated with reference to the particular industry or industrial sector (Tan *et al.*, 2010; Eshun & Taylor, 2009; Boateng, Molla & Heeks, 2009; Alam, 2009; Hinson, Ataguba, Ofori and Fobih, 2007).

In order to identify the reasons for slow adoption of the Internet by SMEs in the business-services sector; it was necessary to explore the factors that either facilitated or inhibited Internet adoption, and to describe the uses of the Internet by the SME sector. With this in mind, the research questions, aim and objectives were developed. These are explained in the following sections.

1.4.1 RESEARCH QUESTIONS

i. For what purpose are small and micro enterprises (SMEs) in the business-services sector using the Internet?

SMEs in industrialised nations use the Internet to enhance their business processes and to gain a competitive edge in their respective industries. However, SMEs in developing nations, like South Africa are not fully exploiting the Internet as a business tool (Boateng *et al.*, 2008; Moodley, 2003). Therefore, the intention of this question was to describe current and planned uses of the Internet for business purposes in the research study context. It was envisaged that this would help identify the technological needs of SMEs, so that Information Technology (IT) service providers can develop targeted IT support strategies for SMEs.

ii. What are the factors that inhibit Internet adoption among small and micro enterprises (SMEs) in the business-services sector?

Walczuch *et al.* (2000) found that the main barriers to Internet adoption were perceptions that the Internet would not lead to improvements in operational efficiencies and cost reductions for SMEs. In other words, the Internet has no bearing on improving SMEs' competitiveness. The purpose of this question was to explore the barriers to Internet adoption among SMEs in the business-services sector and to provide empirical insights into whether such perceptions are prevalent in this research context. The intention was to identify the barriers to Internet adoption and make recommendations to SME development policy makers and legislators.

iii. What are the factors that facilitate Internet adoption among small and micro enterprises (SMEs) in the business-services sector?

Lee and McGuiggan (2009) assert that SMEs need the right information, at the right time, to augment their competitiveness, and that the Internet is recognized as a valuable tool for speedy access to information; "yet small businesses are reported to lag behind their larger counterparts in Internet adoption" (Lee & McGuiggan, 2009, p.23). The intention with this question was to describe the factors that enable Internet adoption among SMEs in the business-services sector, and to make recommendations to encourage SMEs to use the Internet for business purposes.

1.5 AIM OF THE STUDY

To investigate factors that influence Internet adoption among small and micro enterprises (SME) in the business-services sector in Chatsworth, KwaZulu Natal.

1.5.1 OBJECTIVES

i. To describe Internet usage among SMEs in the business-services sector

This objective was addressed by analysing responses to question numbers 26-47 in the research instrument.

ii. To determine the factors that inhibit Internet adoption among SMEs in the business-services sector (Inhibitors)

This objective was addressed by analysing responses to question numbers: 7-10, 12 and 18-24 in the research instrument.

iii. To determine the factors that facilitate Internet adoption among SMEs in the business-services sector (Facilitators)

This objective was addressed by analysing responses to question numbers: 6, 11, 13-17 and 25 in the research instrument.

All the objectives were addressed by analysing responses to questions in the research instrument (Appendix D).

1.6 LIMITATIONS OF THE STUDY

Despite attempts to gather the best possible quality information, there were a number of limitations to this research study:

- The researcher chose businesses located in Chatsworth, which is the area where the researcher resides. While this meant that the participants (sources of data) were easily accessible, it also meant that the sample did not represent the entire spectrum of the general population because only those owners or managers available on the days and time of data collection were selected to participate in the study. However there is no

evidence to suggest that managers available at the time of data collection would be different to those surveyed on a different day and time.

- In this study the questions were pre-defined by the researcher; this eliminated the possibility of addressing any other relevant question which could have arisen during the data collection. Also, the type of data gained was limited to the responses defined in the research instrument. It is for this reason that Mouton (2003) reports that descriptive, survey-designs lack depth (or topic coverage).
- There does not seem to be a single, comprehensive database of South African SMEs (de Klerk and Kroon, 2005). In this study the Durban Chamber of Commerce (DCC), South African Revenue services (SARS), Department of Trade and Industry for KwaZulu-Natal (DTI), eThekweni municipality and Durban City Engineers (DCE) were contacted. The City Engineers' department was the most helpful with regards to information about SMEs. However, while the City Engineers' office had a database of formally registered SMEs in the Durban region, it was not accessible to the researcher. Only staff members with proper clearance had access and the population size was based on what the researcher was told, hence the information was subject to human and counting errors beyond the control of the researcher. Moreover, the study focused on formally registered businesses and did not take into account those SMEs which were not registered (i.e. SMEs in the informal economy).
- Furthermore, since there was no consistent definition of small business in the literature and policy documents, it was difficult to consistently determine the exact number of SMEs in the business-services sector.
- Another limitation was the researcher's assumption that the participants were honest in their responses. Additionally, the results were an interpretation of the responses received and as a result were subject to cognitive biases.
- The response rate was 76.25% of the required sample size; hence the generalisability of the results to other SMEs in the business-services sector located in Durban is limited by the nature, small size and low response rate of the sample.
- Lastly, the time available to conduct the study was short (1 semester).

1.7 SUMMARY OF CHAPTER ONE

The adoption of Internet technologies by SMEs is vital for their ongoing survival in an increasingly competitive marketplace. However, despite the opportunities and benefits that can be derived from using the Internet for commercial purposes, it has been shown that South African SMEs are slow to adopt the Internet.

SMEs within the business-services sector were identified as a group that would be in a good position to describe the factors that influenced Internet adoption and usage among SMEs. Chapter 2 summarises literature about the Internet, SMEs and factors affecting Internet adoption, and was used to guide the theoretical framework for this study.

2 CHAPTER TWO: THE LITERATURE REVIEW

2.1 INTRODUCTION

Every research project should commence with a review of the existing literature. This allows the researcher to establish how other researchers in the past have investigated a topic of interest. Conducting a literature review is important for the following reasons (Mouton, 2003):

- To avoid duplication of a previous study
- To uncover the most authoritative and recent theories about a subject
- To learn about the most widely accepted empirical findings in a field of study
- To find existing research instruments with proven validity and reliability
- To find out about widely accepted definitions of key concepts in a field of study

The first step when writing a literature review is to conduct a literature search.

2.2 LITERATURE SEARCH

The literature search is a systematic way of looking for literature pertaining to a particular topic. The first step is to define the research topic by compiling a list of key search terms (Mouton, 2003). The key search terms used in this study were:

- Small business/SMEs AND technology adoption
- SMEs AND Internet adoption, inhibitors/barriers, facilitators/enablers
- SMEs AND developing countries
- Models of Internet adoption AND SMEs
- Business services sector
- E-Commerce.

The above terms were used in various combinations to search for information and to access the appropriate resources. Table 2–1 summarises the main sources of information for this study, their location and the different means of accessing the relevant sources.

Table 2–1: Sources of information

Type of information source	Location	Means of accessing the source
Books, conference proceedings and reports	Library books	Library catalogue (<i>OPAC</i>)
	Electronic books	Google scholar
	Conference proceedings and reports	<i>Various Internet electronic databases:</i> WorldCat, Sabinet, Google scholar, EbscoHost <i>Websites:</i> StatsSA, WorldBank, IMF, Cipro, Brabys Business Directory
Journal articles	South African journals	<i>On-line databases:</i> SA e-publications, Google scholar, ScienceDirect, ProQuest and Emerald Insight
	International journals	<i>Online databases:</i> Google scholar, Emerald Insight, Science Direct and Directory of Open Access Journals (DOAJ)
Dissertations and theses	South African dissertations	<i>On-line databases:</i> SACat and National Research Foundation (NRF)

Adapted from “How to succeed in your Masters and Doctoral studies”, (Mouton, 2003)

2.2.1 THE CONCEPT MATRIX

A concept matrix tabulates references and pertinent themes that have been identified for a particular research topic. The key search terms were used to identify the relevant references. The references were then selected and sorted by themes applicable to this research study. A concept matrix format provided by Klopper (2006) was used to categorise the references according to the main themes and concepts relating to the problem statement. The matrix was extended to include year and country of the study. The concept matrix which informed the literature review that follows can be viewed in Appendix A.

2.3 THE LITERATURE REVIEW

2.3.1 THE INTERNET

2.3.1.1 Definition of the Internet

The Internet is a vast computer network that links smaller computer networks worldwide. The Internet includes commercial, educational, governmental, and other networks, all of which use the same set of communications protocols to connect to one another. Thus, this global information system serves as a mechanism for information dissemination, and a medium for collaboration and interaction, between individuals and their computers without regard for geographic location. The Internet is becoming recognised increasingly for the vast array of information services it offers (Leiner, Cerf, Clark, Kahn, Kleinrock, Lynch, Postel, Roberts & Wolff, 2009).

2.3.1.2 Internet tools and services

The Internet offers a variety of services and many tools which have been developed to help send, receive and find information on the Internet. These tools and services are summarised in Table 2-2.

Table 2–2: Types of services provided by the Internet

Internet tool	Brief description of the services provided
E-mail	Allows for the sending/receiving messages or documents.
Chat	A synchronous communications channel that allows text-based „chat’ between different users who are logged in at the same time.
Bulletin boards	Electronic bulletin boards used to discuss a particular topic.
File Transfer Protocol (FTP)	FTP refers to a standard for moving files across the Internet. FTP is often used as a feature on websites for downloading and uploading information.
Telnet	This allows for remote access to computer systems.
Push channel	Information is broadcast over the Internet and received using a web browser or special program. This tool is often used for automated software distribution.
World Wide Web (WWW)	Widely used for publishing information and running business applications over the Internet.

Adapted from “BIS: Technology, Development and Management for E-business”, (Bocij, Chaffey, Greasley & Hickie, 2003)

E-mail and World Wide Web (WWW) technologies are extensively used for business purposes. E-mail is used as a means of fast and cost-effective communication (Stansfield & Grant, 2003) and the WWW as a tool for searching for information and conducting business transactions (Tan *et al.*, 2010).

2.3.1.3 Business use of the Internet: E-commerce

E-commerce has been defined as the use of the Internet and allied technologies to conduct core business functions, internally within the organisation, or externally with customers, suppliers, government and other stakeholders of the business environment (Kaynak, Tatoglu & Kula, 2005; Molla & Licker, 2004; Eastin, 2002). More recently, Boateng, Molla and Heeks (2009, p.3) defined e-commerce as “the sharing of business information, maintaining of business relationships, and conducting of business transactions by means of telecommunications networks”

According to these definitions e-commerce is not restricted to the actual buying or selling of products and services using technology, but also includes the pre-sale and post-sale activities across the supply chain (Bocij, Chaffey, Greasley & Hickie, 2003). In order to survive in an era of electronically mediated information exchanges, and successfully practice e-commerce, businesses need to adopt the Internet (primarily, e-mail and web technologies) (Al-hawari, Al-Yamani & Izwawa, 2008).

E-commerce has been hailed as a revolutionary way of conducting business in the global context. In varying degrees, e-commerce has been adopted in private, public, and non-profit sectors in both industrialized nations and developing countries (Boateng *et al.*, 2008).

Since the Internet offers direct links with customers, suppliers, distributors and creditors by facilitating information transfer, irrespective of physical boundaries, it offers small businesses opportunities to increase their customer base without physically having to contact customers or advertise in other parts of the world (Kula & Tatoglu, 2003).

2.3.2 SMALL AND MICRO ENTERPRISES (SMEs)

2.3.2.1 Definition of SMEs

The classification of the size of a business is usually based on turnover, asset value, or the number of employees (or combinations of all three). However the description of small and micro enterprises (SMEs) differs in the literature and no standard definition exists (Alhawari *et al.*, 2008; Cloete, 2002; Martin & Matlay, 2001). Burgess (2002) highlighted the different definitions used by researchers to describe small, medium and micro enterprises. In Australia, one study defined small businesses as having up to 19 employees; a study in Europe defined small businesses as having up to 100 employees; and studies in Canada targeted small businesses with up to 300 employees (Burgess, 2002).

In South Africa, the National Small Business Act of 1996 defines a small business “as a separate and distinct business entity, including cooperative enterprises and non-governmental organisations, managed by one owner or more which, including its branches or subsidiaries, if any, is predominantly carried on in any sector, or sub-sector of the economy” (SA Government, 1996, p.2). Furthermore, the Act stipulates that business size should be classified according to industrial sector, followed by specified criteria for the number of full-time employees, annual turnover, and total gross asset value.

2.3.2.2 Characteristics of SMEs

While there seems to be no consistent global classification of an SME, there are a few criteria that SMEs meet the world over:

- They are usually **managed in an informal and often personalised way** and not through an official or prescribed management structure. As a result, their strategies tend to have a short range planning perspective (Simmons, Armstrong & Durkin, 2008; Beaver, 2007; MacGregor & Vrazalic, 2005; Fillis, Johansson & Wagner, 2004).
- They are **independent**. They do not form part of a larger organisation and the owner or manager is free from external control when making principal decisions. Thus there is a tendency to avoid business ventures which impinge on their independence (Simmons *et al.*, 2008; Beaver, 2007; MacGregor & Vrazalic, 2005).

- They are heavily reliant on a few customers and have a relatively **small market share**. They also face difficulties in obtaining finance and other resources (Simmons *et al.*, 2008; Beaver, 2007; MacGregor & Vrazalic, 2005; Fillis *et al.*, 2004).
- They are **riskier** than large businesses. Their failure rates are higher because they have limited access to resources. SMEs are often reluctant to take risks, and have a tendency to be conservative with their resources compared to larger businesses (MacGregor & Vrazalic, 2005; Walczuch *et al.*, 2000).

2.3.2.3 The importance of SMEs

Despite the challenges and resource constraints, faced by SMEs when compared to large businesses, they are more flexible and can react to changes in the business environment; they are an important player in economic growth. Acs (1999) claimed that small businesses make two indispensable contributions to a country's economy: they serve as sources of innovation for technological change and productivity growth, and they are gateways by which many people (especially previously disadvantaged groups) enter the economic and social mainstream.

Globally SMEs play an important role. Because SMEs are flexible, by virtue of their small size, they help to diversify a country's economic base by providing it with opportunities to respond to varying market conditions (Simmons *et al.*, 2008). Furthermore, the presence of small businesses in an economy is an expression of necessary competition against big businesses and monopoly power (Beaver, 2007; Rao, Metts & Monge, 2003).

In addition, the SMEs contribution to gross domestic product (GDP) and employment levels in countries where they operate is widely documented (Lee & McGuiggan, 2009; Pflughoeft, Zahedi, Ramamurthy, Soofi & Yasai-Ardekani, 2003; Chau & Kuan, 2001; Rashid & Al-Qirim, 2001; Fink, 1998).

2.3.2.4 SMEs in developing countries

As discussed earlier, while there are some characteristics SMEs share the world over; the economic status of the country in which a small enterprise operates determines the specific

kinds of challenges those SMEs face. In their study conducted on Indian and Chinese SMEs, Singh *et al.* (2010, p.63) wrote that in order “to sustain a fair level of competitiveness in both the domestic and global markets, SMEs in emerging market economies (or developing countries), must strive to utilize information and communication technologies to reach the right markets in cost effective ways.”

Burgess (2002) reported that small businesses make up a substantial proportion of businesses in developing countries. However, SMEs in developing nations experience greater challenges with regard to access to information for decision making, lack of data sources from which to obtain the necessary information, and problems with technological infrastructure amongst others (Eshun & Taylor, 2009; Howard & Mazaheri, 2009; Burgess, 2002). According to the World Bank (2009), South Africa is classified as a developing economy. This means that South Africa, as a nation, is susceptible to the challenges of access to information and her SMEs are similar to SMEs in other developing countries.

In recognition of the importance of the contribution of small business’ contribution to the country’s economy, the South African government developed a strategy for the promotion of small businesses, which stresses that the key objective of the government’s national policy framework “is to create an enabling environment for small businesses” (DTI, 2005, p.7). This is supported by legislation, in the form of the National Small Business Act, which “provides guidelines for organs of state in order to promote small business” in South Africa (SA Government, 1996, p.1).

2.3.3 THE SOUTH AFRICAN SERVICES SECTOR

Some developed economies that have overcome high unemployment levels have relied substantially on the expansion of the services sector, such as business and professional services (Altman, 2006). This is true for South Africa, where the largest and fastest growing segments of the economy were found in the services sector, which is comprised of finance, community and business-services.

Research carried out by Altman (2006) found that the services industry was an important area for future job creation, and that an estimated 70% of South African employment could be found in this industry. Furthermore, the September 2009 preliminary Quarterly Financial Statistics (QFS) recorded an income of R342 million for the services sector (StatsSA, 2009). This is evidence of the substantial financial contribution made by this sector to the South African economy.

2.3.4 THE SOUTH AFRICAN BUSINESS-SERVICES SECTOR

In 2003, the finance, insurance, real estate and business-services sectors (within the services industry) accounted for 8% of employment in South Africa. Two years later, these sectors employed approximately 2.1 million people (10% of those employed). These sectors have been growing at three to five per cent per annum, and if the industry continues to grow at this rate, then approximately 958 000 new jobs will be created in the future (Altman, 2006). Furthermore, in the third quarter of 2009, this sector alone generated a total income of over R139 million (StatsSA, 2009).

In addition to increasing employment levels and contributing to the country's economy, Dos Santos and Bacchialoni (2009) reported that total information and communication spend for the financial and other business-services sector is forecasted to reach approximately R55 billion by 2013. Of this, R26 billion will be spent on telecommunications (e.g. telephone, fax, Internet) indicating that this sector is an intensive user of ICT. This means that the sector heavily invests in ICT in South Africa. The implication for the current study is that the business-services sector is an ideal sector in which to investigate Internet adoption because it is likely to be using the Internet for business purposes.

2.3.4.1 Activities in the South African business-services sector

The Standard Industry Classification (SIC) system is an internationally accepted set of codes for the standard classification of all economic activities. "These codes are prescribed by the Department of International Economic and Social Affairs of the United Nations" (CIPRO, 2008, para.1) and was designed to classify businesses according to different types

of economic activities. It provides a “standardised framework for the collection, tabulation, analysis and presentation of statistical data” on businesses (CIPRO, 2008, para.4). According to the SIC system, the business-services sector, comprises of the activities outlined in Table 2-3.

Table 2–3: Activities in the business-services sector

Accounting/ Tax/ Auditing services	Legal services
Advertising	Labour brokers
Architectural and/or Engineering services	Packaging activities
Business and/or Management consultancy	Photography and/or Sign-writing
Building and/or industrial plant cleaning services	Renting of machinery and equipment
Computer related services	Research and development activities
Debt collection and/or credit rating services	

Adapted from “Standard Industry Classifications for the Business-services Sector”, (CIPRO, 2008)

From Table 2-3, it can be seen that the sector is sub-divided into 13 sectoral activities. These activities range from accounting to legal to research and development activities. It must be noted that building and/or industrial plant cleaning refers to building/property maintenance activities and not the actual construction of buildings or equipment, which, would be classified in the construction sector. Similarly, research and development activities refer to research around this particular sector (CIPRO, 2008).

2.3.4.2 SMEs in the South African business-services sector

As noted earlier in this Chapter, the National Small Business Act of 1996 stipulates that the business size of SMEs should be classified according to industrial sector, followed by specified criteria for the number of full-time employees, annual turnover, and total gross asset value. Table 2-4 is an excerpt from the National Small Business Act – 1996 (SA Government, 1996) and defines the size criteria for SMEs in the South African business-services sector.

Table 2–4: Classification of South African SMEs in the business-services sector

Size	Turnover per year	Total gross asset value (fixed property excluded)	Number of employees
Medium	R20,000,000	R4,000,000	100
Small	R10,000,000	R2,000,000	50
Very small	R2,000,000	R400,000	10
Micro	R150,000	R100,000	5

Adapted from “South African National Small Business Act, 1996”, (SA Government, 1996)

From Table 2-4 it can be seen that the business size is described by turnover, asset value and number of employees. However, consider the example of a business with just 8 employees which records a turnover exceeding R15m per year. According to the Act, it could be classified either as a “medium” or as a “very small” business. It is difficult to determine, from the Act which single characteristic (turnover, asset value or number of employees) is the definitive one with regard to classifying an organisation as medium, small, very small or micro in the business-services sector.

Despite the lack of a consistent definition of SMEs in this sector, there is a lot of evidence that SMEs in this sector make a substantial contribution to the country’s economy. In the preliminary results of the September 2009 QFS report South African small and micro enterprises (SMEs) across all industries, recorded a total income of approximately R294 million. Furthermore, the same report recorded that SMEs in the real estate and business-services industry recorded an income in the region of R43 million (StatsSA, 2009). This represents 15% of the total income of all SMEs in South Africa and approximately 31% (R43 million/R139 million) of the total income recorded for the business-services sector. Therefore it may be surmised that, not only does the business-services sector make a substantial contribution to the South African economy in terms of gross domestic product and employment, but SMEs in this sector also play an important role.

2.3.5 MODELS OF INTERNET ADOPTION AMONG SMALL BUSINESSES

de Vos, Strydom, Fouche and Delport (2005) define a model as a partial representation of a particular phenomenon. This means that models do not include all the features of a system; just those that are necessary for research purposes. The authors stipulate that certain characteristics of the phenomenon which are irrelevant to the model are usually

deliberately excluded, while the most obvious aspects are emphasized. “The value of this simplification is that it draws the attention of the researcher to specific themes” and concepts (de Vos *et al.*, 2005, p.36).

Overall, from the literature review, the theme of Internet adoption has focused on a number of issues which are classified into five sub-themes of adoption i.e. the managerial context, the organisational context, the environmental context, the technological context and the interaction between these contexts (Boateng *et al.*, 2009; Mohamad & Ismail, 2009; Molla & Licker, 2005). Factors within the sub-themes are then investigated. A brief description of the predominant themes is presented below.

- i. **Managerial:** The literature addresses the managerial determinants of Internet adoption. These include the management characteristics, such as innovativeness, strategic vision, decision-making, knowledge about the Internet and commitment toward its use for business purposes (Boateng *et al.*, 2009; Mohamad & Ismail, 2009,).
- ii. **Organisational:** The literature tackles the factors that influence Internet adoption which lie in the internal context of the organization. For example: industry sector, size, organisational age, organizational readiness, functional differentiation, and risk taking propensity (Boateng *et al.*, 2009; Mohamad & Ismail, 2009; Boateng *et al.*, 2008; Molla and Licker, 2005).
- iii. **Technology:** The literature looks at the technological factors that determine Internet adoption such as: costs, security, relative advantage, compatibility with existing infrastructure, complexity, ease of use, and usefulness (Boateng *et al.*, 2009; Mohamad & Ismail, 2009).
- iv. **Cultural:** The literature addresses the cultural determinants of Internet adoption. These include language, values, power distance, individualism, collectivism, uncertainty avoidance, long-term orientation and masculinity (Bin, Chen & Sun, (2003) as cited by Boateng *et al.*, 2009).

- v. **Environmental:** The literature describes the environmental determinants of Internet adoption. These are external to the organization and include: consultants' support, government support, and pressure from trading partners or competitors (Boateng *et al.*, 2009, Mohamad & Ismail, 2009).
- vi. **Interaction:** The literature addresses the interrelated determinants of Internet adoption which lie in the internal and external contexts of the organization. These consist of a combination of the determinants listed above (Boateng *et al.*, 2009; Boateng *et al.*, 2008).

In their review of the theoretical frameworks found in the literature Boateng *et al.* (2009) reported that there were two major conceptual frameworks, namely: the technology acceptance model, also known as Davis' theory of acceptance model (TAM), and Roger's diffusion of innovation theory (DOI), which have been used to explore the sub-themes of Internet adoption. They found that Hofstede's cultural frameworks, Azjen's theory of planned behaviour and Tornatzky's technology-organization-environment (TOE) model have been used to a lesser extent and warranted further empirical testing. Below is a review of the various theoretical frameworks that have been used to examine and explore Internet adoption among SMEs.

2.3.5.1 Davis' Theory of Acceptance Model (TAM)

This model examines beliefs about the perceived usefulness and ease of use as the major factors influencing attitudes toward technology usage, which, in turn, affects intention to adopt technology (Riemenschneider, Harrison & Mykytyn, 2003; Shih, 2004).

2.3.5.2 Roger's Diffusion Theory – Diffusion of Innovation (DOI)

The diffusion of innovation (DOI) theory describes how adoption takes place within a social system. According to this model, the adoption rate of an innovation is influenced by the **characteristics** of the innovation itself such as its relative advantage, compatibility, complexity, trialability and observability; the “**communications channels** through which the benefits of the innovation are communicated; the **time elapsed** since the introduction

of the innovation; and the **social system** in which the innovation is to diffuse” (Azam, 2007, p.46).

2.3.5.3 Azjen’s Theory of Planned Behaviour (TPB)

In the theory of planned behaviour (TPB), the business’s decision to adopt the Internet is a function of attitudes, subjective norms and perceived behaviour/control. While not as commonly used as the other models, this framework has been used to explain attitudes towards technology, the social norms that influence technology adoption and the impact of perceived behaviour or control on the use of technology (Riemenschneider *et al.*, 2003).

2.3.5.4 Hofstede’s Cultural Frameworks (HCF)

In this framework, culture is described as the collective mental programming of a group, for example a nation. Culture is the aggregate of individual personality traits. Hofstede’s cultural framework (HCF) was developed as an empirically based typology of cultural attributes, where countries were classified along four dimensions (Bagchi, Cervený, Hart & Petersen, 2003):

- i. **Power distance:** “This measure refers to the extent to which a society accepts the unequal power distribution within or between institutions and firms” (Bagchi, *et al.*, 2003, p.959). People in a high-power distance more readily accept wider differences in power compared to low power difference societies. Low power distance societies have more need for technologies and modern industries. This societal norm suggests a positive relationship between low power distance and IT adoption, when adoption levels are concerned (Bagchi *et al.*, 2003).
- ii. **Uncertainty avoidance:** “This cultural attribute describes the extent to which individuals feel threatened by uncertain and ambiguous situations, and try to avoid them” (Bagchi *et al.*, 2003, p.960). Cultures with low uncertainty avoidance exhibit greater tolerance for risk and people in such societies tend to be more innovative and entrepreneurial. In contrast, countries that exhibit high uncertainty avoidance value security and clear rules, their citizens tend to focus on risk avoidance and reduction.

ICT adoption, and in particular Internet adoption involves risks. Therefore, this societal norm suggests a negative relationship between uncertainty avoidance and Internet adoption because any IT adoption involves risks (Gong, Li & Stump, 2007; Bagchi *et al.*, 2003).

- iii. **Individualism/collectivism:** Individualism refers to a loosely knit social network where people take care of themselves. In contrast, collectivism refers to a tightly knit social network where the group feeling is very strong. In cultures where individualism is perceived as being high, employee loyalty is considered more important than efficiency. IT adoption in individualistic nations will be greater as individuals pay more attention to their personal lives and freedom at work and are more performance oriented. Technologies such as cell-phones, personal computers and the Internet are supportive of these values (Gong *et al.*, 2007; Bagchi *et al.*, 2003).
- iv. **Masculine/feminine:** This is a dichotomous attribute. A culture is considered feminine when the value of human relationships and concern for others is high. Contrarily, masculine cultures are more assertive and value materialism (Bagchi *et al.*, 2003). Hence, masculinity has a positive effect on consumer innovativeness and the diffusion of technological product innovations (Gong *et al.*, 2007).

2.3.5.5 Tornatzky's Technology-Organisational-Environmental Model (TOE)

This model identified three aspects of a business's context that influence technology adoption and implementation. These aspects are the technological context, organisational context and environmental context:

- i. The **technological** context describes both the internal and external technologies relevant to the business in terms of costs, complexity and trialability. This includes existing technologies being used by the business, as well as the available technologies on the market.

- ii. The **organisational** context is defined in terms of several descriptive measures: business size and age; the centralization, formalization, and complexity of its managerial structure and the amount of resources available internally.
- iii. The **environmental** context refers to the arena in which a business operates. This context covers the industry, in which the business operates, its competitors, access to resources, trading partners and dealings with government (Zhu, Kraemer & Xu, 2002).

2.3.6 THE INTERNET AND SMEs

“The ability of SMEs to harness the Internet to explore new markets and remain competitive is an important factor in achieving economic stability and achieving success” (Stansfield & Grant, 2003, p.16). E-commerce has been hailed as a significant development that is widely accepted as a revolutionary way of conducting business in the global context (Drucker, 1999) and, in varying degrees, has been adopted in private, public, and non-profit sectors in both industrialized nations and developing countries (Boateng *et al.*, 2008).

Since the Internet offers direct links with customers, suppliers, distributors and creditors by facilitating information transfer irrespective of physical boundaries, it offers small businesses the opportunity to increase their customer base without having to physically contact customers or advertise in other parts of the world (Kula & Tatoglu, 2003, Drucker, 1999). The Internet is a means by which businesses can compete globally and the simplest way to provide this online information is for SMEs to invest in web technologies or, at the very least, to be listed in on-line directories. Having this kind of web presence enables suppliers and customers to access SME service (or product) offerings via the Internet through browsing (Al-hawari *et al.*, 2008; Al-Qirim, 2007).

Porter (2001) commends this increase in customer reach as it is directly linked to improved competitiveness. In his article on the Internet and strategy, he highlights that the Internet and e-commerce are enabling conditions which allow businesses to operate efficiently. This operational efficiency which he defines as, “doing what your competitors do, only better” (Porter, 2001, p.1), is the cornerstone of competitive sustainability. He posits that

businesses have no choice but to adopt Internet and e-commerce technologies if they want to stay competitive.

However, SMEs not using the Internet are reluctant to change their current business models (Beckinsale & Levy, 2004). This may be because SMEs face greater risks in adopting the Internet than larger businesses due to inadequate resources and limited knowledge. Severe constraints on financial and human resources can also cause SMEs to lag behind large businesses when it comes to using the Internet (MacGregor & Vrazalic, 2005; Chau & Kuan, 2001).

2.3.6.1 The Internet and SMEs in developing countries

In an analysis of the prevailing literature at the time, Cloete (2002) found that studies about Internet use in developing countries like India, China and Egypt showed that although Internet usage lagged behind the developed nations (US and Europe), their rates of Internet usage were increasing rapidly. However, currently, the geographical distribution of connections to the Internet heavily favours the highly industrialised countries and there is unequal access to network-based services between the developing and developed world thus emphasising, the digital divide (Aladwani, 2008; Lal & Oyelaran-Oyeyinka, 2005; Moodley, 2003; Travica, 2002; Moodley, 2001).

Many developing nations have low computer penetration rates and lack the telecommunications infrastructure necessary to take full advantage of the Internet. They also lack the availability of an economically priced telephone service and regular electricity supply. Internet access in these countries is expensive and unreliable. Furthermore, access to Internet-based markets (through e-commerce) depends on the availability of skilled labour and this is often lacking in developing nations (Lal & Oyelaran-Oyeyinka, 2005; Moodley, 2003). In addition, in developing countries, the geographical distribution of the Internet is often limited to urban centres, the costs of technology adoption are higher than average annual income and Internet adoption remains in the initial stages. The trend in developing countries is Internet adoption through cell-phone usage because cell-phones are relatively cheap compared to personal computers (Howard & Mazaheri, 2009, Moodley, 2003).

Moodley (2003) questions whether the Internet will marginalise third world businesses or whether it will facilitate their access to world markets. He suggests that theoretically, the Internet has much to offer a developing economy like South Africa, “an export-oriented, industry-centred and market-driven development trajectory” (Moodley, 2003, p.59).

2.3.6.2 The benefits of Internet adoption

The Internet creates the opportunity for businesses to communicate, transact and collaborate with enhanced flexibility and at a lower cost (Moodley, 2003). Published literature provides evidence of the value that SMEs derive from adopting the Internet and Internet related technologies. Broadly speaking, some of the prevalent benefits of Internet adoption include bigger market exposure, cost and time savings, improved organisational efficiency and competitiveness, and new ways of doing business (Walczuch *et al.*, 2000).

i. Market exposure

Wider market exposure means that organisations have access to new business opportunities. This increases the ability of SMEs to compete with other businesses (Tan *et al.*, 2010; Mogre, Balocco & Toletti, 2009; Dholakia and Kshetri, 2004; Cragg *et al.*, 2001; Walczuch *et al.*, 2000; Poon and Swatman, 1999; Poon & Strom, 1997). It also results in an improved SME brand image and facilitates advertising throughout the world (Elliott & Boshoff, 2005; Walczuch *et al.*, 2000; Poon & Swatman, 1999). A consequence of this is increased sales and an increase in the SMEs’ customer base (Walczuch *et al.*, 2000, Tan & Teo, 1998). Other positive results of wider market exposure for SMEs include easier market analysis and a better awareness of the business environment (Elliott & Boshoff, 2005, Chatterjee, Grewal & Sambamurthy, 2002; Jones *et al.*, 2002). Finally, wider market exposure invariably leads to extended business networks (Kula & Tatoglu, 2003) and the availability of knowledge, regardless of the SME’s location (Walczuch *et al.*, 2000).

ii. Cost savings

Businesses are likely to see a reduction in operating costs when communicating with customers and suppliers, especially if the SME is selling in distant markets. The cost of communicating using the Internet and e-mail is lower than the costs incurred by

sending correspondence by post, making telephone calls or faxing. This results in a reduction in the costs of obtaining, processing and transmitting information (Tan *et al.*, 2010; Alam, 2009; Teo, Lin & Lai, 2009; Mogre *et al.*, 2009; Dholakia & Kshetri, 2004; Teo & Pian, 2003; Cragg, Mehrtens & Mills, 2001; Walczuch *et al.*, 2000; Poon & Swatman, 1999; Poon & Strom, 1997). Furthermore, SMEs have opportunities for continuous global advertising and marketing, at rates that are cheaper than conventional advertising (which may be paper-based, radio or television broadcasting) (Lee & McGuiggan, 2009, Martin & Matlay, 2003; Riquelme, 2002; Cragg *et al.*, 2001; Walczuch *et al.*, 2000; Poon & Swatman, 1999; Poon & Strom, 1997).

iii. Time savings

Since the Internet allows for faster and better communication, SMEs can expect speedier and/or more flexible delivery from suppliers (Walczuch *et al.*, 2000). This results in time savings (Riquelme, 2002).

iv. Improved organisational efficiency and competitiveness

The Internet offers direct links to customers and suppliers which results in improved efficiency and better co-ordination in the value chain (Tan *et al.*, 2010; Riquelme, 2002; Walczuch *et al.*, 2000; Poon & Strom, 1997). This easy access to potential customers in the form of direct and indirect selling methods and advertising via the Internet can help SMEs compete against larger business (Dholakia & Kshetri, 2004; Zheng, Caldwell, Harlan, Powell, Woerndl & Xu, 2003; Jones *et al.*, 2002; Poon & Strom, 1997). Improved access to market information regarding competitors, government regulation and products and services (Poon & Strom, 1997, Walczuch *et al.*, 2000, Cragg *et al.*, 2001, Stansfield & Grant, 2003, Lee & McGuiggan, 2009) have resulted in improved competitiveness in the industry in which the SME operates (Kula & Tatoglu, 2003, Tan and Teo, 1998, Elliott and Boshoff, 2005) and better support and service from suppliers (Walczuch *et al.*, 2000, Teo and Pian, 2003).

v. New ways of doing business

The Internet has presented a convenient way of conducting business transactions since the enterprise is not restricted to standard hours of operation. This means that the Internet eliminates time barriers when conducting business (Dholakia and Kshetri,

2004, Tan *et al.*, 2010, Mogre *et al.*, 2009). This increases the ability of SMEs to compete with other businesses (Poon and Strom, 1997, Poon and Swatman, 1999, Riquelme, 2002, Stansfield and Grant, 2003) and facilitates new ways of organising and managing businesses (Tan *et al.*, 2010, Martin and Matlay, 2003).

Drucker (2001) postulated that since customers have access to information through the Internet, they are able to search for products and services relatively easily and at their own convenience. “Whoever has the information has the power” (Drucker, 2001, p.3). Power is thus shifting to the customer, and businesses need to be prepared.

Despite the benefits of Internet adoption, many studies report that SMEs the world over are slow to adopt the Internet, compared with larger businesses. This is evidenced in studies conducted by Tan *et al.* (2010), Alam (2009), Lee & McGuiggan (2009), Dholakia & Kshetri (2004), Stansfield & Grant (2003), Riquelme (2002). South African SMEs are similar to their global counterparts and they have been relatively slow in their adoption of the Internet for business purposes (Moodley, 2003).

2.3.6.3 Factors inhibiting Internet adoption among SMEs

Several studies show that SMEs are not convinced of the financial benefits that could result from using the Internet. SMEs reported that the start-up investment costs for Internet adoption were too high, and that the return on investment was questionable. Furthermore, the SMEs’ owners did not believe that Internet adoption could result in lower operational costs (Tan *et al.*, 2010; MacGregor & Vrazalic, 2005; Walczuch *et al.* 2000; Cavaye and van Akkeren, 1999).

There is insufficient education and knowledge about the Internet and its uses, among SME owners and staff. Many studies show that SMEs lack the time and opportunity to learn how to use the Internet. Consequently, they find it too complex to use and/or unsuitable for business operations. While some SMEs are knowledgeable about the Internet, there is often a lack of expertise and competence when it comes to actually using the Internet (Johnson, 2010; Tan *et al.*, 2010; MacGregor & Vrazalic, 2005; Dholakia & Kshetri, 2004; Ferrer, Schroder & Ortman, 2003; Stansfield & Grant, 2003; Hornby, Goulding & Poon, 2002; Riquelme, 2002; Lituchy & Rail, 2000; Cavaye & van Akkeren, 1999).

However, trying to find qualified staff to fill the gap left by lack of expertise is difficult. SMEs have limited financial resources to recruit and retain appropriately skilled IT staff. Moreover, career development and advancement for IT staff is limited in SMEs and they tend to choose working for larger businesses (Tan *et al.*, 2010; MacGregor & Vrazalic, 2005; Stansfield & Grant, 2003; Hornby *et al.*, 2002; Chau & Kuan, 2001; Cavaye and van Akkeren, 1999).

This lack of financial resources has further implications, in that SMEs cannot afford the infrastructure (e.g. computers, modems, networks, software and Internet service provider subscriptions) required to adopt the Internet. Thus, the high costs of technology and associated infrastructure means that the Internet is not widely used in SMEs as evidenced in studies conducted by Tan *et al.*(2010) and Alam (2009). Furthermore, the rapid changes in technological developments are yet another prohibitive factor affecting Internet adoption among SMEs (Dholakia & Kshetri, 2004; Stansfield & Grant, 2003, Hornby *et al.*, 2002; Riquelme, 2002; Walczuch *et al.*, 2000; Cavaye & van Akkeren, 1999; Poon & Swatman, 1999; Tan & Teo, 1998).

Linked to technological developments is geographical location. The literature shows that SMEs located in rural and remote areas are less likely to adopt the Internet because of the lack of telecommunication networks and Internet connectivity infrastructure. While there may be low cost methods of access in urban areas (cities and metropolitan areas), the same cannot be said for rural and remote areas. Moreover, the further away a business is from the resources it needs, the longer it takes and the more it costs the business, to get those resources (Donner, 2006; de Klerk & Kroon, 2005; MacGregor & Vrazalic, 2005; Burgess, 2002).

Many studies highlighted that fears and concerns about the security of information on the Internet were barriers to Internet adoption. SMEs were concerned about unauthorised access to sensitive or proprietary information, and limited verification of authorship, of messages received (Tan *et al.*, 2010; Lee & McGuiggan, 2009; MacGregor & Vrazalic, 2005; Dholakia & Kshetri, 2004; Stansfield & Grant, 2003; Lituchy & Rail, 2000; Walczuch *et al.*, 2000, Cavaye & van Akkeren, 1999, Tan & Teo, 1998).

In their studies, Johnson, (2010), Tan *et al.* (2010), Dholakia and Kshetri (2004), Hornby *et al.* (2002) and Poon and Swatman (1999) draw attention to the lack of management support and encouragement for Internet adoption as an important barrier. If the decision to adopt the Internet is not driven by the SME owner or manager it is unlikely that the SME will adopt the Internet. This lack of management support may be linked to management and staff reticence to use new technologies and a preference for conventional methods such as telephone and fax as an information and telecommunication medium. There is often a resistance to change (Johnson, 2010; MacGregor and Vrazalic, 2005; Cavaye and van Akkeren, 1999).

Also linked to lack of management support is the belief by SME owners that Internet adoption will result in decreased productivity among staff. Some SME owners believe that their staff will use the Internet frivolously and for unintended purposes. It is often these managers' perceptions that staff will waste too much time surfing the net, as opposed to performing their designated job functions (Tan *et al.*, 2010; Walczuch *et al.*, 2000; Tan & Teo, 1998).

Some studies show that low use of the Internet by customers and suppliers was a barrier to adoption for SMEs. Due to the lack of critical mass of stakeholder usage (customers and suppliers) SMEs reported that the Internet was not relevant to their businesses (Tan *et al.*, 2010; MacGregor & Vrazalic, 2005; Stansfield & Grant, 2003).

Howard and Mazaheri (2009) report that English language literacy is considered by some researchers as a potential predictor of Internet adoption, because surfing the Internet, may require proficiency in English. However, empirical evidence has not been conclusive in this regard (Alam, 2009; Al-hawari *et al.*, 2008).

A final barrier for those SMEs who do decide to adopt the Internet is that some of them discontinue using the Internet because the speed of access is too slow. This means that the SMEs spend too much time waiting for information to download (Walczuch *et al.*, 2000; Tan and Teo, 1998).

2.3.6.4 Factors facilitating Internet adoption among SMEs

There is a fairly common list of factors in the literature which aid Internet adoption among small and micro enterprises. These factors range from managerial involvement and interactivity, to organisational and cultural characteristics, to technological and environmental factors (Mohamad & Ismail, 2009; Molla & Heeks, 2007; Dholakia & Kshetri, 2004; Stansfield & Grant, 2003; Burgess, 2002; Riquelme, 2002; Sadowski, Maitland & van Dongen, 2002, , Walczuch *et al.*, 2000; Cavaye & van Akkeren, 1999; Fink, 1998; Poon & Strom, 1997).

- i. **Managerial involvement:** Management enthusiasm and support in promoting Internet use is a vital determinant of Internet adoption. Among SMEs, the owner/manager is the key decision maker and their involvement is critical to Internet adoption. The owner/manager's involvement in the implementation of technology within the SME, and their recognition of the importance of the Internet for strategic marketing purposes, makes Internet adoption and its use for commerce (e-commerce) within the SME highly likely. Therefore, those SME owner/managers who possess the relevant marketing skills and knowledge are able to recognise the Internet's marketing potential and build on it strategically (Alam, 2009; Simmons, Durkin, McGowan & Armstrong, 2007; Elliott & Boshoff, 2005; Teo & Pian, 2003; Burgess, 2002; Chatterjee *et al.*, 2002; Poon & Strom, 1997). However, management enthusiasm can only be garnered if they perceive that adopting the Internet will benefit their SME.
- ii. **Organisational factors:** The level of IT knowledge and skill among staff significantly influences Internet adoption in an organisation (Cragg *et al.*, 2001). Furthermore, an Internet champion within the organisation will encourage and motivate for the use of the Internet within that organisation (Tan & Teo, 1998). Another organisational driver is the reported efficiency as a result of employees being able to get information about competitors, government regulation and supplier stock levels, and increased productivity by reducing information distribution time (Zheng *et al.*, 2003; Cragg *et al.*, 2001).
- iii. **Technology factors:** Another factor facilitating Internet adoption is the availability of adequate computer systems and user-friendly applications for SMEs (Dholakia and

Kshetri, 2004, Cragg *et al.*, 2001). Since IT expertise is usually limited within SMEs, user-friendliness and ease of use of the Internet technology is crucial for adoption. The degree of connectivity, fast download speeds, and efficiency and cost benefits of Internet use over traditional methods of communication (phone and fax) facilitate its adoption among SMEs (Zheng *et al.*, 2003; Cragg *et al.*, 2001). Furthermore, a low financial cost of adopting Internet technologies significantly determines whether an SME will use the Internet for business purposes (Aguila-Obra & Padilla-Melendez, 2006).

- iv. **Environmental factors:** Many studies show that support from the government, business partners and Internet service providers facilitates Internet adoption. SMEs are more likely to adopt the Internet if they are actively encouraged to do so. Also, support from consultants/ IT vendors in terms of assisting with the selection of technology, installing Internet applications, assisting the SME with the training of users (owner/manager and staff), and assisting the SME with planning methodologies in setting up applications for business use, all encourage Internet adoption among SMEs (Chong, 2008; Simmons *et al.*, 2007; Kula & Tatoglu, 2003, Burgess, 2002; Riquelme, 2002; Walczuch *et al.*, 2000).

Furthermore, industry pressure to use the Internet also facilitates Internet adoption. For example, if customers, suppliers and distributors require that the SME fill in on-line forms, or communicate via e-mail, then the SME is likely to adopt the Internet (Kula & Tatoglu, 2003, Zheng *et al.*, 2003; Sadowski *et al.*, 2002; Cragg *et al.*, 2001; Walczuch *et al.*, 2000; Poon & Swatman, 1999; Poon & Strom, 1997). Chong (2008) proposed that the industry culture would impact on SMEs in their adoption and usage of the Internet. Another study showed that Internet adoption levels within an industry sector can directly affect the adoption strategy of SMEs in that same sector and identified industry norms as a central determinant of Internet adoption by SMEs (Simmons *et al.*, 2007).

- v. **Cultural factors:** Bagchi *et al.* (2003) found that national cultures where decision-making is decentralized and participative have a greater need for technologies and technology driven industries. The implication is that Internet adoption is facilitated by

a culture that is performance-orientated and not averse to adopting new ideas and ways of doing business. This attribute facilitates technology, such as the Internet, adoption. Furthermore, Bagchi *et al.* (2003, p.963) found that “national culture, makes a statistically significant contribution to IT diffusion, even after controlling for other relevant national indicators such as GDP per capita and heterogeneity index”.

In summary, factors such as, increased managerial involvement, organisational and technological readiness, support from the businesses’ external environmental, industry pressure and even national cultures that are performance-orientated are key facilitators to Internet adoption.

2.4 THE THEORETICAL FRAMEWORK APPLICABLE TO THIS STUDY

As mentioned earlier, overall, the literature on Internet adoption has focused on a number of issues which are classified into five themes i.e. the managerial context, the organisational context, the environmental context, the technological context and the interaction between these contexts (Boateng *et al.*, 2009; Mohamad & Ismail, 2009; Molla & Licker, 2005). The researcher decided not to test an extant model of Internet adoption but rather, to explore the themes of Internet adoption, as outlined in the literature. The purpose of this study was therefore, to investigate broadly the different themes which influence Internet adoption among SMEs in the business-services sector; and to understand how various factors contribute to these themes; with the intention of recommending a model of Internet adoption applicable to the current research context.

2.5 SUMMARY OF CHAPTER TWO

From the literature, it is clear that the Internet is a global information system which serves as a mechanism for information dissemination, and a medium for collaboration and interaction, between individuals and their computers, without regard for geographic location. Harnessing the Internet for business purposes improves operational efficiency and competitiveness in an increasingly global economy.

While there is no consistent definition of SMEs in the literature, there is consensus that small businesses are important in any economy because they are the key drivers of innovation, employment and economic growth. In order for SMEs to remain competitive, it is imperative that they adopt and integrate Internet technologies within their businesses.

As evidenced in the literature, there are as many benefits as there are factors which either inhibit or facilitate Internet adoption among SMEs. The aim of this research study was to describe the factors influencing Internet adoption and usage among SMEs in the business-services sector. Chapter 3 explains the research methodology that was used to determine these factors and to describe the levels of Internet usage among SMEs.

3 CHAPTER THREE: RESEARCH DESIGN AND METHODOLOGY

3.1 INTRODUCTION

“ Research is a systematic process of collecting, analysing and interpreting information (data) in order to increase our understanding of the phenomena about which we are interested” (Leedy & Ormond, 2005, p.2). This Chapter begins by outlining the research problem, its aims and objectives, the data collection process and finally, the statistical methods used in order to provide information that addresses the research problem.

3.2 RESEARCH PROBLEM AND QUESTIONS

As mentioned in Chapter 1, the research problem was that, in South Africa, small businesses are slow to use Internet technologies for commerce purposes (e-commerce). Research questions were developed to obtain information that would address this particular research problem. The research questions were as follows:

- i. For what purpose are SMEs in the business-services sector using the Internet?
- ii. What factors inhibit Internet adoption among SMEs in the business-services sector?
- iii. What factors facilitate Internet adoption among SMEs in the business-services sector?

This study aimed to solicit the opinions of SME owners or managers, from the business-services sector, about the factors influencing Internet adoption and its usage in their businesses.

3.3 RESEARCH DESIGN

According to Mouton (2003), a research design determines what type of study will be undertaken in order to provide acceptable answers to the research questions. Furthermore, the research design serves as a blueprint of how the researcher will conduct the research, and focuses on determining the kind of evidence that is required to address the objectives of the study.

3.3.1 EMPIRICAL VS. NON-EMPIRICAL STUDIES

According to Mouton (2003), non-empirical studies ask questions that are conceptual, theoretical or philosophical in order to address the overall research problem. On the other hand, empirical studies often ask research questions that are exploratory, descriptive, causal, evaluative, predictive or historical in nature. The research questions in this study were descriptive and to some extent exploratory in nature, therefore, the researcher classified it as an empirical study.

3.3.2 PRIMARY VS. SECONDARY DATA

The next step in the design process was to decide on the type of data that would be collected. In research studies there are two types of data: primary and secondary data. Primary data refers to data collected directly from the source whereas secondary data refers to data derived from primary data (Leedy & Ormond, 2005). While secondary data may save time in terms of data collection no such data could be found for this particular study that would have addressed all the research questions. Therefore a decision was made to collect primary data.

3.3.3 QUANTITATIVE VS. QUALITATIVE APPROACHES

Finally, a decision about the kind of information that would be used to study the research problem was made. Research problems can be investigated either qualitatively or quantitatively. **Qualitative** information means that the research information is presented in the form of words, sentences or narratives. The information is typically used to answer questions about a complex situation, with the purpose of providing an in-depth and holistic analysis of a particular context from the point of view of the research participants (Blumberg, Cooper & Schindler, 2005). The data is usually collected from a small sample but data collection can be time-consuming (Leedy & Ormond, 2005).

Quantitative information refers to research information that is presented in the form of numbers and figures and is used to answer questions about relationships among measured variables, in order to develop generalisations that contribute to a theory (Blumberg *et al.*, 2005). The data is usually collected from large samples, in a form that can be converted to

numerical indices, and the data can be collected in a short period of time (Leedy & Ormond, 2005).

The literature review, shows that factors affecting Internet adoption, in terms of broadly defined themes, have already been established. The purpose of this study was to investigate the themes that were applicable in this research context, with the aim of developing a generalisation. Therefore a quantitative approach was deemed appropriate.

3.3.4 OVERALL RESEARCH DESIGN

Leedy and Ormond (2005) discuss four types of research designs which use a quantitative approach. Broadly, they are:

- i. **Observation study designs:** where a particular aspect of behaviour is observed and quantified.
- ii. **Correlational study designs:** where the extents to which variables, in one or more characteristics, are related.
- iii. **Developmental designs:** where data related to characteristics are collected, in intervals, over time or from different groups of participants.
- iv. **Survey designs:** where information about participants in a study is acquired by asking them questions and tabulating their answers.

Survey designs are commonly used in business research to describe incidence, frequency and distribution of certain characteristics in a population (Leedy & Ormond, 2005). Additionally, Blumberg *et al.* (2005) noted that survey design is versatile and appropriate when collecting information about opinions, attitudes, perceptions, intentions and expectations. Therefore, the survey design type was considered the most appropriate research design for this research study.

3.3.4.1 Types of data collection used for survey designs

In the last step of the design process, a decision on the type of data collection method needed to be made. Blumberg *et al.* (2005) highlight common data collection methods used in survey designs. These include:

- i. **Participant interviews:** this refers to a two-way communication between interviewer and participant where the interviewer asks the participant a standard set of questions.
- ii. **Self-administered questionnaires:** refers to when the interviewer leaves a questionnaire with the participant, to be completed in a convenient location.

Self-administered questionnaires were chosen as the preferred data collection method because they typically cost less than interviews and provide a higher degree of anonymity for the participants (Blumberg *et al.*, 2005).

3.4 RESEARCH METHODOLOGY

For the purposes of this research study, a quantitative, descriptive survey design was selected with the aim of providing a broad overview of the factors influencing Internet adoption among small and micro enterprises (SMEs operating in the business-services sector, located in Chatsworth, Durban). According to Mouton (2003), the research methodology of a study explains the tools and procedures that are used to execute the research design.

3.4.1 STUDY POPULATION

3.4.1.1 Industrial sector

In South Africa, the services industry is comprised of several sectors namely: financial, real estate, insurance, business and community, services (Altman, 2006). According to the Standard Industry Classification system (SIC), the business-services sector is categorised as offering the services tabulated in Chapter 2, Table 2-3.

3.4.1.2 Geographical location

Chatsworth is a suburb located outside Durban. The street code for Chatsworth is 4092 (SAPO, 2010). Chatsworth was chosen because of the accessibility of the participants to the researcher.

3.4.1.3 Business size

In this study, a small business was defined as having a minimum of 6 to a maximum of 50 employees (excluding the owner); and a micro enterprise as having a minimum of 1 to a maximum of 5 employees (excluding the owner) (SA Government, 1996).

3.4.1.4 Population size

There does not seem to be a single, comprehensive database of South African SMEs (de Klerk & Kroon, 2005). The Durban Chamber of Commerce (DCC), South African Revenue services (SARS), Department of Trade and Industry for KwaZulu-Natal (DTI), eThekweni municipality and Durban City Engineers (DCE) were contacted with regard to a database.

The DCC could not provide information, because confidentiality clauses prohibited the DCC from distributing client contact information without their explicit consent. Information was available from SARS, but it was difficult to differentiate between small and large businesses based on employee size, as SARS categorisations were based on turnover. The DTI had a list of businesses in the eThekweni (Durban) area, but the list could not be categorised according to business size or suburb. The DTI referred the researcher to the Durban municipal office. The municipal office did not have any information and suggested that municipal ward councillors, for each ward in Chatsworth, be contacted directly. They also suggested that the DCE's office may be of assistance to the researcher.

The following must be noted about the DCE's database of SMEs since the information is not publicly accessible. Future researchers need to contact the Durban City Engineers'

office, supply chain department (located at 166 Old Fort Road, Durban) and request the assistance of the Supply Chain Management (SCM) Officer. The officer will then access the database and run the relevant searches. Civilians are not allowed access to the database.

The supply chain department at the DCE office had a record of approximately 34,000 businesses in the Durban region. These were registered, in terms of the Companies Act, as formal businesses. Of these, approximately 21, 000 are SMEs. The researcher asked the supply chain officer to run a search for SMEs in Chatsworth, based on street code 4092. The searches were conducted on 18 and 19 April 2010. The total number of SMEs in Chatsworth as recorded in the City Engineer's database was 317. From the 317 SMEs a search for businesses whose core activities are categorised in Table 2-3 was conducted. Only the number of SMEs was given and this was subject to counting errors by the SCM officer. Contact information and names of SMEs were withheld. The total number of SMEs counted was 112. Thus, it was concluded that the study population comprised of an estimated 112 SMEs in the business-services sector located in Chatsworth, where the business' physical address had the street code 4092.

3.4.2 THE SAMPLE

A sample is a subset of a population being investigated and there are two types of sampling designs: probability and non-probability sampling. In probability sampling the researcher can specify in advance that each segment of the population will be represented in the sample. This type of sampling is based on the concept of random selection. In non-probability sampling, the researcher has no way of guaranteeing that each element of the population will be represented in the sample. This type of sampling is arbitrary and subjective because it allows the researcher to sample elements wherever they find them (Blumberg *et al.*, 2005; Leedy & Ormond, 2005).

3.4.2.1 Sampling design

Non-probability sampling was applicable in this study because the researcher was not assured that that each segment of the population would be represented in the sample.

According to Blumberg *et al.* (2005) there are 2 types of non-probability sampling, namely convenience sampling and purposive sampling.

- i. **Convenience sampling:** Here the researcher has the freedom to choose whoever they can find to participate in their study. This is considered the least reliable sampling design because the conclusions drawn from the research may not be trustworthy; however, it is considered the cheapest to conduct.
- ii. **Purposive sampling:** This is where the respondents are chosen for a particular purpose (Leedy & Ormond, 2005). There are 2 types of purposive sampling designs, as defined by (Blumberg *et al.*, 2005), namely:
 - i. **Judgement sampling:** where the researcher selects respondents members who conform to some pre-determined criterion.
 - ii. **Quota sampling:** where sample members are selected in the same proportion that they are found in the general population.

In this research study, purposive, judgement (non-probability) sampling was conducted. According to Blumberg *et al.* (2005) this type of sampling occurs when a researcher selects sample members who conform to a certain criterion. The criterion applicable in this research study was that only owners or managers of SMEs, operating in the business-services sector, physically located in Chatsworth were chosen to participate in the study. Furthermore, only businesses with less than 50 employees were selected to participate in the study.

The reason for choosing owners and managers is because it is well-documented that the perceptions of the owner/manager are a key factor that influences Internet adoption among SMEs (Alam, 2009; Dholakia & Kshetri, 2004; Kula & Tatoglu, 2003; Stansfield & Grant, 2003; Sadowski *et al.*, 2002; Cragg *et al.*, 2001; Walczuch *et al.*, 2000; Cavaye & van Akkeren, 1999; Poon & Swatman, 1997; Iacovou, Benbasat & Dexter, 1995). Moreover, for practical reasons and in order to save time, the purposive (judgement) sample of business-services SME owners or managers, located in Chatsworth, and who were available between 07H00 and 18H00 on the days of data collection, were selected to participate in the study.

3.4.2.2 Sample size

Leedy and Ormond (2005, p.198) state as a basic rule that “the larger the sample, the better”, but large samples are not always practical. Therefore, sampling is done to increase the feasibility, cost-effectiveness and manageability of the research study (de Vos *et al.*, 2005). The sample size in this study was computed using the sample size table provided by the Graduate School of Business, University of KwaZulu Natal, in their MBA dissertation style guide 2010 (Research Advisors, n.d). The sample size was calculated to be **80** participants (from an estimated population of 112) with a confidence interval of 95% and a 5% margin of error.

3.4.3 ETHICAL CLEARANCE

Ethical approval was obtained from the University of KwaZulu-Natal Management Studies’ Research Committee (Appendix J). Permission to adapt and use the Stansfield and Grant (2003) questionnaire was obtained from the author and publisher (Appendix B).

When approached to participate in the survey, the respondents were given an informed consent document (Appendix C) informing them of the details of the study and their rights as participants. Once they agreed to participate, they were requested to sign the 2nd page of the document which was returned to the researcher. The participants kept the first page for their own reference. After they had signed the informed consent document, it was collected by the researcher and the participants were given the questionnaire (Appendix D). The participants were given an opportunity to peruse the questionnaire and clarify any queries they may have had. Thereafter the researcher left, and returned an hour later to collect the questionnaires. Questionnaires were not left with those business owners or managers who chose not to participate in the study. The informed consent documents were kept separate from the questionnaires.

Anonymity and confidentiality were ensured. The researcher left the questionnaire with the respondent to complete, and requested that the respondent place the completed questionnaire in an envelope, which was collected. There were no conceivable risks involved when participating in this study as the information obtained was only used for

this study and the participants remained anonymous because their responses were analysed as aggregated data.

3.4.4 DATA COLLECTION

3.4.4.1 The questionnaire

The basic objective of a questionnaire is to obtain facts and opinions about a subject from people on a particular issue (de Vos *et al.*, 2005). According to Blumberg *et al.* (2005) validated questionnaires are a rich source of ideas. A review of the literature revealed a research instrument that was used in a similar study conducted in Scotland (Stansfield & Grant, 2003).

i. Validity and reliability of the (Stansfield and Grant, 2003) questionnaire

“Validity refers to the extent which the questionnaire measures what it is actually intended to measure, and reliability refers to the extent the questionnaire yields consistent results when a characteristic being measured has not changed” (Leedy & Ormond, 2005, p.92). In the Stansfield and Grant (2003) questionnaire, the authors used a multi-method approach to ensure that the questionnaire was valid and reliable for their study. They achieved this by initially conducting interviews with 15 businesses. The owners were given an opportunity to express their opinions on the use of the Internet. Subsequently, a questionnaire was developed and piloted among a sample of 20 different businesses. The pilot questionnaire also underwent peer evaluation. The research instrument was revised, based on the results of the pilot and peer evaluation, before it was adopted as the final questionnaire design. Furthermore, internal consistency and reliability was ensured through using multiple questions to measure each aspect of a variable.

ii. The adapted questionnaire used in this research study (Appendix D)

In order to address the relevance of the Stansfield and Grant (2003) questionnaire in the local context, the English language therein was adapted to suit South African prose, and only questions pertinent to the objectives of this study were selected. The final research instrument (Appendix D) comprised of predominately close-ended questions, where the participant was asked to select an answer from a list provided by the

researcher. This was done because close-ended questions provide uniformity of responses and are easier to process (Mouton, 2003).

The responses to the variables (questions) in the research instrument (questionnaire) were assigned numbers, resulting in measurement scales which were categorical. The data was then captured and analysed. According to Babbie and Mouton (2009), the shortcoming of close-ended questions lies in the researcher's choice of responses. Response categories have to be exhaustive and mutually exclusive to avoid having the participant choose more than one response. This was addressed by adapting a pre-validated questionnaire and conducting a pilot study in the South African context. Furthermore, instructions on how to complete the questionnaire were provided.

The aim of the research instrument was to reveal the factors influencing Internet adoption and its usage in SMEs. The first part of the questionnaire consisted of 5 questions pertaining to the demographic representation of the SME in terms of its size, age, service offerings and types of ICTs currently being used. The second part comprised of 19 questions about the factors influencing the use of the Internet and was designed to measure the owner/manager's perceptions using a five-point Likert scale where 1 = strongly, 2 = disagree, 3 = no opinion, 4 = agree and 5 = strongly agree. The last part of the questionnaire was made up of 21 questions about applications of the Internet being used, within the SME. The respondents were asked to indicate their present practices and future plans regarding Internet usage. The measurement scale was 1 = yes, 2 = no and 3 = plan to.

3.4.4.2 Pilot study

Pilot studies (or pre-testing) are essential in order to reduce sources of error in the questionnaire. For example, the use of ambiguous terms, or asking questions of which the participants have no knowledge (Mouton, 2003). In addition to the pilot study conducted in the Stanfield and Grant (2003) paper, the questionnaire was piloted among 5 SMEs located in Durban's south basin (specifically the Jacobs area with street code 4031). The respondents were asked to provide feedback about the layout of the questionnaire, how long it took them to complete the questionnaire, and their understanding of the questions

and response categories. Their responses were reviewed and the questionnaire adjusted accordingly.

3.4.4.3 Method of delivery

Babbie and Mouton (2009), as well as Leedy and Ormond (2005) describe three methods in which self-administered questionnaires can be delivered to participants in a research study. They are categorised in Table 3-1.

Table 3–1 : Methods of delivery for self-administered questionnaires

Method of delivery	Explanation	Advantages	Disadvantages
Home delivery	The researcher delivers the questionnaire to the home of the participant, explains the study and ascertains whether the participant is capable of completing the questionnaire on his/her own. The researcher then returns to pick up the questionnaire.	Participants are more likely to respond. Researcher can check for completeness and discuss any problems or queries experienced by the participant.	Costs of travelling to the participant's home.
Mail distribution	The questionnaire, together with a letter of explanation and an addressed, stamped envelope is posted to the participant.	Minimal travel costs	Could be expensive because of the postage costs especially in large surveys. Poor response rates. Dependent on whether participants have access to a postal service.
Electronic surveys	The use of a computer to distribute the questionnaires, either by e-mail or by sending participants a link to a website that hosts the survey	Reduced costs. Efficient.	Access to e-mail and Internet may be restricted for the participants.

Adapted from (Mouton, 2003) and (Leedy & Ormond, 2005)

Mail distribution was considered inappropriate because of the time constraints on this study and the associated costs. Similarly, electronic surveys were considered inappropriate because it would have restricted the survey to participants with e-mail access. In order to examine the barriers to Internet adoption, it was necessary to include participants without

Internet and e-mail access (non-adopters). Therefore, based on Table 3-1, the home-delivery method was deemed to be the most appropriate way to deliver questionnaires to the participants for this research study. However, instead of going to the participant's home, the researcher went to the participant's place of business. This was done to ensure increased response rates and completeness of the questionnaire. The cost of travelling to the place of business was reduced, since the SMEs were located in an area that was easily accessible to the researcher. The location of the SMEs made it easier for the researcher to follow up with those who did not complete the questionnaire on at least two occasions, to ensure a reasonable response rate.

3.4.4.4 Sources of data

Structured self-administered questionnaires were printed and used to collect primary data from business owners or managers who managed SMEs in the business-services sector, located in Chatsworth. Leedy and Ormond (2005) maintain that data collected with questionnaires often reflect the reading and writing skills of the respondents, and that they (the respondents) sometimes tell the researcher what they think the researcher wants to hear. With regard to the former, efforts were made by the researcher to address any queries had by the respondents, before and after a respondent answered the questionnaire. Regarding the latter issue, the researcher left the respondent alone and in-private to fill out the questionnaire, so as to minimise any influence over the responses.

3.4.4.5 Inclusion and exclusion criteria

- i. **Inclusion criteria:** Owners or managers of business-services SMEs operating in Chatsworth, who were available at their place of business, between 07H00 and 17H00 on the days of data collection were eligible for inclusion in the study.
- ii. **Exclusion criteria:** All other categories of employees were excluded from the study and all other small and microenterprises whose core business activities were not listed in Table 2-3, were also excluded from the study.

3.4.5 DATA ANALYSIS

Upon collection by the researcher, the questionnaires were checked for completeness. The researcher inspected the questionnaire before leaving the business premises and, if questions were left blank, she went back to the SME owner to request a response. This was done to reduce the possibility of missing data during analysis.

Thereafter, the questionnaires were numbered, and the data was coded and entered into SPSS version 15.0 (SPSS, 2006a). The data was then cleaned by running case summaries for each variable to ensure that capturing errors were identified and corrected. There was one variable with a single missing response and this was excluded from the analysis. Table 3-2 categorises the constructs in the questionnaires that were analysed in order to address the research objectives.

Table 3–2: Constructs in the questionnaire

Construct	Question numbers
Objective1: Uses of the Internet	
▪ E-mail	43, 44, 45, 46
▪ E-commerce	26, 27, 29, 30, 31, 34, 37, 39, 40, 41
▪ Web-browsing	32, 35, 36, 38, 42
Objective 2: Inhibiting factors	7,8,9,10,12,18,19,20,21,22,23,24
Objective 3: Facilitating factors	6, 11,13,14,15,16,17,25

After the data had been cleaned, the nominal scales for questions relating to Objective 1: Uses of the Internet (numbers: 26-47) were recoded as ordinal scales. The second part of the questionnaire; relating to Objectives 1 and 2, was categorised into inhibiting (and enabling factors, and then re-coded to ensure unidirectionality of the responses. Finally, descriptive and inferential statistical tests were performed on the data.

3.4.5.1 Nature of the data

Data was collected for a single population and was coded using numeric variables which were predominantly represented by categorical (nominal and ordinal) scales. Table 3-3

provides a description of the types of measurement scales that were used, as related to the questions in the research instrument.

Table 3–3: Measurement scales used in the questionnaire

Type of Data	Characteristics	Questions
Nominal	Numbers were used to group responses but not in any particular order.	1,3,5,25-47
Ordinal	Numbers were used to group responses and the responses were ordered.	4-5,6-25
Numeric variables	Finite number of possible values.	2

Adapted from (Cooper & Schindler, 2006) p342

In the questionnaire (Appendix D), rating scales (also known as Likert scales) were used to group the ordinal data. According to Leedy and Ormond (2005), Likert scales are useful when assessing attitudes, opinion or perceptions along a continuum. In this study, that continuum ranged from strongly disagree to strongly agree, where 1 = strongly disagree, 2 = disagree, 3 = no opinion, 4 = agree, 5 = strongly agree.

3.4.5.2 Internal consistency and reliability

Reliability of the research instrument refers to the extent to which the measurement scales are free from random error and yield consistent results. If the association between different scales (data) is high, this implies that they are consistent at giving the same results at different times and, therefore, the measurement scales are considered reliable (Leedy & Ormond, 2005; Gliem & Gliem, 2003). In order to ensure unidirectionality of the measurement scales, responses to questions 6-47 were ranked and recoded. Thereafter Cronbach's Alpha (α) co-efficient was used to determine the internal reliability and consistency of the constructs in Table 3-2. A value greater than 0.7 was considered reliable, which according to Field (2009) is the norm.

3.4.5.3 Non-parametric tests

The choice of statistical tests depends on the research approach and the nature of the data. There are two types of statistics that apply when dealing with quantitative data, that is, parametric statistics and non-parametric statistics. According to Leedy and Ormond (2005) parametric statistics are based on 2 assumptions:

- a. The nature of the data reflects interval or ratio scales
- b. The data fall in a normal distribution

The data in this study were predominantly ordinal in nature and according to Leedy and Ormond (2005), non-parametric tests are more suited for ordinal data. However, Field (2009) cautions against simply conducting non-parametric tests on ordinal data and recommends that a Kolmogorov-Smirnov (K-S) test be conducted to determine whether data fall within a normal distribution. If the K-S test is significant ($p < 0.05$), then the distribution of the data is non-normal (Field, 2009) and the decision to use non-parametric tests can be confirmed.

Hence, a K-S test (Appendix H) was conducted to check whether the scores were normally distributed and the results were significant. This implied that the data did not follow a normal distribution. Therefore, a decision to conduct non-parametric tests was taken.

3.4.5.4 Descriptive statistics

Descriptive statistics describe a body of data by determining the points of central tendency and variability, and the extent to which variables are associated with one another (Leedy & Ormond, 2005).

- i. **Measures of central tendency:** Table 3-4 is a summary of the different measures of central tendency, how they are determined, and for what measurement scales they are appropriate.

Table 3–4: Measures of central tendency

Measure of central tendency	How it is determined	Measurement scales for which it is appropriate
Mode	The most frequently occurring response is identified	Nominal, ordinal, ratio and interval scales
Median	The responses are arranged in order from smallest to highest and the mid-point is identified	Ordinal, ratio and interval scales
Arithmetic mean	The responses are added together and are divided by the total number of responses	Interval and ratio scales
Geometric mean	All the responses are multiplied together and the nth root is computed	Ratio scales

Adapted from (Leedy and Ormond, 2005) page 260

Leedy and Ormond (2005) state that calculating the means and standard deviations for ordinal data are inappropriate. Therefore, since the data collected was predominantly ordinal a decision to test for the medians and modes of variables was taken. Furthermore, the sum of the responses was used to rank the data. The formula to determine the sum of responses was:

$$S = 1(a_1) + 2(a_2) + 3(a_3) \dots i(a_i) \text{ where;}$$

S = total sum, a = number of responses per scale and i = highest number assigned to the ordinal scale (SPSS, 2006b).

A detailed explanation of how the sum of responses was calculated and interpreted in this study is provided in Appendix I. Finally, tables and graphs were used to display the data.

- i. **Measures of Association (Correlation):** Correlation refers to the nature of the relationship (or association) between different variables. A correlation co-efficient is a number between -1 and +1 and reveals two things about the relationship between different variables, namely direction and strength, (Leedy & Ormond, 2005) where:
 - a. **Direction:** a positive number indicates that as one variable increases so does the other whereas a negative number indicates an inverse relationship between the variables.
 - b. **Strength:** The closer the co-efficient is to either -1 or +1, the stronger the relationship, or effect. According to (Field, 2009) values of ± 0.1 indicate a small effect (weak relationship), ± 0.3 indicate a medium effect (or medium strength relationship) and ± 0.5 indicates a large effect (or strong relationship).

While not exhaustive, Table 3-5 provides a list of the various non-parametric correlational tests available, and the scales for which they are appropriate.

Table 3–5: Correlational tests for non-parametric statistics

Non-parametric statistics	Measurement scales for which it is appropriate
Spearman correlation co-efficient	Ordinal scales
Contingency co-efficient	Nominal data
Kendall’s tau correlation	Ordinal data. Especially useful for small samples (n<30)

Adapted from (Leedy and Ormond, 2005) page 266

From Table 3-5 it was possible to determine that the appropriate correlational test was the Spearman correlation co-efficient. This test was conducted in order to determine the direction and strength of associations between variables measuring the factors (enablers and barriers) and Internet adoption.

3.4.5.5 Inferential statistics

Inferential statistics allow researchers to make inferences about large populations from small samples (Leedy & Ormond, 2005). The applicable inferential statistical procedures for non-parametric statistics are described in Table 3-6.

Table 3–6: Inferential statistical procedures for non-parametric statistics

Inferential statistical procedure	Purpose
Sign test	To compare correlated variables to determine if one variable is significantly larger than the next.
Mann-Whitney <i>U</i>	Compare 2 groups when the data is ordinal (similar to the t-test in parametric statistics).
Kruskal-Wallis test	Compare 3 or more groups when the data is ordinal (similar to the ANOVA in parametric statistics).
Wilcoxin matched pair signed rank test	Determines whether 2 samples with ordinal data differ from each other when a relationship exists between the 2 samples.
Chi-square (χ^2) goodness-of-fit test	Determines how closely observed frequencies or probabilities match expected frequencies or probabilities. This test can be computed for nominal, ordinal, interval or ratio data.
Odds ratio	Determines whether two dichotomous nominal variables are correlated.
Fisher’s exact test	Determines whether two dichotomous variables (nominal or ordinal) are correlated when the sample size is quite small.

Adapted from (Leedy and Ormond, 2005) page 274

While the Chi-square test is a popular inferential test, it was found to be inappropriate for the data in this study, because more than 20% of the data had expected frequencies of less than 5%. From Table 3-6 the Mann-Whitney U test was deemed the most appropriate inferential procedure to be used on the available data. The test compared the mean ranks of those who used the Internet (adopters) and those did not use the Internet (non-adopters), in order to determine if there was a statistical difference between the two groups (that is, between adopter and non-adopters) with regard to enabling factors, barriers to Internet adoption and their organisational characteristics such as business size and age.

3.5 SUMMARY OF CHAPTER THREE

In summary, the logical progression of the research design and methodology, for this study was as follows:

1. The research design applicable to this study was an empirical study, which collected primary data by means of self-administered questionnaires, within a quantitative, descriptive survey-design framework.
2. The population size and sampling frames were used to determine the optimal sample size. The sample size was calculated to be 80 SMEs with a confidence interval of 95% and a 5% margin of error.
3. A pre-validated survey questionnaire was adapted and tested in a pilot study of 5 SMEs. The questionnaire was then revised.
4. Data was collected by the researcher visiting the SMEs business premises and asking the business owners/managers to participate in the study. Eighty businesses were approached and 61 agreed to participate. The response rate was 76.25%.
5. The data, consisting of responses to 47 questions was captured, cleaned and coded using SPSS 15.0. The nominal scales for questions 5, 26-47 were recoded as ordinal scales. The second part of the questionnaire (questions 6-25) was re-categorised into enabling and inhibiting factors and re-coded to ensure unidirectionality of the responses.
6. Descriptive data analysis consisted of determining frequencies, medians and modes. The sum of responses was used to rank the data. Spearman's correlation co-efficient, together with the 95% Confidence Interval (CI) ($p < 0.05$) values were

selected as the appropriate measures of association to identify statistically significant inhibiting and facilitating factors and SMEs use of the Internet.

7. Finally, Mann-Whitney U tests were conducted to investigate whether there were any statistical differences between those who adopted the Internet (adopters) and those who did not (non-adopters).

The results of the analysis are presented in Chapter 4.

4 CHAPTER FOUR: RESULTS

4.1 INTRODUCTION

The data collected was coded and analysed using the statistical software package SPSS (SPSS, 2006a). The first part of the analysis focussed on the frequency analysis, measures of central tendency, variations and correlations of the profile of the respondents. This was followed by using cross tabulations to explore patterns within the data which might facilitate or inhibit Internet adoption and patterns of Internet usage among SMEs. Finally, significant associations between the factors were determined.

4.2 RESPONSE RATE

The sample size was determined to be 80 SMEs from a population of 112. This sample size was used to allow for a confidence interval of 0.05 and a confidence level of 95%. Consequently 80 questionnaires were distributed to SMEs in the business-services sector in Chatsworth.

In the first round of data collection, 48 SMEs consented to participate in the study, with 15 refusals and 49 SMEs asked that the researcher return at a later date. The main reason for refusal was that the owner/managers were too busy to answer the questionnaire.

For the second round of data collection only those SMEs (49) who had requested the researcher to return at a later date were approached. From this group of 49 participants, 13 agreed to participate in the study and 36 refused. Again, the primary reason for refusal was that the owners/managers were too busy to answer the questionnaire. In total, 61 of the 80 SMEs agreed to participate in the study; thus the response rate was 76.25%.

4.3 CONSISTENCY AND RELIABILITY: CRONBACH'S ALPHA

Cronbach's alpha coefficient ranges between 0 and 1. The closer Cronbach's alpha coefficient is to 1.0 the greater the internal consistency and reliability of the items in the

measurement scales of the research instrument (Gliem & Gliem, 2003). Table 4-1, shows the five constructs which were identified in Chapter 3, and their corresponding Cronbach's alpha.

Table 4–1: Cronbach's Alpha (α) co-efficient

Construct	Cronbach's α	Question numbers
Objective1: Uses of the Internet		
▪ E-mail	0.740	43, 44, 45, 46
▪ E-commerce	0.800	26, 27, 29, 30, 31, 34, 37, 39, 40, 41
▪ Web-browsing	0.725	32, 35, 36, 38, 42
Objective 2: Inhibiting factors	0.701	7,8,9,10,12,18,19,20,21,22,23,24
Objective 3: Facilitating factors	0.721	6, 11,13,14,15,16,17,25

As discussed in Chapter 3, a Cronbach's alpha greater than 0.7 was considered reliable (Field, 2009). Hence from Table 4-1, it can be see that the constructs used in this study were found to have adequate internal reliability, since the constructs of Internet usage (specifically: e-mail, e-commerce and web-browsing), inhibiting and facilitating factors had Cronbach's alpha values greater than 0.7.

4.4 DESCRIPTIVE STATISTICS

4.4.1 OVERALL SAMPLE CHARACTERISTICS

The work in this study was based on a quantitative, survey design using self-administered questionnaires. The views of SME owners and managers were sought and primary data was obtained. Table 4-2 summarises the demographic characteristics of the sample in this study.

Table 4–2: Demographic representation of the SMEs

Characteristic	No.	%	Characteristic	No.	%
Size of the business			Age of the business		
Micro	38	62.3	Less than 1 year	2	3.3
Small	23	37.7	1 – 3 years	13	21.3
			Greater than 3 years	46	75.4
Breakdown of activities in the business-services sector			Information technologies being used in the business (yes responses)		
Legal	15	24.6	Computers	57	93.4
Information and communication technology	10	16.4	Telephone or Fax (TeleFax)	54	88.5
Accounting, auditing and tax	7	11.5	E-mail	53	86.9
Business management	7	11.5	Cell-phones	50	82.0
Building, cleaning and fumigation	6	9.8	Internet	48	78.7
Equipment rental	5	8.2	Websites	13	21.3
Photography and sign-writing	4	6.6	Intranet	5	8.2
Architecture and engineering	2	3.3	Other: (<i>Radios and wireless local area network (LAN)</i>)	2	3.3
Debt collection and credit rating	2	3.3			
Packaging	2	3.3			
Advertising	1	1.6			

Micro businesses (employing up to 5 staff) made up 62% of the sample whilst 38% of the respondents were classified as small enterprises (employing between 5 and, up to 50 staff). Three-quarters (75%) of the SMEs sampled had been operating for more than 3 years.

As described in Chapter 2, the activities in the business-services sectors were defined by the standard industry classification (SIC) system and respondents were asked to identify the activity that best described their core business. According to this classification, legal services (25%) were the predominant activity within the business-services sector, followed by ICT services (16%). In terms of the Internet technologies being used for business purposes, 79% of SMEs used the Internet, 87% reported using e-mail, and 21% had a website.

4.4.2 OBJECTIVE 1: INTERNET USAGE

The third part of the questionnaire, examined Internet usage among SMEs and Table 4-3 shows the results. A three-point scale was used where: 1 = no, 2 = plans to, 3 = yes. The variables were coded as ordinal scales (in ascending order) which reflected an increasing likelihood of Internet adoption. Various uses of the Internet (Table 4-3) that were identified in the literature review were tested in this study. The shaded area in the table highlights those variables which are applicable in the current research context [i.e. the respondents said that they were using the Internet for these purposes (median=3, S>122)]. The un-shaded area shows those factors which were tested but found to be not applicable (median=1, S<122).

Table 4–3: Current and planned uses of the Internet

Variable	No (%)	Plans to (%)	Yes (%)	Median	Mode	Sum (S)
Uses Internet to find suppliers	4.92	8.20	86.89	3	3	172
Uses Internet to find out about competitors	8.20	3.28	88.52	3	3	171
Uses Internet to do industry/market research	8.20	6.56	85.25	3	3	169
Does Internet banking	16.39	1.64	81.97	3	3	162
Uses Internet to attract new customers	14.75	16.39	68.85	3	3	155
Uses Internet because its expected in the industry	27.87	6.56	65.57	3	3	145
Uses Internet to build business connections	24.59	21.31	54.10	3	3	140
Uses Internet to receive payments for services rendered	34.43	11.48	54.10	3	3	134
Allows staff to use the Internet to search for information	49.18	3.28	47.54	2	1	121
Provides info about its services over the Internet	42.62	19.67	37.70	2	1	119
Uses Internet to order non-inventory items	59.02	4.92	36.07	1	1	108
Use the Internet to streamline its internal operations	57.38	26.23	16.39	1	1	97
Uses Internet to recruit new staff	70.49	4.92	24.59	1	1	94
Purchases goods/services over the Internet	73.77	1.64	24.59	1	1	92
Sells goods/services over the Internet	78.69	8.20	13.11	1	1	82

Notes: n=61. The mode is the most frequently occurring response, the median is the mid-point after the responses have been arranged from smallest to highest and the sum refers to the total sum of responses of the ordinal scale where (1=No, 2=Plan to, 3=Yes).

S<122 indicates “non-use”, S=122 indicates “plans to use” and S>122 indicates “current use”.

In terms of frequency, most of the SMEs currently browse the Internet to search for information about competitors (89%, median=3, S=171), to find suppliers (87%, median=3, S=172), to conduct market research (85%, median=3, S=169), and to do Internet banking (82%, median=3, S=162). However, in terms of ordered ranking, the sum total of responses (S) indicated that the primary reason SMEs use the Internet is to search for suppliers. This increase can be explained by the number of SMEs (8%) who although not currently using the Internet for this purpose, are planning to do so in the future. Therefore it can be surmised that in the near future, *ceteris paribus*, searching for suppliers will be the most important reason why SMEs use the Internet. However a limitation is that the researcher was not able to ascertain what information SMEs were seeking when searching for suppliers.

While the frequency of responses show that few SMEs were using the Internet for their own organisation's benefit such as recruiting new staff (25%, median=1, S=94) and streamlining internal operations (16%, median=1, S=97); the median response indicated these areas were largely unexploited by SMEs.

4.4.2.1 Internet used for e-commerce activities

In order for SMEs to increase their market reach, they need to sell and market themselves over the Internet; they need to have a website or at the very least they need to be listed in on-line directories. Figure 4.1 shows the number of SMEs that are listed in on-line directories and, if they are not, whether they intend to get listed in on-line directories.

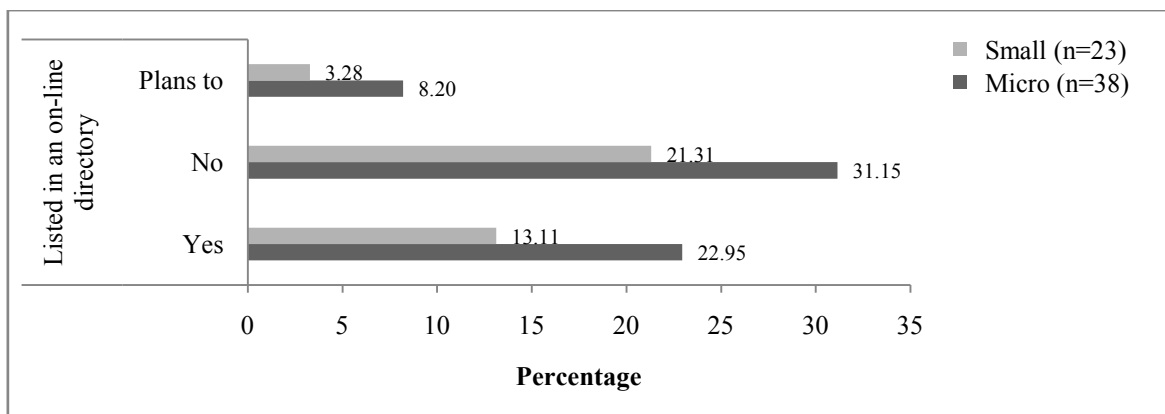


Figure 4-1: Frequency of SMEs listed in on-line directories

More than half (53%) of SMEs were not listed in an online directory (and did not plan to enlist on on-line directory service in the near future), but 36% of SMEs were currently listed in an on-line directory with approximately 12% planning to do so in the future.

Websites are an important tool for e-commerce and Figure 4-2 shows the number of SMEs that currently have a website, and, if they don't, whether they plan to get one in the future.

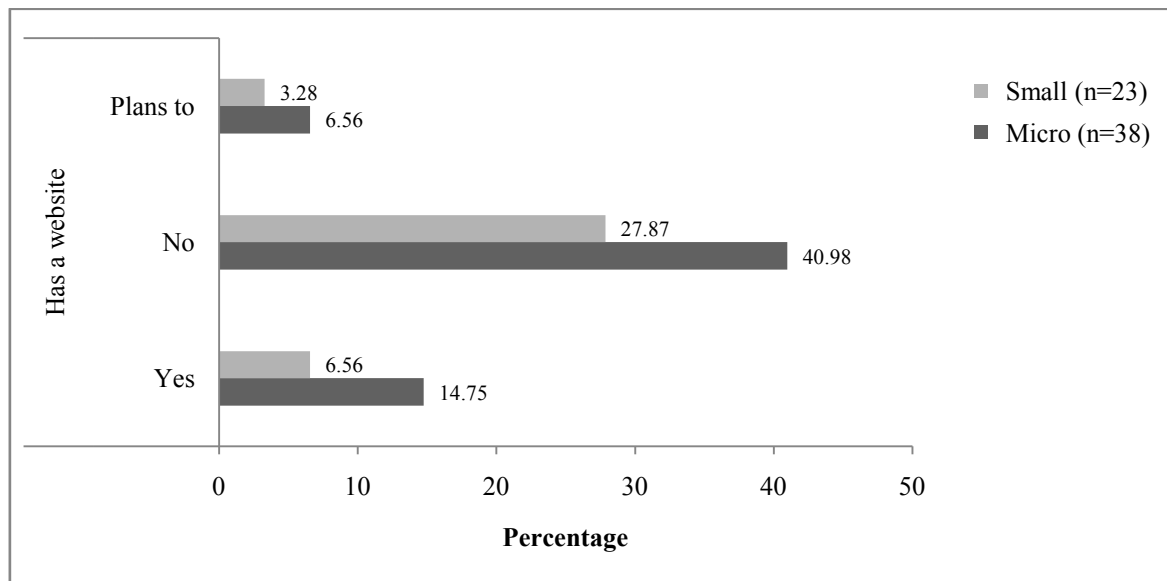


Figure 4-2: Frequency of website ownership

From Figure 4-2, it can be seen that 21% of the respondents currently have websites, while 10% said that they planned to get a website in the future. However, the majority of respondents (69%) indicated that they neither have a website, nor are they planning to create websites in the future.

As seen in Table 4-3, 36% of SMEs use the Internet to order non-inventory items. Furthermore while 25% of SMEs purchase good or services over the Internet, very few (13%) sell their goods/services via the Internet. In terms of advertising, while 69% of the respondents reported that they use the Internet to attract customers, only 38% provided information about their services over the Internet. Figure 4-3 summarises the e-commerce activities in which the respondents engaged.

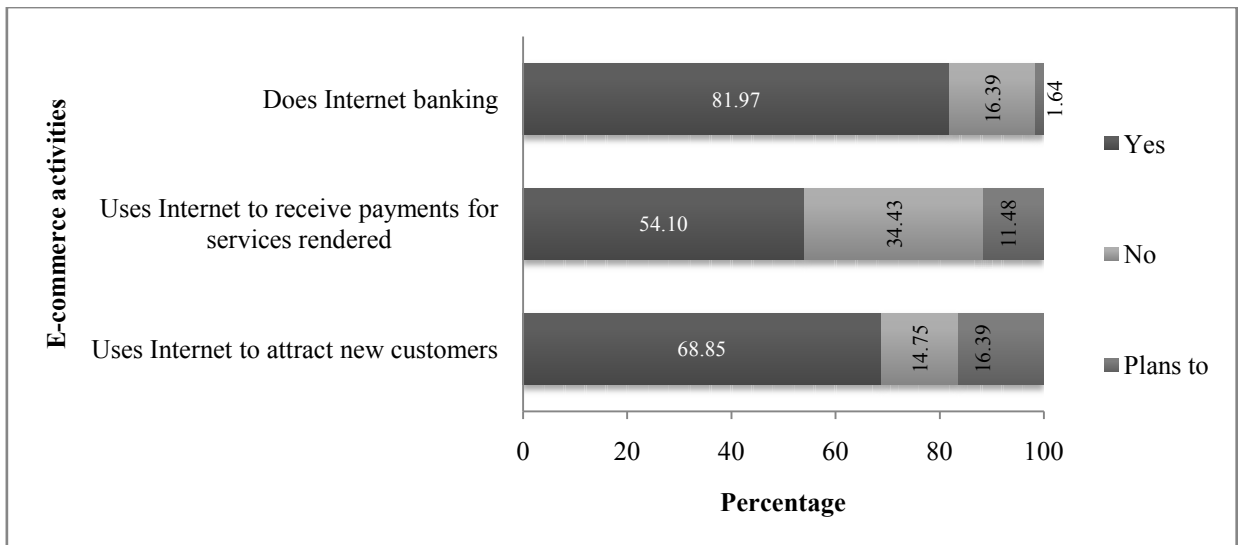


Figure 4-3: Frequency of e-commerce activities

In this study, 82% of SMEs did their banking on-line, 54% used the Internet to receive payments, and 69% reported using the Internet to attract customers.

4.4.2.2 Internet used as a communication medium

In relation to e-mail, the respondents were asked if they utilise e-mail applications in their businesses; 87% (53) of SMEs responded in the affirmative. The construct of e-mail as a communication medium looked at the purpose for which e-mail is being used and the results are presented in Figure 4.4.

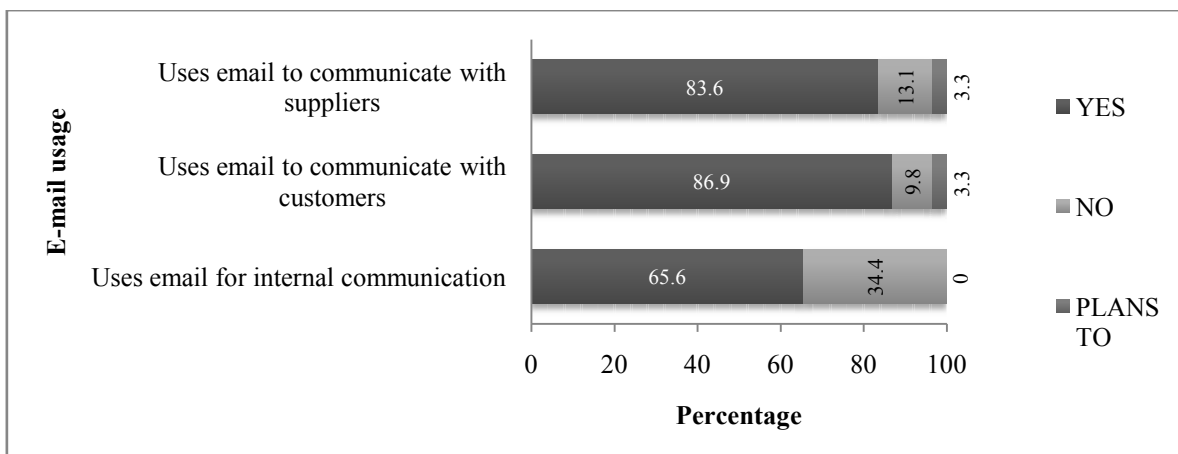


Figure 4-4: Purpose for which e-mail is used

In order of decreasing frequency, SMEs used e-mail predominantly to communicate; with customers (84%), then suppliers (80%) and, to a lesser extent, for internal communication (64%).

4.4.2.3 Internet used as a tool to search for information

The web-browsing construct looked at how the SMEs were using the Internet to search for information. The results are presented in Figure 4-5.

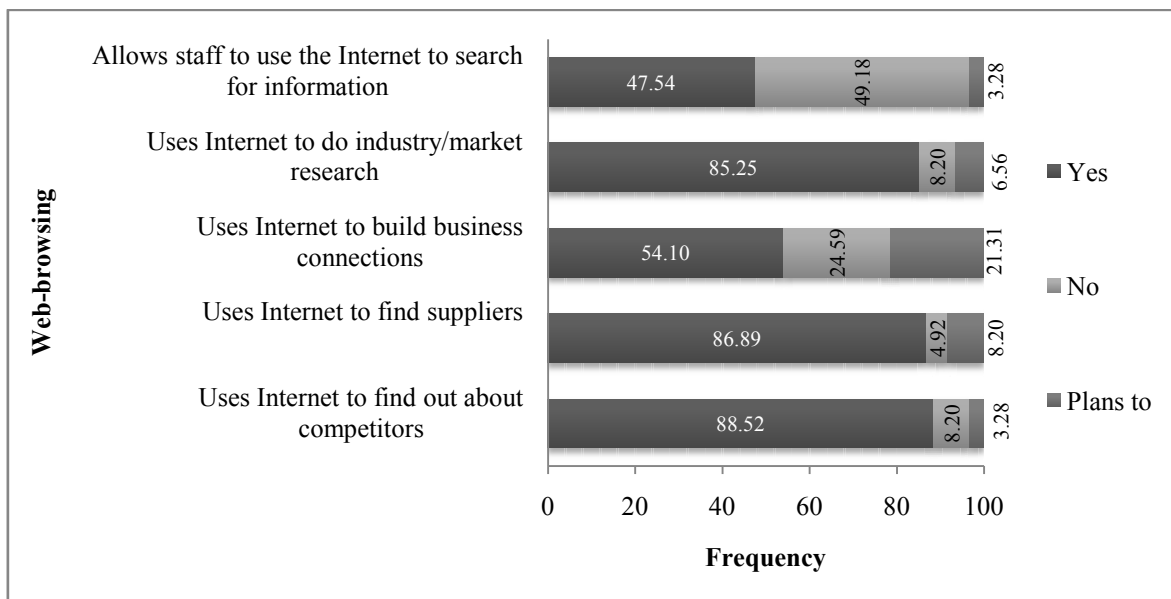


Figure 4-5: Information being searched for, by SMEs

Most SMEs browsed the Internet to search for information about competitors (89%), to find suppliers (87%), and to do industry or market research. To a lesser extent, SMEs reported that they used the Internet to build business connections (54%). Less than half of the SMEs reported allowing their staff to search for information on the Internet (48%).

4.4.3 OBJECTIVE 2: FACTORS INHIBITING INTERNET ADOPTION

In the second part of the questionnaire, respondents were asked to rate their agreement with statements regarding inhibiting factors sourced from the literature. In the questionnaire, a five-point Likert scale was used where: 1 = strongly disagree, 2 = disagree, 3 = no opinion, 4 = agree, 5 = strongly agree.

In order to maintain unidirectionality of the variables for analysis, the variables reflecting the inhibiting factors were reverse recoded in SPSS to 1 = strongly agree, 2 = agree, 3 = no opinion, 4 = disagree, 5 = strongly disagree, and the variables were set as ordinal scales. The sum of the responses was then used to rank the inhibiting factors in increasing order of importance.

Various barriers to Internet adoption, as identified in the literature review were tested in this study (Table 4-4). The shaded area in the table highlights those variables which are applicable in the current research context (i.e. the respondents agreed that these were inhibiting factors (median=2, $S < 183$). The un-shaded area shows those factors which were tested but found to be not applicable (median=4, $S > 183$). Table 4-4 presents the participants' responses regarding factors inhibiting Internet adoption.

Table 4–4: Descriptive statistics of factors inhibiting Internet adoption

Variable	Strongly agree (%)	Agree (%)	No opinion (%)	Disagree (%)	Strongly disagree (%)	<u>CENTRAL TENDENCY</u>		
						Median	Mode	Sum (S)
Cost of electricity is too high	44.26	50.82	3.28	0.00	1.64	2	2	100
There is a lack of support from the government for businesses to use the Internet	16.39	75.41	4.92	1.64	1.64	2	2	120
IT consultant services are too expensive	13.11	49.18	1.64	34.43	1.64	2	2	160
The Internet is too expensive	13.11	49.18	1.64	32.79	3.28	2	2	161
The Internet poses a security threat to businesses	4.92	50.82	8.20	32.79	3.28	2	2	170
There is a lack of information on how to use the Internet for business purposes	6.56	44.26	3.28	42.62	3.28	2	2	178
Cost of equipment required to use the Internet is too high	1.64	52.46	1.64	40.98	3.28	2	2	178
My staff will waste time using the Internet	8.20	34.43	3.28	54.10	0.00	4	4	185
The Internet is too slow	3.28	24.59	9.84	55.74	6.56	4	4	206
IT consultants are hard to find	3.28	18.03	1.64	68.85	8.20	4	4	220
The Internet is too complex	0.00	16.39	4.92	73.77	4.92	4	4	224
The Internet has no relevance to this business	0.00	9.84	6.56	63.93	19.67	4	4	240
I do not understand how the Internet works	0.00	4.92	1.64	77.05	16.39	4	4	247

Notes: n=61. The mode is the most frequently occurring response and the median is the mid-point after the responses have been arranged from smallest to highest. The sum refers to the total sum of responses of the ordinal scale where (1=strongly agree, 2=agree, 3=no opinion, 4=disagree, 5=strongly disagree). S<183 indicates agreement, S=183 indicates no opinion and S>183 indicates disagreement

In terms of costs associated with using the Internet, 95% of respondents felt the cost of electricity was too high (median=2, S=100); and 62% felt the Internet was too expensive (median=2, S=161). However, while 54% felt that the cost of equipment required to go on-line was too expensive (median=2, S=178), this factor was ranked the lowest in the group of inhibiting factors.

With regard to third party consultants, while 62% of respondents felt that IT consultant services were too expensive (median=2, S=161), 77% felt that IT consultants were not difficult to find (median=2, S=220).

Other inhibiting factors included lack of government support for SMEs to use the Internet (92%, median=2, S=120), the Internet posing a security threat to businesses (56%, median=2, S=170) and lack of information on how to use the Internet for business purposes (51%, median=2, S=178).

Respondents did not concur (i.e. they disagreed or strongly disagreed) with other inhibiting factors such as: lack of understanding of the Internet (93%, median=4, S=247), irrelevance of the Internet (84%, median=4, S=240), high complexity of the Internet (78%, median=4, S=224), and low Internet speed (62%, median=4, S=206). This suggests that these factors are not prohibitive when it comes to Internet adoption among SMEs in the business-services sector. Figure 4-6 is a summary of the inhibiting factors as chosen by the respondents (strongly agree & agree).

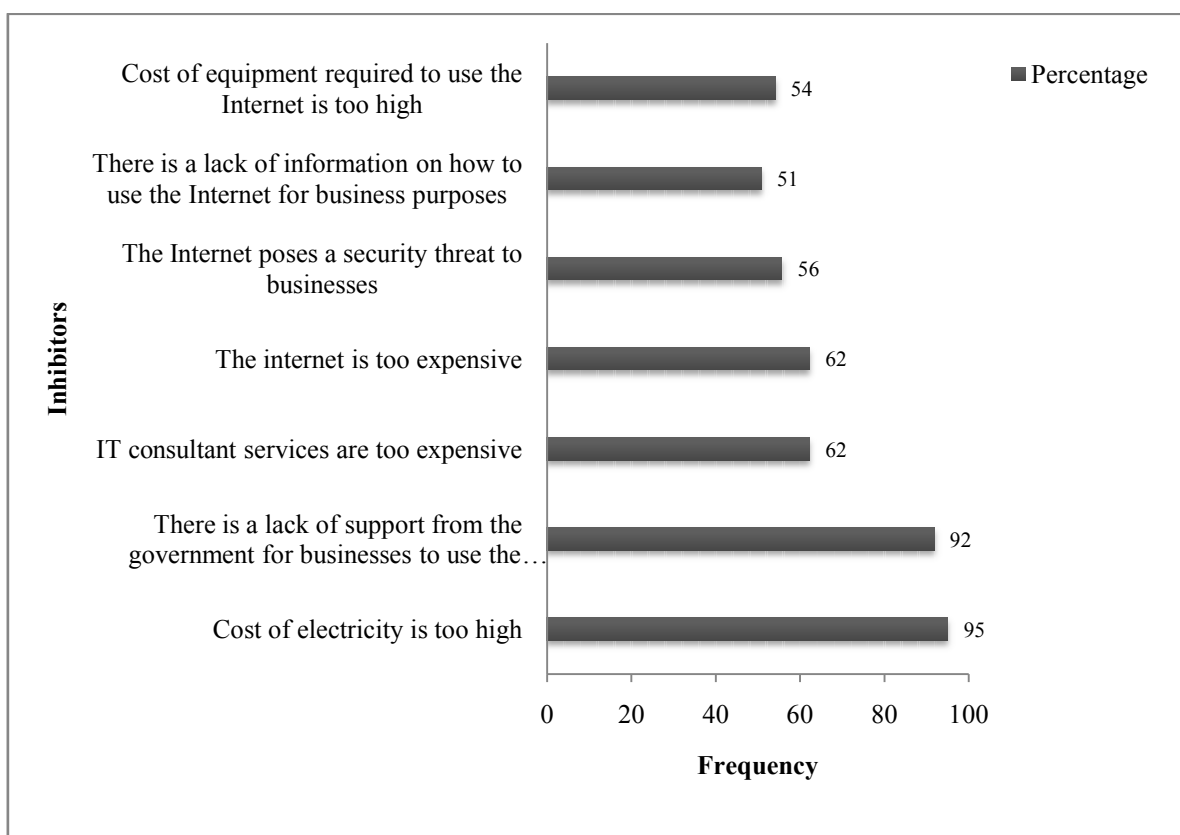


Figure 4-6: Inhibiting factors identified by the respondents

Non-adopters reasons for not using the Internet for business purposes

In order to further explain the inhibiting factors, only those SMEs who did not adopt the Internet (whom I shall refer to as non-adopters) were selected for further analysis. From Table 4-2, it can be seen that 21% (13 SMEs) were identified as non-adopters and a frequency analysis on the inhibiting factors identified in Table 4-4 was conducted on this group.

The shaded area in Table 4-5 shows the barriers to Internet adoption, from the point of view of the non-adopters. The un-shaded area illustrates that these factors were not prevalent among non-adopters (median ≥ 3 , $S > 39$).

Table 4–5: Non-adopters’ reasons for not using the Internet

Inhibiting factors	Strongly agree (%)	Agree (%)	No opinion (%)	Disagree (%)	Strongly disagree (%)	Median	Mode	Sum (S)
Cost of electricity is too high	30.77	53.85	7.69	0.00	7.69	2	2	26
The Internet is too expensive	15.38	46.15	0.00	38.46	0.00	2	2	34
IT consultant services are too expensive	0.00	61.54	7.69	30.77	0.00	2	2	35
Cost of equipment required to use the Internet is too high	7.69	46.15	7.69	38.46	0.00	2	2	36
There is a lack of information on how to use the Internet for business purposes	0.00	46.15	15.38	38.46	0.00	3	2	38
The Internet poses a security threat to businesses	7.69	38.46	7.69	38.46	7.69	3	2	39
There is a lack of support from the government for businesses to use the Internet	0.00	7.69	92.31	0.00	0.00	4	3	51

Notes: n=13. The mode is the most frequently occurring response and the median is the mid-point after the responses have been arranged from smallest to highest. The sum refers to the total sum of responses of the ordinal scale where (1=strongly agree, 2=agree, 3=no opinion, 4=disagree, 5=strongly disagree). $S < 39$ indicates agreement, $S = 39$ indicates no opinion and $S > 39$ indicates disagreement

It is interesting to note that the non-adopters did not feel that there was a lack of support from government in terms of Internet use (median=4, $S=51$). Furthermore, the non-adopters expressed no opinion, when questioned about lack of information on how to use the Internet for business purposes (median=3, $S=38$) and about the Internet being a

security threat (median=3, S=39). The four highest ranked inhibiting factors from the point of view of the non-adopters were all related to cost. They expressed no opinion (median=3, S<39) and even disagreed (median=4, S<39) with the other factors as inhibiting factors.

4.4.4 OBJECTIVE 3: FACTORS FACILITATING INTERNET ADOPTION

Here, the respondents were asked to rate their agreement with statements regarding facilitating factors sourced from the literature. In the questionnaire, a five-point Likert scale was used where: 1 = strongly disagree, 2 = disagree, 3 = no opinion, 4 = agree, 5 = strongly agree and the variables were set as ordinal scales.

Factors facilitating Internet adoption, as identified in the literature review were tested in this study and Table 4-6 shows those factors/variables which are applicable in the current research context (i.e. the respondents agreed that these were facilitating factors (median=4, S>183). Notably, all of the factors tested were applicable. The sum of the responses was then used to rank the facilitating factors in decreasing order of importance and Table 4-6 shows the ordered ranking of those factors that were considered as enablers.

Table 4–6: Descriptive statistics of factors enabling Internet adoption

Variable	Strongly disagree (%)	Disagree (%)	No opinion (%)	Agree (%)	Strongly agree (%)	Median	Mode	Sum (S)
The government should give businesses more incentives to get on the Internet	3.28	0.00	0.00	68.85	27.87	4	4	255
The Internet can give my business a competitive edge in this industry	0.00	3.28	1.64	73.77	21.31	4	4	252
The Internet is a valuable business tool	1.64	1.64	0.00	80.33	16.39	4	4	249
My competitors are on-line	0.00	9.84	14.75	70.49	4.92	4	4	226
My suppliers expect us to be on-line	3.28	16.39	4.92	72.13	3.28	4	4	217
My customers expect us to be on-line	4.92	22.95	6.56	59.02	6.56	4	4	207
My staff have the skills to use the Internet	8.20	31.15	3.28	50.82	6.56	4	4	193

Notes: n=61. The mode is the most frequently occurring response and the median is the mid-point after the responses have been arranged from smallest to highest. The sum refers to the total sum of responses of the ordinal scale where (1=strongly disagree, 2=disagree, 3=no opinion, 4=agree, 5=strongly agree). S<183 indicates disagreement, S=183 indicates no opinion and S>183 indicates agreement

Government incentives (96%, median=4, S=255) was ranked the most important enabling factor followed by an increase in competitiveness (95%, median=4, S=252) that comes from using the Internet. The perception that the Internet is a valuable business tool (87%, median=4, S=249) was ranked third. Pressure from competitors (75%, median=4, S=226), suppliers (75%, median=4, S=217) and customers (66%, median=4, S=207), to be on-line were also considered as enabling factors. Staff skills (57%, median=4, S=193) in terms of using the Internet was ranked the lowest as an enabling factor.

4.5 NON-PARAMETRIC TESTS

The Kilmogorov-Smirnov test (KS test) was used to determine if the data were normally distributed. This test compares the scores in a sample to a normally distributed set of scores with the same means and standard deviations. If the test is significant ($p < 0.05$) then the distribution of the variables being investigated is different from a normal distribution (Field, 2009). The test was run for question numbers 6-25 and all were found to have a non-normal distribution. Therefore, non-parametric tests such as the Spearman's correlation co-efficient and Mann-Whitney U tests were chosen to analyse the data.

4.5.1 CORRELATION TESTS: SPEARMAN'S CORRELATION CO-EFFICIENT

Spearman's correlation co-efficient (also known as Spearman's rho - r_s) was used to determine correlations between Internet adoption inhibitors as a group and, correlations between facilitators and how these variables were associated with using the Internet for business purposes. When using categorical variables that are directional (ordinal) it is more appropriate to report the results of the one-tailed tests instead of the two-tailed tests (Field, 2009).

4.5.1.1 Factors inhibiting Internet adoption

Appendix E is a correlation matrix showing the correlations between the factors inhibiting Internet adoption. Below is a summary of the significant results (with a positive and medium correlation) applicable to this study.

- i. The Internet being too expensive was significantly correlated with the cost of equipment required to use the Internet, $r_s=.306$, $p(\text{one-tailed})<0.01$ and lack of information on how to use the Internet for business purposes, $r_s=.328$, $p(\text{one-tailed})<0.01$.
- ii. Internet complexity was significantly correlated with a lack of understanding about how the Internet works, $r_s=.339$, $p(\text{one-tailed})<0.01$ and lack of information on how to use the Internet for business purposes, $r_s=.295$, $p(\text{one-tailed})<0.05$.
- iii. The Internet posing a security threat to businesses was significantly correlated with a lack of understanding about how the Internet works, $r_s=.272$, $p(\text{one-tailed})<0.05$.
- iv. Lack of government support was significantly correlated with lack of information on how to use the Internet for business purposes, $r_s=.290$, $p(\text{one-tailed})<0.05$.
- v. Internet adoption was significantly related to the complexity of the Internet $r_s=.258$, $p(\text{one-tailed})<0.05$

4.5.1.2 Factors facilitating Internet adoption

Appendix F shows the correlations between the factors facilitating Internet adoption and below is a summary of the significant results (with a positive and medium correlation) applicable to this study.

- i. The relevance of the Internet was significantly correlated with customer expectation ($r_s=.401$, $p(\text{one-tailed})<0.05$), supplier expectation ($r_s=.228$, $p(\text{one-tailed})<0.05$) and pressure from competitors ($r_s=.331$, $p(\text{one-tailed})<0.01$) for the business to be on-line. It was also correlated with an increase in competitive edge in the industry ($r_s=.395$, $p(\text{one-tailed})<0.01$).
- ii. Customer expectation to be on-line was significantly correlated (positive but weak) to the government giving businesses more incentives to get on the Internet ($r_s=.226$, $p(\text{one-tailed})<0.05$).
- iii. The perception of the Internet as a valuable business tool was significantly correlated with the relevance of the Internet to the business ($r_s=.307$, $p(\text{one-tailed})<0.01$), competitive pressure ($r_s=.310$, $p(\text{one-tailed})<0.01$), government incentives to get on the Internet ($r_s=.540$, $p(\text{one-tailed})<0.01$) and increased competitive edge ($r_s=.395$, $p(\text{one-tailed})<0.01$).

4.5.2 INFERENCE STATISTICS: MANN-WHITNEY U TESTS

Significant associations between those SMEs using the Internet (adopters) and those not using the Internet (non-adopters) were determined by computing the results of the Mann Whitney U test. Hence the final stages of the data analysis looked at the:

- i. Differences between adopters (using the Internet) and non-adopters (not using the Internet) in terms of organisational characteristics such as business age and size.
- ii. Differences between adopters and non-adopters in terms of the factors that facilitate Internet adoption.
- iii. Differences between adopters and non-adopters in terms of the factors that inhibit Internet adoption.

4.5.2.1 Organisational characteristics

The Mann-Whitney test was conducted for all variables to see if there were significant differences between Internet adopters and non-adopters with regard to their organisational characteristics. Specifically, this test was used also to examine whether there were differences between SME, age and size, and their use of the Internet. The results are presented in Table (4-7).

Table 4–7: Internet adoption and organisational characteristics

				rec_UseInternet	N	Mean Rank	Sum of Ranks
rec_q2: Number of employees	No				13	31.23	406.00
	Yes				48	30.94	1485.00
	Total				61		
rec_q4: When did the business start?	No				13	31.46	409.00
	Yes				48	30.88	1482.00
	Total				61		

Test Statistics(a)

	rec_q2: Number of employees	rec_q4: When did the business start?
Mann-Whitney U	309.000	306.000
Wilcoxon W	1485.000	1482.000
Z	-.063	-.142
Asymp. Sig. (2-tailed)	.950	.887
Exact Sig. (2-tailed)	1.000	1.000
Exact Sig. (1-tailed)	.596	.600
Point Probability	.251	.282

a Grouping Variable: rec_UseInternet [where: 1=No (non-adopter), 2=Yes (adopter)]

There was no significant difference with regard to business age, or size and Internet adoption. This means that, in this study, small enterprises were no different from micro enterprises when it came to adopting the Internet. Also, the age of the business (less than 1 year, between 1-3 years and greater than 3 years) had no effect on whether the business was likely to adopt the Internet.

4.5.2.2 Factors facilitating Internet adoption

Table 4-8 determined whether there were significant difference between adopters and non-adopters regarding the factors that facilitate (or enable) Internet adoption.

Table 4–8: Comparison between adopters and non-adopters regarding the factors enabling Internet adoption

	rec_UseInternet	N	Mean Rank	Sum of Ranks
rec_q6: The Internet has no	No	13	26.31	342.00
relevance to this business	Yes	48	32.27	1549.00
	Total	61		
q11: My staff have the skills	No	13	25.35	329.50
to use the Internet	Yes	48	32.53	1561.50
	Total	61		
q13: My customers expect us	No	13	15.73	204.50
to be on-line	Yes	48	35.14	1686.50
	Total	61		
q14: My suppliers expect us	No	13	19.12	248.50
to be on-line	Yes	48	34.22	1642.50
	Total	61		
q15: My competitors are on-	No	13	21.00	273.00
line	Yes	48	33.71	1618.00
	Total	61		
q16: The Internet is a	No	13	29.54	384.00
valuable business tool	Yes	48	31.40	1507.00
	Total	61		
q17: The government should	No	13	28.62	372.00
give businesses more	Yes	48	31.65	1519.00
incentives to get on the	Total	61		
Internet				
q25: The Internet can give	No	13	30.46	396.00
my business a competitive	Yes	48	31.15	1495.00
edge in this industry	Total	61		

Test Statistics (a)

	rec_q6: The Internet has no relevance to this business	q11: My staff have the skills to use the Internet	q13: My customers expect us to be on-line	q14: My supplie rs expect us to be on-line	q15: My competit ors are on-line	q16: The Internet is a valuable business tool	q17: The governmen t should give businesses more incentives to get on the Internet	q25: The Internet can give my business a competitive edge in this industry
Mann-Whitney U	251.000	238.500	113.500	157.500	182.000	293.000	281.000	305.000
Wilcoxon W	342.000	329.500	204.500	248.500	273.000	384.000	372.000	396.000
Z	-1.257	-1.414	-3.954	-3.455	-2.849	-.484	-.676	-.161
Asymp. Sig. (2-tailed)	.209	.157	.000	.001	.004	.628	.499	.872
Exact Sig. (2-tailed)	.261	.157	.000	.001	.003	.658	.535	.869
Exact Sig. (1-tailed)	.121	.079	.000	.001	.003	.385	.326	.467
Point Probability	.006	.000	.000	.000	.000	.056	.092	.121

a Grouping Variable: rec_UseInternet[where: 1=No (non-adopter), 2=Yes (adopter)]

There were significant differences between customer expectation ($U=113.5$, $z=-3.954$, $p<0.01$), supplier pressure ($U=157.5$, $z=-3.455$, $p<0.01$) and competitor pressure ($U=182$, $z=-2.849$, $p<0.01$) between adopters and non-adopters of the Internet.

4.5.2.3 Factors inhibiting Internet adoption

Table 4-9 determined whether there were significant difference between adopters and non-adopters regarding the factors that inhibit Internet adoption.

Table 4–9: Comparison between adopters and non-adopters regarding the factors inhibiting Internet adoption

	rec_ UseInternet	N	Mean Rank	Sum of Ranks
rec_q7: The Internet is too expensive	No	13	30.58	397.50
	Yes	48	31.11	1493.50
	Total	61		
rec_q8: The Internet is too complex	No	13	24.27	315.50
	Yes	48	32.82	1575.50
	Total	61		
rec_q9: The Internet is too slow	No	13	30.31	394.00
	Yes	48	31.19	1497.00
	Total	61		
rec_q10: The Internet poses a security threat to businesses	No	13	34.00	442.00
	Yes	48	30.19	1449.00
	Total	61		
rec_q12: My staff will waste time using the Internet	No	13	28.27	367.50
	Yes	48	31.74	1523.50
	Total	61		
rec_q18: IT consultant services are too expensive	No	13	32.85	427.00
	Yes	48	30.50	1464.00
	Total	61		
rec_q19: IT consultants are hard to find	No	13	29.00	377.00
	Yes	48	31.54	1514.00
	Total	61		
rec_q20: Cost of electricity is too high	No	13	36.73	477.50
	Yes	48	29.45	1413.50
	Total	61		
rec_q21: Cost of equipment required to use the Internet is too high	No	13	28.85	375.00
	Yes	48	31.58	1516.00
	Total	61		
rec_q22: I do not understand how the Internet works	No	13	26.35	342.50
	Yes	48	32.26	1548.50
	Total	61		
rec_q23: There is a lack of support from the government for businesses to use the Internet	No	13	35.38	460.00
	Yes	48	29.81	1431.00
	Total	61		
rec_q24: There is a lack of information on how to use the Internet for business purposes	No	13	31.19	405.50
	Yes	48	30.95	1485.50
	Total	61		

Test Statistics (a)

	rec_q7: The Internet is too expensive	rec_q8: The Internet is too complex	rec_q9: The Internet is too slow	rec_q10: The Internet poses a security threat to businesses	rec_q12: My staff will waste time using the Internet	rec_q18: IT consultant services are too expensive	rec_q19: IT consultants are hard to find	rec_q20: Cost of electricity is too high	rec_q21: Cost of equipment required to use the Internet is too high	rec_q22: I do not understand how the Internet works	rec_q23: There is a lack of support from the government for businesses to use the Internet	rec_q24: There is a lack of information on how to use the Internet for business purposes
Mann-Whitney U	306.5	224.5	303	273	276.5	288	286	237.5	284	251.5	255	309.5
Wilcoxon W	397.5	315.5	394	1449	367.5	1464	377	1413.5	375	342.5	1431	1485.5
Z	-0.10545	-1.9994	-0.17602	-0.75255	-0.69879	-0.46168	-0.56054	-1.48354	-0.55588	-1.45239	-1.33342	-0.04816
Asymp. Sig. (2-tailed)	0.9160	0.0456	0.8603	0.4517	0.4847	0.6443	0.5751	0.1379	0.5783	0.1464	0.1824	0.9616
Exact Sig. (2-tailed)	0.9501	0.0518	0.8734	0.4614	0.5173	0.6322	0.6114	0.1708	0.6676	0.1770	0.1447	0.8934
Exact Sig. (1-tailed)	0.4772	0.0273	0.4207	0.2337	0.2379	0.3098	0.2987	0.0724	0.3411	0.1076	0.0840	0.4407
Point Probability	0.0393	0.0111	0.0110	0.0120	0.0202	0.0053	0.0026	0.0141	0.0924	0.0237	0.0178	0.0030
a	Grouping Variable: rec_UseInternet											

a Grouping Variable: rec_UseInternet [where: 1=No (non-adopter), 2=Yes (adopter)]

Table 4-9 shows that there were no significant difference between adopters and non-adopters with regard to factors inhibiting Internet adoption.

4.6 SUMMARY OF CHAPTER FOUR

This Chapter presented the results of the research study in terms of the factors that inhibit or facilitate Internet adoption. Furthermore it described how the Internet was being used among SMEs in the business-services sector. Chapter 5 discusses these results, in light of the literature reviewed.

5 CHAPTER FIVE: DISCUSSION

5.1 INTRODUCTION

The importance of SMEs in any economy was identified in the literature review. In order to acquire a competitive advantage, businesses need speedy access to information to make informed decisions. The Internet facilitates this access to information. Despite this, SMEs have low Internet adoption levels. Therefore, this research investigated the factors that influence Internet adoption among small and micro enterprises (SMEs) in the business-services sector. The following sections present a discussion of the results.

5.2 OVERVIEW OF THE DEMOGRAPHIC DATA

Table 4-2, shows that the majority of SMEs in this study were classified as micro (62%) and 75% of the SMEs have been operating for more than 3 years. The SMEs were sorted according to the Standard Industrial Classification system (CIPRO, 2008) and one-quarter of the SMEs reported legal services as their core activity.

5.3 TECHNOLOGY USAGE

SMEs were asked to indicate their current usage of technology for business purposes (Table 4-2). Overall, 79% of the respondents indicated that their organisation currently used the Internet, and e-mail usage was slightly higher at 87%. While most of the SMEs use computers (93%), website (21%) and Intranet (8%) usage were much lower. This is consistent with findings of the study conducted by Stansfield & Grant (2003) who also found that, while some technologies are being used extensively, other technologies like Intranets and having websites were limited among Scottish SMEs.

In terms of communication capabilities, SMEs were equipped with telefaxes (89%) and cell-phones (82%). The high percentage of cell-phone technology indicates that it plays a vital role in business communication. It also implies that mobile commerce (m-commerce)

is likely to be embraced in the future. Besides telefax and cell-phone services, SMEs were using e-mail (87%) to facilitate communications with business partners and employees.

5.4 OBJECTIVE 1: USES OF THE INTERNET

Overall, the data (Table 4-3) showed that SMEs currently use the Internet as an information search tool to find out about competitors, customers and suppliers, and to conduct market related research.

Table 4-6 showed that, despite the claim by SMEs that the Internet can give their business a competitive edge (95%), analysis of their usage patterns revealed that they most often used the Internet as a communication medium, rather than a business tool. There was a limited number of SMEs which used the Internet for e-commerce purposes. The following sections describe the prevalent uses of the Internet.

5.4.1 E-MAIL

In the current study e-mail was defined as using the Internet as a communication medium. Table 4-2 shows that most SMEs (87%) are using e-mail and Figure 4-4 illustrates that they are mainly using email to communicate with customers (84%), suppliers (80%) and for internal communication purposes (64%). Dholakia and Kshetri (2004) wrote that SMEs often use mailing lists to update customers on their latest offerings and receive e-mail alerts from suppliers about product offerings.

Through e-mail, businesses are able to timeously disseminate information to customers and suppliers (Tan and Teo, 1998) because it allows for global communication, and the ability to exchange multimedia documents, which is convenient and cost-effective (Poon & Strom, 1997). Interestingly, a study conducted in New Zealand showed that, while external communication with customers and suppliers was significantly associated with using the Internet for business purposes, internal communication between staff was not associated with Internet adoption (Al-Qirim, 2007). A limitation of the current study was

that the researcher did not enquire whether the respondents' sent/received e-mail alerts or used mailing lists.

5.4.2 E-COMMERCE

As seen in Chapter 2, e-commerce was defined as using the Internet to facilitate business transactions such as, buying/selling of goods and services, advertising/marketing those goods and services and, streamlining internal operations, all using the Internet. Dholakia and Kshetri (2004) found that prior technology use, in the form of website ownership, significantly contributes to the use of the Internet for e-commerce.

The current study found that SMEs in the business-services sector are not fully exploiting the Internet for e-commerce purposes. The results (Figures 4-1 & 4-2) show that the majority of SMEs (69%) in the business-services sector do not have websites, and more than half (53%) are not listed in on-line directories. Being listed in on-line directories is a precursor to establishing an on-line presence, because this allows Internet savvy customers to search for businesses. Having an informational website is the first step to informing and attracting future customers (Tan *et al.*, 2010), and falls into the early stages of integrating the Internet into routine business processes to enable e-commerce (Stansfield & Grant, 2003).

In terms of using the Internet for trading (e-commerce), 13% of SMEs indicated that they sold goods or services on-line and one-quarter of the respondents reported that they purchased goods and services on the Internet (Table 4-3). More than half (54%) of SMEs indicated that they use the Internet to receive payments for services rendered, and 82% reported that they make use of Internet banking (Figure 4-3).

In this study, while some e-commerce activity was taking place, it was essentially in the form of Internet banking. Buying and selling of services was less common. This is consistent with the findings of Cragg *et al.* (2001) who reported that despite e-commerce offering an extensive list of applications for business use, advanced applications, such as on-line trading, are rarely used by SMEs. Similarly Xu *et al.* (2004) found that SMEs in

developing countries were less likely to be using the Internet for buying and selling products and services to business partners.

5.4.3 WEB-BROWSING

In this study, web-browsing was defined as using the Internet to search for information. Table 4-3 shows that the Internet is predominantly used as a tool to search for information. In Figure 4-5 illustrates that the kinds of information SMEs are searching for include looking for suppliers (87%), finding out about competitors (89%), and doing industry or market research (85%). This study found that the primary reason SMEs use the Internet is to search for suppliers (Table 4-3, S=172).

Poon and Strom (1997) found that communications and information retrieval were primary reasons why SMEs were using the Internet. Not much had changed six years later when Stansfield and Grant (2003, p.23) reported that the “main use for the Internet related technology is for undertaking research activities, in particular, looking for new suppliers and customers and finding out about the activities of competitors”. These finding are also consistent with even more recent studies which show that the Internet is mostly used for web-browsing and that the use of the Internet by SMEs for other more advanced activities is limited (Tan *et al.*, 2010; Lee and McGuiggan, 2009; Mohamad and Ismail, 2009).

5.5 OBJECTIVE 2: FACTORS INHIBITING INTERNET ADOPTION

While most SMEs (84%) acknowledged that the Internet was becoming increasing relevant to their businesses, they felt that the main barriers to Internet adoption were concerns about the costs and complexity, issues around security, and lack of support when it comes to using the Internet (Table 4-4).

5.5.1 COST AND COMPLEXITY

Notable in the results (Table 4-4) is the number of SMEs that indicated that the costs of: electricity (95%), IT consultant services (63%), Internet access (63%) and equipment (54%), required to use the Internet were high.

There were significant associations between the cost of the Internet and the cost of equipment, where both variables were positively correlated. This implies that SMEs consider the high cost of the equipment required to use the Internet as the strongest reason why they consider using the Internet as expensive.

While 5% of SMEs indicated that they do not understand how the Internet works, there was a medium strength positive correlation between understanding the working of the Internet and the perception that the Internet is too complex. This means that the less the SME owner understood the Internet; the more likely they were to consider it a complex tool. Similarly, Internet complexity was also significantly associated with a lack of information on how to use the Internet for business purposes.

Table 4-5 shows that the factors that influenced SMEs who were not using the Internet (non-adopters) were all related to cost, namely the cost of the Internet, the costs of IT consultants and the high cost of electricity. These results were significantly higher for non-adopters than adopters of Internet technologies.

As seen in the literature, a characteristic of SMEs is their reluctance to invest in technology because of their limited financial resources and access to skilled labour. Also, although many SME owners expressed interest in the potential of the Internet, they seemed far more concerned about the additional expense of adopting the Internet. Here again, the findings are consistent with studies conducted by Walczuch *et al.* (2000) in the Netherlands and Tan *et al.* (2010) in Malaysia. In contrast, Lee and McGuiggan (2009) found that costs were not a significant barrier to Internet adoption among Australian SMEs. This could be because their study was conducted in a developed country.

5.5.2 INFORMATION SECURITY

There was a medium strength positive correlation and significant association between the perception that the Internet posed a security threat to businesses, and understanding of how the Internet works. The implication here is that the less the owner/manager understood the working of the Internet, the more likely they were to believe that it posed a security threat to their businesses. Although there were no other significant associations with the other constructs, information security was highlighted as a concern among 55% of the SMEs (both adopters and non-adopters), (Table 4-4).

These findings are consistent with a study conducted amongst Australian SMEs, where concerns for confidentiality and security of information were identified as a barrier to Internet adoption (Lee & McGuiggan, 2009).

5.5.3 LACK OF GOVERNMENT SUPPORT

The lack of support from government for SMEs to use the Internet was significantly associated with a lack of information on how to use the Internet for business purposes. This could mean that the SMEs see government agencies as important sources of information regarding business tools. Also, Lee and McGuiggan (2009) identified that SMEs were more likely to use the Internet to find out about government policy updates and that SMEs looked to the government as an important source of information. The findings of the current study were similar to those of Chau and Kuan (2001) who found that SMEs in Hong Kong did not adopt the Internet because of lack of knowledge and skills, insufficient internal IT expertise and a lack of legislated support.

5.6 OBJECTIVE 3: FACTORS FACILITATING INTERNET ADOPTION

For those SMEs (79%) using the Internet (the adopters), the motivating reasons were that their customers and suppliers expected them to be on-line and that their competitors were already on-line. They also indicated that government incentives to use the Internet were a facilitating factor, and that staff having skills to use the technology also facilitated its use

within their business. Respondents also indicated that the Internet gave their businesses a competitive edge (Table 4-6).

5.6.1 EXTERNAL PRESSURE

Internet adoption was positively correlated and significantly associated with customer and supplier expectation that the SME be on-line. It was also significantly associated with pressure from competitors to be on-line. This suggests that external pressure from customers; suppliers and competitors are facilitators of Internet adoption. Customer pressure is a key factor for SME decision makers because it reflects the potential market volume, and thereby establishes the extent to which adopting the Internet can be translated into profitability (Zhu *et al.*, 2002).

Zhu *et al.* (2002, p.340) defined competitive pressure as the degree of pressure from competitors, which is an external factor that pushes SMEs to adopt a new technology “in order to avoid competitive decline”. They found that competitive pressure was a significant adoption facilitator. In contrast, Poon and Strom (1997) found the benefit, of the Internet, considered least important by SMEs was benchmarking against competitors performance. Interestingly, in the current study the perception that the Internet was a valuable tool was positively correlated with competitive pressure. This suggests that SMEs perceive that, in order to maintain a competitive edge, they need to benchmark their adoption patterns to those of their competitors. Dholakia and Kshetri (2004) found that perceived competitive pressure, an external factor, significantly influenced website ownership and e-commerce adoption.

In terms of supplier pressure, Zhu *et al.* (2002) also found that a SME’s Internet adoption decision was influenced by the adoption status of its suppliers. They argued that for e-commerce to take place, it was necessary that all trading partners along the value chain, adopted compatible Internet-enabled services.

5.6.2 GOVERNMENT INCENTIVES

The perception that the Internet was a valuable tool was positively correlated with government incentives to use the Internet for business purposes. Hence the results show that the government plays an important role in terms of influencing opinions about the value of the Internet for business purposes, by providing SMEs with incentives to engage with the Internet.

Xu *et al.* (2004) conducted a cross-country comparison and found that government regulation played a critical role in Internet adoption by businesses in developing countries (such as China), whereas this regulation had a lesser impact on firms in industrialised countries (such as the USA). In the developing world, government incentives and frequency of interventions had a significant association to whether, and how, businesses used technology in their daily operations. They also found that there was a greater need for legal support and protection for on-line transactions in developing countries because of the “information asymmetry and immature institutional structures” (Xu *et al.*, 2004, p.14). Similarly, in South Africa, SMEs need supportive legal environments which facilitate Internet adoption for business purposes.

5.6.3 COMPETITIVE EDGE

Molla and Heeks (2007) wrote that e-commerce might contribute to improving a business’ profit margins and, therefore, promote competitiveness. This increase in competitiveness could be achieved by improving operational efficiency and cutting costs. They argued that “businesses in developing countries incur particularly high costs in coordination of their economic activities because of inefficient systems” Molla and Heeks (2007, p.97). This is because ICT infrastructure in these countries is expensive to access and use. Therefore, these high costs adversely affect the competitiveness of businesses in developing countries.

The perception that the Internet is a valuable business tool was significantly associated and positively correlated (medium strength) with the perception of an increase in competitive edge. This suggests that SMEs perceive that using the Internet could improve their overall

competitiveness. This finding is echoed among SMEs in New Zealand where competitive advantage influenced Internet adoption significantly and positively (Al-Qirim, 2007).

A limitation of the current study was that the researcher did not define competitive edge in terms of improved operational efficiencies or increased market reach in the questionnaire. As a result there was no way of determining how the respondents had interpreted question number 25 in Appendix D, and whether the perception that the Internet was a valuable tool was correlated to improved operational efficiencies or an increase in market reach.

5.7 ADOPTERS AND NON-ADOPTERS OF THE INTERNET: AN ADAPTATION OF THE T.O.E MODEL

While the current study did not set out to empirically test a model of Internet adoption, the results indicate that the TOE model could be applicable in this context. It must be noted that the facilitating and inhibiting factors were merely categorised as factors in this model to give the reader a perspective of how such a model could be applicable in the context of the research study. Below is a discussion based on the factors encompassed in the model and those variables which were found to influence Internet adoption; as seen in the current study.

5.7.1 TECHNOLOGICAL FACTORS

The technological factors investigated in this study were related to the associated costs and complexity of the Internet (Appendix D, question no: 7, 8, 20, & 21). While the adopters did not find the costs associated with using the Internet too prohibitive, the non-adopters found this to be their predominant barrier. However, variables measuring costs of the technology and its complexity did not indicate a significant difference between the adopters and non-adopters of the Internet (Table 4-9).

Teo *et al.* (2009) tested the TOE model on eProcurement, which they defined as buying and selling over the Internet in a paperless environment. They postulated that transacting in this way over the Internet would ultimately improve operational efficiency and that,

despite the expense of Internet technology required for such a system, businesses would engage with eProcurement because of the long term costs reduction benefits. However, the results of their study showed that costs of eProcurement were not significantly associated with Internet adoption.

5.7.2 ORGANISATIONAL FACTORS

The organisational factors investigated in the current study were business size and age (Appendix D - question no: 2 & 4), and in their analysis of extant literature on SMEs and e-commerce Mohamad and Ismail (2009) found that developing countries consider organizational factors as the most prevalent barrier to e-commerce adoption. Moreover, Molla and Licker (2004) recommended that the relationship between business size and Internet adoption should be further investigated, because the sample in their study was over-represented by large businesses.

Therefore in the current study the relationship between these variables was investigated and the results of the Mann-Whitney U tests (Table 4-7) showed that there was no significant difference between small businesses (with more than 5 but less than 50 employees) and micro business (less than 5 employees) with regard to Internet adoption (Table 4-7). Simply put, in this research context organisational factors such as business size and age did not significantly affect Internet adoption. This is consistent with the findings of Aguila-Obra and Padilla-Melendez (2006) who found that the size of businesses in Spain does not have any effect on the use of Internet technologies. Similarly, Tan *et al.* (2010) found that business size and age did not influence Internet adoption among Malaysian SMEs and the implication of their research was that Internet adoption is not influenced by business size or age, but rather by business need.

5.7.3 ENVIRONMENTAL FACTORS

The environmental factors investigated in this study were related to external pressure on the SME to be on-line (Appendix D, question no: 13, 14 & 15).

The results of the Mann-Whitney U tests (Table 4-8) showed that there was a significant difference between adopters and non-adopters of the Internet, with regard to pressure from

customers, suppliers and competitors to be on-line. The socio-environmental factors were found to have a significant influence on Internet adoption among business-services sector SMEs. Similarly, Zhu *et al.* (2002) found that consumer readiness to use the Internet significantly influenced Internet adoption among businesses, irrespective of firm size.

Figure 5-1 provides a diagrammatic summary of the factors (in the current study) having a significant influence on Internet adoption among SMEs surveyed. It shows the factors of the TOE model as related to Internet adoption for SMEs in the business-services sector.

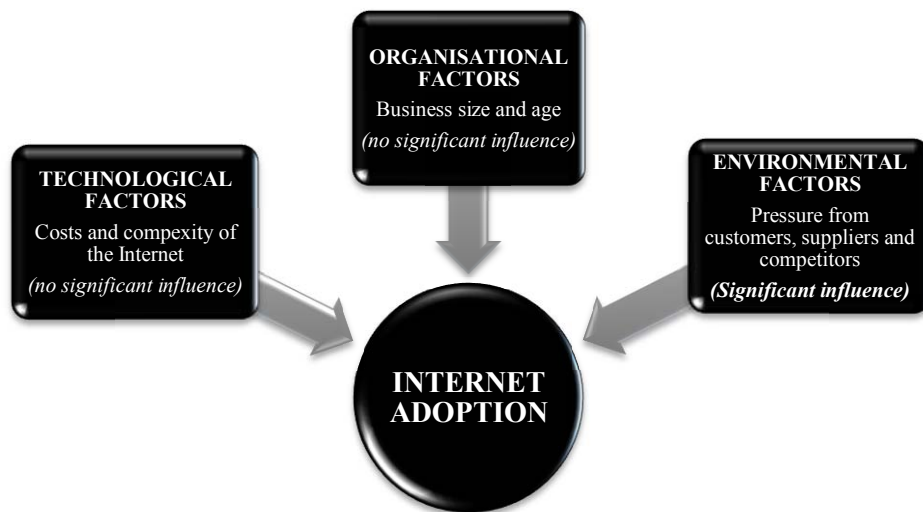


Figure 5-1: Adaptation of the TOE model of Internet adoption among SMEs in the business-services sector in Chatsworth

According to the TOE model (Figure 5-1) environmental factors seem to be the key drivers of Internet adoption among SMEs in the Chatsworth business-services sector. Although there were no reported significant associations between the technological and organisational factors on Internet adoption, this does not imply that these factors have no impact on Internet adoption. On the contrary, this model should be empirically tested in future studies.

5.8 SUMMARY OF CHAPTER FIVE

This Chapter discussed the results of the research study. Factors influencing Internet adoption among SMEs in the business-services sector and the uses of the Internet, which

were identified in the literature review, were investigated. The results were discussed in conjunction with those of previous studies. The next and final Chapter summarises the key findings of the current study in relation to the research questions, puts forth recommendations for the study and future research, and provides closing commentary for the study as a whole.

6 CHAPTER SIX: KEY FINDINGS, RECOMMENDATIONS AND CONCLUSIONS

6.1 INTRODUCTION

In the 21st century, capital and skilled labour are no longer the key drivers of competitive advantage. Increasingly, the ability to control and manipulate information is growing in importance. Customer access to information on products and services, in terms of price and availability, through the Internet is fast becoming the norm. SMEs should use this as an opportunity to capitalise on this “new” buyer behaviour (Beaver, 2007).

6.2 KEY FINDINGS

As stipulated in Chapter 1, this study set out to address 3 research questions, namely:

- i. For what purpose are small and micro enterprises (SMEs) in the business-services sector using the Internet?
- ii. What are the factors that inhibit Internet adoption among small and micro enterprises (SMEs) in the business-services sector?
- iii. What are the factors that facilitate Internet adoption among small and micro enterprises (SMEs) in the business-services sector?

Below is a brief discussion about how the objectives of the study addressed these particular research questions:

6.2.1 OBJECTIVE 1: INTERNET USAGE AMONG SMEs IN THE BUSINESS-SERVICES SECTOR

SMEs in this study were largely using the Internet as a communication medium (e-mail) and as a tool to search for information (web-browsing). Few SMEs actually used the Internet for e-commerce purposes; such as buying/selling of goods and services, advertising/ marketing over the Internet, or for streamlining internal operations, with the predominant e-commerce activity being Internet banking. These findings corroborate those of Boateng *et al.* (2008) and Moodley (2003).

6.2.2 OBJECTIVE 2: FACTORS INHIBITING INTERNET ADOPTION

SMEs not using the Internet (non-adopters) considered the high costs; of the equipment, electricity and IT consultant-services required, as barriers to using the Internet. This finding is consistent with that of Walczuch *et al.*, (2000) who found that perceptions about the costs of the Internet by SME owner/manager were a key barrier to adoption. The study also found that the lack of information on how to use the Internet for business purposes was significantly associated to the perception that the Internet was too complex to use. Another barrier was the lack of government support with regard to Internet adoption. Uncertainty about the security of business information over the Internet was also highlighted as a barrier.

6.2.3 OBJECTIVE 3: FACTORS FACILITATING INTERNET ADOPTION

Those SMEs using the Internet (the adopters) reported that their main motivating reasons were that their customers and suppliers expected them to be on-line and that their competitors were already on-line. The majority of the respondents indicated that government incentives to use the Internet and that staff having IT skills to use the technology also facilitated its usage within their businesses. Similarly, having relevant IT skills was also identified as a facilitator in the study conducted by Jones *et al.* (2002). Finally, respondents indicated that the Internet gave their businesses a competitive edge. The following sections discuss recommendations based on the findings of this study.

6.3 RECOMMENDATIONS FOR THE CURRENT STUDY

As mentioned in Chapter 1, the final purpose of the study was to make recommendations to policy makers and SMEs, to encourage the use of the Internet. The following sections discuss those recommendations.

6.3.1 GOVERNMENT SUPPORT AND INCENTIVES

Most of the respondents (96%, Table 4-6) reported that the government should give businesses more incentives to get on the Internet. Therefore government support in

assisting SMEs can begin by creating a legal environment which is conducive for SMEs trading via the Internet. This includes establishing appropriate Internet and e-commerce laws, and appropriate tax incentives for using the Internet.

Additionally, 91% (Table 4-4) of the respondents indicated that government support in terms of Internet usage was lacking. Hence government assistance should extend to formulating and implementing educational and training plans that aim to prepare SMEs to build up their technology competence, thus enabling them to adopt and integrate the Internet in their businesses for the purpose of e-commerce. This can be achieved through the development of a network of IT support agencies which provide education and training to SMEs. Moreover, government support should also include public awareness programmes that build upon the favourable sentiments towards the Internet among SMEs. This will emphasise the importance and benefits of the Internet, and its applications for the economic future of the South Africa.

6.3.2 MANAGERIAL AWARENESS

In this study most SMEs felt that the associated costs of acquiring the Internet were too high (Table 4-5). Managers need to re-evaluate the benefits and costs of Internet adoption as the business environment changes. In the long-term, the benefits of Internet adoption outweigh the costs. Therefore an important message for SME owner/managers is to realize that, as businesses increasingly engage in e-commerce, SMEs will have more opportunities to compete in the global marketplace.

6.4 RECOMMENDATIONS FOR FUTURE RESEARCH

While this study attempted to explain the factors influencing Internet adoption among SMEs in the business-services sector, it also, highlighted gaps in the body of knowledge about this subject:

- i. This study found that while some e-commerce activities were taking place, they were largely limited to Internet banking (Figure 4-3). Buying, selling and marketing of services, in the research context, were not common. Future studies should closely

examine the possible reasons for the slow progress in using the Internet for e-commerce among South African SMEs.

- ii. In this study 21% of business-services SMEs had websites (Figure 4-2). The study did not investigate the use of these websites hence further research should be conducted into the level of e-commerce integration among SMEs in the business-services sector, by examining the websites of those who have them.
- iii. Most of the respondents (95%) in this study reported that the Internet could give their business a competitive edge (Table 4-6). For this reason, a longitudinal study should be designed to examine how Internet adoption and integration into business processes impact on an SME's performance and competitiveness.
- iv. The study found a high percentage of cell-phone usage (82%, Table 4-2). This indicates that cell-phones play a vital role in business communication and that mobile commerce (m-commerce) may be embraced in the future. Therefore, future studies should investigate the adoption of m-commerce among SMEs.
- v. This study did not set out to empirically test the TOE model of Internet adoption but found factors applicable to the model which should be examined further (Figure 5-1). Hence a final recommendation would be to test the TOE model among SMEs in the business-services sector.

6.5 CONCLUSIONS

The study provided evidence that SMEs are aware of the advantages provided by the Internet. However, the short-term benefits are not apparent enough to SME owners for them to plan any significant investment in adopting Internet technologies.

The results of this study showed that, while the majority of SMEs in the business-services sector located in Chatsworth were engaging in Internet activities, these activities were limited to e-mail and web-browsing. E-commerce (use of the Internet for trading purposes) was limited. Furthermore, this study showed that external pressure from customers, suppliers and competitors is a significant driver of Internet adoption among SMEs in the business-services sector.

Important factors that influenced business-services SMEs' decision to adopt the Internet; included costs and complexity, information security, IT support, pressure from trading partners, and the perception of gaining a competitive edge. The role of government support in convincing SMEs of the benefits of the Internet, and assisting them to adopt and integrate the Internet into their businesses, is essential.

Although there are many benefits to adopting the Internet, there are a few factors which must be considered before adoption. The SME's organisational readiness, in terms of human and financial resources required, and technological readiness (having the relevant IT infrastructure in place) are critical factors which small firms need to consider before adopting the technology.

A limitation of this study was that the results are not generalisable to the population of South African SMEs in the business-services sector. However, the study does point to key factors that influence Internet adoption among these SMEs that warrant further investigation.

7 BIBLIOGRAPHY

- ACS, Z. J. 1999. *Are small firms important? Their role and impact*. Massachusetts, Kluwer Academic Publishers.
- AGUILA-OBRA, A. R. & PADILLA-MELENDZ, A. 2006. Organizational factors affecting Internet technology adoption. *Internet Research*, 16, 94-110.
- AL-HAWARI, M., AL-YAMANI, H. & IZWAWA, B. 2008. Small businesses' decision to have a website. Saudi Arabia case study. *World Academy of Science, Engineering and Technology*, 37, 324-328.
- ALADWANI, A. M. 2008. Key charastersics and e-commerce issues in Arab countries. *Information Technology and People*, 16, 9-20.
- ALAM, S. S. 2009. Adoption of Internet in Malaysian SMEs. *Journal of Small Business and Enterprise Development*, 16, 240-255.
- AL-QIRIM, N. 2007. The adoption of e-commerce communications and applications technologies in small businesses in New Zealand. *Electronic Commerce Research and Applications*, 6, 462-473.
- ALTMAN, M. 2006. Identifying employment-creating sectors in South Africa: The role of the services industries. *Development Southern Africa*, 23, 627-647.
- AZAM, S. 2007. Internet adoption and usage in Bangladesh. *Japanese Journal of Administrative Science*, 20, 43-54.
- BABBIE, E. & MOUTON, J. 2009. *The practice of social research - South African edition*, Cape Town, Oxford University Press Southern Africa (Pty) Ltd.
- BAGCHI, K., CERVENY, R., HART, P. & PETERSEN, M. 2003. The influence of national culture in Information Technology product adoption. In: *Ninth Americas Conference on Information Systems (AMCIS)*, Florida, USA, 4-6 August 2003.
- BEAVER, G. 2007. *Small business entrepreneurship and enterprise development*, Pearson Education Limited.
- BECKINSALE, M. & LEVY, M. 2004. SMEs and Internet adoption strategy: Who do SMEs listen to? In: *European Conference on Information Systems (ECIS)*, Turku, Finland, 14-16 June 2004.
- BLUMBERG, B., COOPER, D. R. & SCHINDLER, P. S. 2005. *Business research methods*, McGraw-Hill Education.

- BOATENG, R., HINSON, R., HEEKS, R. & MOLLA, A. 2008. E-commerce in least developing countries: Summary evidence and implications. *Journal of African Business*, 9, 257-285.
- BOATENG, R., MOLLA, A. & HEEKS, R. 2009. *E-Commerce in developing economies: A review of theoretical frameworks and approaches* In: Rouibah, K (ed). 2009, *Emerging Markets and E-commerce in Developing Economies*, IGI Publishers, p. 1-56.
- BOCIJ, P., CHAFFEY, D., GREASLEY, A. & HICKIE, S. 2003. *Business information systems: technology, development and management for the e-business*, Essex, Pearson Education limited.
- BURGESS, S. 2002. *Information Technology in small business: Issues and challenges*, Idea Group Publishing.
- CAVAYE, A. L. M. & VAN AKKEREN, J. 1999. Factors affecting entry-level Internet technology adoption by small business in Australia: An empirical study. In: *10th Australasian Conference on Information Systems*. Wellington, New Zealand, 1-3 December 1999.
- CHATTERJEE, D., GREWAL, R. & SAMBAMURTHY, V. 2002. Shaping up for e-commerce: Institutional enablers of the organisational assimilation of Web technologies. *Management Information Systems (MIS) Quarterly*, 26, 65-89.
- CHAU, P. Y. & KUAN, K. K. 2001. A perception-based model for EDI adoption in small businesses using a technology-organisation-environment framework. *Information and Management*, 38, 507-521.
- CHONG, S. 2008. Success in e-commerce implementation. *Journal of Enterprise Information Management*, 21, 468-492.
- CIPRO. 2008. *Standard industry classifications (SIC)* [Online]. Companies and Intellectual Properties Registration Office Available: http://www.cipro.co.za//info_library/sic_codes.asp [Accessed 14 March 2010].
- CLOETE, E. 2002. Small businesses' acceptance and adoption of e-commerce in the Western-Cape province of South-Africa. *Electronic Journal on Information Systems in Developing Countries*, 10, 1-13.
- COOPER, D. R. & SCHINDLER, P. S. 2006. *Marketing research*, New York, McGraw-Hill Irwin.

- CRAGG, P. B., MEHRTENS, J. & MILLS, A. M. 2001. A model of Internet adoption by SMEs. *Information & Management*, 39, 165-176.
- DE KLERK, S. & KROON, J. 2005. E-commerce adoption in South African businesses. *South African Journal of Business Management*, 36, 33-40.
- DE VOS, A., STRYDOM, H., FOUCHE, C. & DELPORT, C. 2005. *Research at grassroots for the social sciences and human service professions*, Pretoria, Van Schaik.
- DTI 2005. Integrated strategy on the promotion of entrepreneurship and small enterprises. [Online]. Department of Trade and Industry Available: <http://www.thedti.gov.za/smme/strategy.pdf> [Accessed 14 March 2010]
- DHOLAKIA, R. R. & KSHETRI, N. 2004. Factors impacting the adoption of the Internet among SMEs. *Small Business Economics*, 23, 311-322.
- DONNER, J. 2006. *Internet use (and non-use) among urban microenterprises in the developing world: An update from India*. Microsoft Research India.
- DOS SANTOS, L.-A. & BACCHIALONI, A. 2009. ICT in the South African financial, business and other services sector. *BMI TechKnowledge*. Johannesburg: BMI TechKnowledge Group (Pty) Ltd.
- DRUCKER, P. 1999. Beyond the information revolution. *The Atlantic Monthly*.
- DRUCKER, P. 2001. Will the corporation survive. *The Economist*.
- EASTIN, M. S. 2002. Diffusion of e-commerce: an analysis of the adoption of four e-commerce activities. *Telematics and Infomatics*, 19, 251-267.
- ELLIOTT, R. & BOSHOFF, C. 2005. The influence of organisational factors in small tourism businesses on the success of Internet marketing. *Management Dynamics*, 14, 44-58.
- ESHUN, E. D. & TAYLOR, T. 2009. *Internet and e-commerce adoption among SME non-traditional exporters*. Masters dissertation, Lulea University of Technology, Scandinavia
- FERRER, S. R. D., SCHRODER, D. H. & ORTMANN, G. F. 2003. Internet use and factors affecting adoption of Internet applications by sugarcane farm businesses in the KwaZulu Natal midlands. In: *41st Annual Conference of the Agricultural Economic Association of South Africa (AEASA)*. Pretoria, South Africa, 2-3 October 2003.
- FIELD, A. 2009. *Discovering statistics using SPSS*, London, Sage Publications Ltd.

- FILLIS, I., JOHANNSON, U. & WAGNER, B. 2004. Factors impacting on e-business adoption and development in the smaller firm. *International Journal of Entrepreneurial Behaviour & Research*, 10, 178-191.
- FINK, D. 1998. Guidelines for the successful adoption of Information Technology in small and medium enterprises. *International Journal of Information Management*, 18, 243-253.
- GLIEM, J. A. & GLIEM, R. R. 2003. Calculating, interpreting, and reporting Cronbach's Alpha reliability coefficient for Likert-type Scales. In: *Research to Practice Conference in Adult, Continuing, and Community Education*. Columbus, Ohio, USA, 8-10 October 2003
- GONG, W., LI, Z. G. & STUMP, R. L. 2007. Global Internet use and access: cultural considerations. *Asia Pacific Journal of Marketing and Logistics*, 19, 57-74.
- HINSON, R., ATUGUBA, R., OFORI, D. & FOBIH, J. 2007. The Internet and lawyers in Ghana: Some initial qualitative perspectives. *Library Review*, 56, 311-322.
- HORNBY, G., GOULDING, P. & POON, S. 2002. Perceptions of export barriers and cultural issues: The SME e-commerce experience. *Journal of Electronic Commerce Research*, 3.
- HOWARD, P. N. & MAZAHARI, N. 2009. Telecommunications reform, Internet use and mobile phone adoption in the developing world. *World Development*, 37, 1159-1169.
- IACOVOU, C. L., BENBASAT, I. & DEXTER, A. S. 1995. Electronic data interchange and small organisations: Adoption and impact of technology. *Management Information Systems (MIS) Quarterly*, 19, 465-485.
- JOHNSON, M. 2010. Barriers to innovation adoption: A study e-markets. *Industrial Management and Data Systems*, 110, 157-174.
- JONES, C., HECKER, R. & HOLLAND, P. 2002. *Small firm Internet adoption: A market oriented approach*. Tasmania: University of Tasmania.
- KAYNAK, E., TATOGLU, E. & KULA, V. 2005. An analysis of the factors affecting the adoption of electronic commerce by SMEs. *International Marketing Review*, 22, 623-640.
- KLOPPER, R. 2006. *Concept matrix - research methodology* (MBA course work handout). University of Kwazulu Natal, South Africa

- KULA, V. & TATOGLU, E. 2003. An exploratory study of Internet adoption by SMEs in an emerging market economy. *European Business Review*, 15, 324-333.
- LAL, K. & OYELARAN-OYEYINKA, B. 2005. Internet diffusion in sub-Saharan Africa: A cross-country analysis. *Telecommunications Policy*, 29, 507-527.
- LEE, G. & MCGUIGGAN, R. 2009. Small business benefits for, barriers to, and information sought using the Internet. *Review of Business Research*, 9.
- LEEDY, P. D. & ORMOND, J. E. 2005. *Practical Research: Planning and design*, New Jersey, Pearson Merrill Prentice Hall.
- LEINER, B. M., CERF, V. G., CLARK, D. D., KAHN, R. E., KLEINROCK, L., LYNCH, D., POSTEL, J., ROBERTS, L. G. & WOLFF, S. 2009. A brief history of the Internet. *Computer Communication Review*, 39, 22-31.
- LITUCHY, T. R. & RAIL, A. 2000. Bed and breakfasts, small inns, and the Internet: The impact of technology on the globalization of small businesses. *Journal of International Marketing*, 8, 86-97.
- MACGREGOR, R. C. & VRAZALIC, L. 2005. A basic model of electronic commerce adoption barriers. *Journal of Small Business and Enterprise Development*, 12, 510-527.
- MARTIN, L. M. & MATLAY, H. 2001. "Blanket" approaches to promoting ICT in small firms: Some lessons from the DTI ladder adoption in the UK. *Electronic Networking Applications and Policy*, 11, 399-410.
- MARTIN, L. M. & MATLAY, H. 2003. Innovative use of the Internet in established small firms: The impact of knowledge management and organisational learning in accessing new opportunities. *Qualitative Market Research: An International Journal*, 6, 18-26.
- MOGRE, R., BALOCCO, R. & TOLETTI, G. 2009. Mobile Internet and SMEs: A focus on adoption. *Industrial Management and Data Systems*, 109, 245-261.
- MOHAMAD, R. & ISMAIL, N. A. 2009. Electronic commerce adoption in SMEs: The trend of prior studies. *Journal of Internet Banking and Commerce*, 14, 1-16.
- MOLLA, A. & HEEKS, R. 2007. Exploring e-commerce benefits for businesses in a developing country. *The Information Society*, 23, 95-108.
- MOLLA, A. & LICKER, P. S. 2004. Maturation stage of e-commerce in developing countries: A survey of South African companies. *Information Technologies and International Development*, 2, 89-98.

- MOLLA, A. & LICKER, P. S. 2005. E-commerce adoption in developing countries: A model and instrument. *Information and Management*, 42, 877-899.
- MOODLEY, S. 2001. E-Business and supply chain management in the automotive industry: Preliminary findings from the Eastern Cape and Kwazulu-Natal Benchmarking Club pilot surveys. *Industrial restructuring project*. University of Natal.
- MOODLEY, S. 2003. The promise of e-business for less developed countries (LDCs). *International Journal of Electronic Business*, 1, 53-68.
- MOUTON, J. 2003. *How to succeed in your Master's and Doctoral Studies - A South African guide and resource book*, Pretoria, Van Schaik Publishers.
- PFLUGHOEFT, K. A., ZAHEDI, F. M., RAMAMURTHY, K., SOOFI, E. S. & YASAI-ARDEKANI, M. 2003. Multiple conceptualizations of small business web use and benefit. *Decision Series*, 34, 467-512.
- POON, S. & STROM, J. 1997. Small business use of the Internet: Some realities. In: *Associations for Information Systems Americas Conference*. Indianapolis, USA 15-17 August 1997
- POON, S. & SWATMAN, P. M. 1999. An exploratory study of small business Internet commerce issues. *Information and Management*, 35, 9-18.
- PORTER, M. 2001. Strategy and the Internet. *Harvard Business Review - Onpoint*. Harvard business school publishing corporation.
- RAO, S. S., METTS, G. & MONGE, C. A. M. 2003. Electronic commerce development in small and medium sized enterprises. *Business Process Management Journal*, 9, 11-32.
- RASHID, M. A. & AL-QIRIM, N. A. 2001. E-Commerce technology adoption framework by New Zealand small to medium size enterprises. *Research Letters in the Information and Mathematical Sciences (Res Lett Inf Math Sci)*, 2, 63-70.
- RESEARCH ADVISORS n.d. Sample Size Table. *MBA Dissertation Style Guidelines* Graduate School of Business, University of KwaZulu Natal:, 2010
- RIEMENSCHNEIDER, C. K., HARRISON, D. A. & MYKYTYN JR, P. P. 2003. Understanding IT adoption decisions in small business: Integrating current theories. *Information and Management*, 40, 269-285.

- RIQUELME, H. 2002. Commercial Internet adoption in China: Comparing the experience of small, medium and large businesses. *Internet Research: Electronic Networking Applications and Policy*, 12, 276-286.
- SA GOVERNMENT 1996. National Small Business Act. 1901. South Africa: www.dti.gov.za.
- SAPO. 2010. *Search by postal code*. [Online]. South African Post Office. Available: <http://www.sapo.co.za/CustomerSupport.aspx?ID=5> [Accessed 7 March 2010].
- SADOWSKI, B., MAITLAND, C. & VAN DONGEN, J. 2002. Strategic use of the Internet by small- and medium-sized companies: An exploratory study. *Information Economics and Policy*, 14, 75-93.
- SHIH, H.-P. 2004. Extended technology acceptance model of Internet utilization behavior. *Information and Management*, 41, 719-729.
- SIMMONS, G., ARMSTRONG, G. A. & DURKIN, M. 2008. A conceptualization of the determinants of small business website adoption: Setting the research agenda. *International Small Business Journal*, 26, 351-389.
- SIMMONS, G. J., DURKIN, M. G., MCGOWAN, P. & ARMSTRONG, G. A. 2007. Determinants of Internet adoption by SME agri-food companies. *Journal of Small Business and Enterprise Development*, 14, 620-640.
- SINGH, R. K., GARG, S. K. & DESHMUKH, S. 2010. Competitiveness of SMEs in a globalized economy: Observations from China and India. *Management Research Review*, 33, 54-66.
- SPSS FOR WINDOWS, 2006a, Release v.15.0.0. Chicago: SPSS, Inc
- SPSS, 15.0. 2006b. *A brief guide*, Chicago: SPSS, Inc
- STANSFIELD, M. & GRANT, K. 2003. An investigation into issues influencing the use of the Internet and e-commerce among small medium sized enterprises. *Journal of Electronic Commerce Research*, 4, 15-33.
- STATSSA 2009. Quarterly Financial Statistics Survey - Preliminary QFS September 2009 estimates based on the 2009 sample - Small, medium and large enterprises. In: AFRICA, S. S. (ed.). Pretoria.
- TAN, K. S., CHONG, S. C., LIN, B. & EZE, U. C. 2010. Internet-based ICT adoption among SMEs. *Journal of Enterprise Information Management*, 23, 27-55.
- TAN, M. & TEO, T. S. 1998. Factors influencing the adoption of the Internet. *International Journal of Electronic Commerce*, 2, 5-18.

- TEO, T. S. & PIAN, Y. 2003. A contingency perspective on Internet adoption and competitive advantage. *European Journal of Information Systems*, 12, 78-92.
- TEO, T. S. H., LIN, S. & LAI, K.-H. 2009. Adopters and non-adopters of e-procurement in Singapore: An empirical study. *Omega*, 37, 972-987.
- TRAVICA, B. 2002. Diffusion of electronic commerce in developing Countries: The case of Costa Rica. *Journal of Global Information Technology Management*, 5, 4-24.
- WALCZUCH, R., VAN BRAVEN, G. & LUNDGREN, H. 2000. Internet adoption barriers for small firms in the Netherlands. *European Management Journal*, 18, 561-672.
- WORLD BANK 2009. World bank list of economies. In: CLASSIFICATIONS, W. B. C. (ed.) *Excel*.
- XU, S., ZHU, K. & GIBBS, J. 2004. Global technology, local adoption: A cross-country investigation of Internet adoption by companies in the United States and China. *Electronic Markets*, 14, 13-24.
- ZHENG, J., CALDWELL, N., HARLAND, C., POWELL, P., WOERNDL, M. & XU, S. 2003. Small firms and e-business: Cautiousness, contingency and cost-benefit. *Journal of Purchasing and Supply Chain Management*, 10, 27-39.
- ZHU, K., KRAEMER, K. & XU, S. 2002. A cross-country study of electronic business adoption using the Technology-Organization-Environment framework. In: *23rd International Conference on Information Systems (ICIS)*, Barcelona, Spain, 15-18 December 2002.

8 APPENDICES

8.1 APPENDIX A: CONCEPT MATRIX

Author	Year	Country	Study design	The Internet: - Definition - Tools and services	Internet commerce /e-commerce	SMEs: - Definition Characteristics - Importance	services sector and SMEs and Internet	Internet and SMEs: - Usage - Benefits of adoption	Barriers/ inhibitors to adoption (non-adopters)	Drivers/Facilitators of adoption (adopters)	Models of Adoption	Notes
Khong Sin Tan;Siong Choy Chong;Binshan Lin;Usher Michael Johnson	2010	Malaysia	quant			✓	✓	✓	✓	✓		ICT adoption
Rajesh K Singh;Suresh K Garg; SG Deshmukh	2010	US/UK	qual		✓				✓		✓	
Barry M Leiner;Vinton G Cerf;David D Clark;Robert E Kahn;Leonard Kleinrock;Daniel Lynch;Jon Postel;Larry G Roberts;Stephen Wolff	2010	India/China	quant			✓	✓	✓				SME competitiveness
Elizabeth D. Eshun;Theresa Taylor	2009	US	report	✓								
Geoffrey Lee;Robyn McGuiggan	2009	Ghana	disc. Qual	✓	✓	✓			✓	✓		
Lesley-Anne Dos Santos;Althea Bacchialoni	2009	Aus	quant	✓		✓		✓	✓	✓		
Philip N. Howard;Nimah Masaheri	2009	SA	report		✓		✓					
Riccardo Mogre;Raffaello Balocco;Giovanni Toletti	2009	cross cnt	quant	✓	✓							mobile phones and internet
Richard Boateng;Alemayehu Molla;Richard Heeks	2009	Italy	qual/quant					✓	✓	✓		
Rosli Mohamad;Noor Azizul Ismail	2009	cross cnt	lit.rev		✓				✓	✓	✓	developing countries
StatsSA	2009	cross cnt	lit.rev	✓	✓	✓					✓	
Syed Shah Alam	2009	SA	govt doc									
Thompson S. H. Teo;Sijie Lin;Kee-hung Lai	2009	SA	govt doc									
World Bank	2009	Malaysia	quant	✓		✓	✓		✓	✓		
World bank	2009	Singapore	quant	✓	✓						TOE	
Adel M Aladwani	2009	Int'l	report									
CIPRO	2008	Int'l	report									
Geoff Simmons;Gillian A. Armstrong; Mark Durkin	2008	Arab cnt	internet quant		✓				✓	✓		
Jude E Edwards;Leila Halawi; Richard Mcarthy	2008	SA										SME stats
Jude E Edwards;Leila Halawi; Richard Mcarthy	2008	US	lit.rev	✓	✓	✓			✓	✓	web adoption	
M. Al-hawari;H. Al-Yamani;B. Izwawa	2008	Barbados	quant	✓	✓						TAM	
Heeks;Alemayehu Molla	2008	Barbados	quant		✓				✓	✓	TAM	
Sandy Chong	2008	Saudi Arabia	qual		✓				✓	✓		
Alemayehu Molla;Richard Heeks	2008	cross cnt	lit.rev	✓	✓							developing countries - ecomm
Dave Chaffey	2007	Aus/Singapore	quant	✓	✓	✓					✓	
Fathul Wahid	2007	SA	quant		✓				✓	✓		e-comm adoption
Geoffrey J. Simmons;Mark G Durkin;Pauric McGowan	2007	US	book									ecommerce
Graham Beaver	2007	Indonesia	quant	✓					✓	✓	TAM	
Nabeel Al-Qirim	2007	Ireland	quant		✓	✓	✓		✓	✓		
Nancy M. Levenburg;Simha R. Magal	2007	SA	book			✓			✓	✓		
Robert Hinson;Raymond Atuguba;Dan Ofori;Julius Fobih	2007	New Zealand	quant		✓				✓	✓	✓	
	2007	US	quant			✓	✓		✓	✓		
	2007	Ghana	qual	✓		✓			✓	✓		

APPENDIX A: CONCEPT MATRIX - INTERNET ADOPTION AMONG SMEs IN THE BUSINESS SERVICES SECTOR

Author	Year	Country	Study design	The Internet: - Definition - Tools and services	Internet commerce /e-commerce	SMEs: - Definition Characteristics - Importance	services sector and SMEs and Internet	Internet and SMEs: - Usage - Benefits of adoption	Barriers/ inhibitors to adoption (non-adopters)	Drivers/Facilitators of adoption (adopters)	Models of Adoption	Notes
Shah Azam	2007	Bangladesh	quant	✓					✓	✓		
Wen Gong;Zhan G Li;Rodney L Stump	2007	cross cnt	qual/quant	✓					✓	✓	Hofstede's cultural framework	
Ana R Aguila-Obra; Antonio Padilla-Melendez	2006	Spain	quant	✓					✓	✓	TOE	
Jonathan Donner	2006	India	qual	✓					✓	✓		
Mariam Altman	2006	SA	report			✓	✓					
Rosemary Stockdale;Craig Standing	2006	Aus	quant		✓			✓	✓	✓		e-commerce adoption
Weiyin Hong;Kevin Zhu	2006	US	quant	✓	✓				✓	✓	✓	
Alemayehu Molla;Paul S. Licker	2005	SA	quant		✓		✓				PERM	e-comm adoption, devlp countries
Department of Trade and Industry	2005	SA	govt doc									
Department of Trade and Industry	2005	SA	report									
Erdener Kaynak;Ekrem Tatoglu; Veyzel Kula	2005	Turkey	quant		✓	✓			✓	✓		
Kaushalesh Lal;												
Banji Oyelaran-Oyeyinka	2005	SA	quant/lit.rev	✓	✓				✓	✓		
Robert C MacGregor;Lejla Vrazalic	2005	Sweden/Aus	quant		✓	✓			✓	✓	✓	
Roger Elliott;Christo Boshoff	2005	SA	quant	✓		✓		✓	✓	✓		
S de Klerk;J Kroon	2005	SA	quant	✓	✓		✓		✓	✓		
Alemayehu Molla;Paul S. Licker	2004	SA	quant	✓	✓				✓	✓		developing countries - ecomm
Elizabeth E. Grandon;J. Michael Pearson	2004	US	quant		✓	✓			✓	✓		
Hung-Pin Shih	2004	Taiwan	quant	✓	✓						TAM	?interviewd employees of SMEs
Ian Fillis;Ulf Johansson;Beverly Wagner	2004	Sweden	quant	✓	✓	✓			✓	✓	✓	
Martin Beckinsale;Margi Levy	2004	Europe	qual	✓		✓					✓	Network
Mike Simpson;Anthony J Docherty	2004	UK	quant		✓					✓		
Ruby Roy Dholakia;Nir Kshetri	2004	US	quant	✓		✓			✓	✓	✓	
Sean Xu;Kevin Zhu;Jennifer Gibbs	2004	US/China	quant	✓	✓				✓	✓	TOE	
Cynthia K. Riemenschneider;David A. Harrison;Peter Ilse Gieseng	2003	US	quant	✓		✓			✓	✓	TPB/TAM	devlpd hybrid model
Ilse Gieseng	2003	SA	diss. Quan									
Jurong Zheng;Nigel Caldwell;Christine Harland; Philip Powell;Maria Woerndl;S Xu	2003	UK	lit.rev/case	✓	✓						Internet adoption m	model of e-cmm adoption for e-business.
Kailoi Bagchi;Robert Cerveny; Paul Hart;Mark Petersen	2003	cross cnt	quant	✓	✓						Hofstede's cultural framework	
Kurt A. Pfughoeft;Fatimah Mariam Zahedi;K Ram	2003	US	quant		✓	✓	✓				3 models	
Lynn M Martin;Harry Matlay	2003	US	qual/case					✓				internet for mktg
Lynn M Martin;Harry Matlay	2003	UK	quant	✓		✓			✓	✓		
Mark Stansfield;Kevin Grant	2003	Scotland	quant	✓	✓	✓	✓	✓	✓			
Paul Booi;Dave Chaffey;Andrew Greasley;Simon Hickie	2003	US	book	✓	✓				✓	✓		SMEs/BIS
S Subba Rao;Glenn Metts; Carlo A Mora Monge	2003	Europe	qual/case		✓	✓		✓			stages model	e-commerce
S.R.D. Ferrer;D.H. Schroder;G.F. Ortmann	2003	SA	quant	✓					✓	✓		
Sagren Moodley	2003	SA										
Thompson SH Teo;Yujun Pian	2003	Singapore	quant		✓				✓	✓	stages model	e-commerce (contingency)
Veyzel Kula;Ekrem Tatoglu	2003	Turkey	quant	✓		✓		✓	✓	✓		

Author	Year	Country	Study design	The Internet: - Definition - Tools and services	Internet commerce /e-commerce	SMEs: - Definition Characteristics - Importance	services sector and SMEs and Internet	Internet and SMEs: - Usage - Benefits of adoption	Barriers/ inhibitors to adoption (non-adopters)	Drivers/Facilitators of adoption (adopters)	Models of Adoption	Notes
BM Sadowski;C Maitland;J van Dongen	2002	Netherlands	quant				✓	✓				model of strategic use of internet
Bob Trivica	2002	Barbados	qual		✓							e-commerce diffusion
Colin Jones;Rob Hecker;Peter Holland	2002	Aus	lit.rev		✓	✓						e-commerce mktg
Debabroto Chatterjee;Rajdeep Grewal;V Sambamurthy	2002	US	quant	✓								
Elizabeth Daniel;Hugh Wilson;Andrew Myers	2002	UK	quant		✓			✓			✓	
Eric Cloete	2002	SA	quant		✓	✓		✓		✓	TAM	
Glen Hornby;Paula Goulding;Simpson Poon	2002	Aus/UK	quant	✓	✓	✓			✓	✓		
Herman Riquelme	2002	China	quant			✓		✓	✓			
Jennifer Gibbs;Kenneth Kraemer;Jason Dedrick	2002	cross cnt	lit.rev		✓							
Kevin Zhu;Kenneth Kraemer;Sean Xu	2002	Europe	quant				✓	✓			TOE	
Matthew S Eastin	2002	US	quant	✓	✓						✓	
Pali Lehohla	2002	SA	report									
Paul Windrum;Pascale de Berranger	2002	UK	qual/ case		✓	✓						organisational factors, internal and external
Stephen Burgess	2002	US	book	✓	✓	✓		✓	✓	✓		
James H. Tieszen;Richard W. Wright;Ian Turner	2001	Canada	case		✓	✓						model of SME e-commerce
Jinsoo Park;Joonghu Ahn;Dongwon Lee	2001	US/Korea	quant		✓			✓				TAM - perceived risk vs e-com
Louis Raymond	2001	Canada	quant		✓		✓		✓			diffusion and assimilation models
Lynn M. Martin;Harry Matlay	2001	UK	quant	✓	✓	✓			✓	✓	✓	
M.A. Rashid;N.A. Al-Qirim	2001	New Zealand	qual (theory bld)		✓			✓			TOE	It adoption models
Michael Porter	2001	US	report									
Patrick YK Chau;Kevin KY Kuan	2001	Hong Kong	quan/case	✓	✓	✓			✓	✓	TOE	EDI adoption among SMEs
Paul B Cragg;Jenni Mehrkens;Annette M Mills	2001	NZ	qual	✓		✓			✓	✓	✓	
Peter Drucker	2001	US	report	✓								
Sagren Moodley	2001	SA	report		✓		✓	✓				
B Mahadevan	2000	India	qual	✓	✓						✓	
Rita Walczuch;Gert van Braven;Henriette Lundgren	2000	Netherlands	quant	✓				✓	✓			
Terri R. Lituchy;Anny Rail	2000	US/Canada	quant	✓	✓	✓			✓		✓	
Andrew Wyckoff;Alessandra Cloecchia	1999	US	book									ecommerce
Angèle L.M. Cavaye;Jeanette van Akkeren	1999	Aus	quant		✓	✓			✓	✓	TAM	
Caroline Chappell;Sylvie Feindt	1999	Europe	qual/quant		✓		✓		✓	✓		
Peter Drucker	1999	US	report	✓	✓	✓						
Simpson Poon;Paula MC Swatman	1999	Aus	qual					✓	✓	✓		integration
Zoltan J Acs	1999	US	book			✓						SMEs
D Fink	1998	W.Aus	quant	✓		✓				✓		
Frederick J Riggins;Hyeun-Suk (Sue) Rhee	1998	US	report		✓							ecommerce models and use
Margaret Tan;Thompson SH Teo	1998	Singapore	quan/qual	✓			✓		✓	✓		
Simpson Poon;Jim Strom	1997	Aus	quan/ case study	✓			✓	✓		✓		model of business relationship development
SA government	1996	SA	legislation									small business act
Isak Benbasat;Albert S Dexter	1995	Canada	report	✓		✓		✓			✓	

8.2 APPENDIX B: AUTHOR AND PUBLISHER PERMISSION TO ADAPT QUESTIONNAIRE

Reshma Subbaye - RE: Request permission to use questionnaire

From: Mark Stansfield <Mark.Stansfield@uws.ac.uk>
To: Reshma Subbaye <Subbaye@ukzn.ac.za>
Date: 2010-02-13 04:58 PM
Subject: RE: Request permission to use questionnaire

Dear Reshma,

Please feel free to use the questionnaire.

Good luck in your research study.

Kind regards,
Mark

From: Reshma Subbaye [Subbaye@ukzn.ac.za]
Sent: 13 February 2010 11:38
To: Mark Stansfield
Subject: Request permission to use questionnaire

Dear Dr Stansfield,

By way of an introduction, my name is Reshma Subbaye and I am a student at the University of KwaZulu Natal in Durban, South Africa.

I am registered at the University's Graduate School of Business (GSB) and I intend on writing my Masters dissertation topic on "Factors influencing internet adoption amongst SMEs in KwaZulu Natal" (working title).

I encountered your article on "'An Investigation into the Use of Electronic Commerce among Small to Medium Sized Enterprises" published in the *Journal of Electronic Commerce Research*, (2003).

I am interested in carrying out a similar (quantitative only) study in South Africa. However for practical reasons my study sample will be smaller.

Research staff at the GSB encourage students to use validated questionnaires for their research and I am interested in using the questionnaire created for your study to collect my data.

I would be very grateful if you could assist, by granting me permission to use the above mentioned questionnaire for my dissertation.

Should you require, I will gladly email you a copy of my final submission once accepted by the GSB.

If you have any queries, please do not hesitate to contact me. I look forward to hearing from you.

Sincerely,

Reshma Subbaye
Postgraduate student
University of KwaZulu Natal
Graduate School of Business
Westville Campus
Durban, RSA

From: "Melody Kiang" <mkiang@csulb.edu>
To: "Reshma Subbaye" <Subbaye@ukzn.ac.za>
CC: <mkiang@csulb.edu>
Date: 2010-05-01 03:40 AM
Subject: Re: Permission to use questionnaire published in JECR 2003 -Vol4, Issue 1, p15-33

Dear Reshma,
You are welcome to adapt the questionnaire in your dissertation as long as proper citation regarding the source is included.

Dr. Melody Kiang
Co-editor in Chief,
Journal of Electronic Commerce Research

8.3 APPENDIX C: INFORMED CONSENT

APPENDIX C1

Informed Consent Letter 3C

**UNIVERSITY OF KWAZULU-NATAL
SCHOOL**

Dear Respondent,

MBA Research Project

Researcher: Reshma Subbaye (031 260 1569)

Supervisor: M Marimuthu (031 260 7444)

Research Office: Ms P Ximba 031-2603587

I, Reshma Subbaye am an MBA student, at the Graduate School of Business, of the University of Kwazulu Natal. You are invited to participate in a research project entitled “**INTERNET ADOPTION AMONG SMALL AND MICRO ENTERPRISES (SMEs), IN THE BUSINESS SERVICES SECTOR**”. The aim of this study is to investigate the factors that influence internet adoption among SMEs in the business services sector located in Chatsworth, KwaZulu Natal.

Through your participation I hope to understand the factors that encourage and/or inhibit internet adoption among SMEs, in the business services sector. The results of the questionnaire are intended to contribute to a greater understanding of the factors that facilitate or act as barriers to Internet adoption, to inform government and policy makers. It will be published in a dissertation as a requirement for completion of my Masters in Business Administration.

Your participation in this project is voluntary. You may refuse to participate or withdraw from the project at any time with no negative consequence. There will be no monetary gain from participating in this survey. Confidentiality and anonymity of records identifying you as a participant will be maintained by the Graduate School of Business, UKZN.

If you have any questions or concerns about completing the questionnaire or about participating in this study, you may contact me or my supervisor at the numbers listed above.

The survey should take you about 20 minutes to complete. I hope you will take the time to complete this survey.

Sincerely

Investigator's signature _____ Date _____

APPENDIX C2

UNIVERSITY OF KWAZULU-NATAL SCHOOL

MBA Research Project

Researcher: Reshma Subbaye (Telephone number)

Supervisor: M Marimuthu (031 260 744Telephone number)

Research Office: Ms P Ximba 031-2603587

CONSENT

I.....(full names of participant) hereby confirm that I understand the contents of this document and the nature of the research project, and I consent to participating in the research project.

I understand that I am at liberty to withdraw from the project at any time, should I so desire.

SIGNATURE OF PARTICIPANT

DATE

.....

This page is to be retained by researcher

8.4 APPENDIX D: RESEARCH INSTRUMENT (QUESTIONNAIRE)

APPENDIX D: INTERNET ADOPTION AMONG SMEs IN THE BUSINESS SERVICES SECTOR

This questionnaire should take around 10-15 minutes to complete and is printed on both sides (2 PAGES).

PLEASE provide responses on both sides of the page.

No:

Please place a mark (✓) or (X) on the relevant response.

Choose only ONE option per question (e.g. What is your gender? ☒ Male)

1	In what capacity do you run this business?	Owner	Manager		
2	How many staff are employed in this business (part & full time) (Fill in a number, in the space provided)				
3	What service best describes your core business activity?	Accounting/Tax/Auditing services	Advertising	Architectural/Engineering services	Business / management consultancy
		Building/ Industrial plant cleaning/fumigation activities	Computer related services	Debt collection/ Credit rating	Legal services
		Labour brokers	Packaging services	Photography/ Sign-writing services	Renting of machinery and equipment
		Research and development services	Other Please specify:		
4	When did this business start?	In the past 12 months	1-3 years ago	More than 3 years ago	
5	Please indicate which of the following you use for business purposes. (you may mark more than one response)	Computers	E-mail	Internet (www)	
		Company Intranet (LAN)	Cell-phones	Telephone or Fax (TeleFax)	
		None	Other Please specify:		

Please indicate how much you agree with the following statements.

Choose only ONE option per question.

1= Strongly disagree, 2= Disagree 3= No opinion, 4=Agree, 5=Strongly agree

		Strongly disagree	Disagree	No opinion	Agree	Strongly Agree
6	The Internet has no relevance to this business	1	2	3	4	5
7	The Internet is too expensive	1	2	3	4	5
8	The Internet is too complex to use	1	2	3	4	5
9	The Internet is too slow	1	2	3	4	5
10	The Internet poses a security threat to businesses	1	2	3	4	5
11	My staff have the skills to use the Internet	1	2	3	4	5
12	My staff will waste time using the Internet	1	2	3	4	5
13	My customers expect us to be on-line	1	2	3	4	5
14	My suppliers expect us to be on-line	1	2	3	4	5
15	My competitors are on-line	1	2	3	4	5
16	The Internet is a valuable business tool	1	2	3	4	5
17	The government should give businesses more incentives to get on the Internet	1	2	3	4	5
18	IT consultant services are too expensive	1	2	3	4	5
19	IT consultants are hard to find	1	2	3	4	5
20	The cost of electricity is too high	1	2	3	4	5

Adapted from (Stansfield and Grant, 2003)

Page | 1

APPENDIX D: INTERNET ADOPTION AMONG SMEs IN THE BUSINESS SERVICES SECTOR

Please indicate how much you agree with the following statements. Choose only ONE option.

		Strongly disagree	Disagree	No opinion	Agree	Strongly Agree
21	The cost of equipment required to use the Internet is too high	1	2	3	4	5
22	I do not understand how the Internet works	1	2	3	4	5
23	There is a lack of support from the government for businesses to use the Internet	1	2	3	4	5
24	There is a lack of information, on how to use the internet for business purposes	1	2	3	4	5
25	The Internet can give my business a competitive edge in this industry	1	2	3	4	5

Please complete the sentence by placing a mark in the relevant box. Choose only ONE option.

This business: (1=YES, 2=NO, 3=PLANS TO)

		YES	NO	PLANS TO
26	Has a web page (or website)	1	2	3
27	Is listed in an on-line directory	1	2	3
28	Has on-site Internet access	1	2	3
29	Purchases goods/services over the internet	1	2	3
30	Sells goods/services over the internet	1	2	3
31	Provides information about its services over the Internet (i.e. advertises over the internet)	1	2	3
32	Uses the internet to find out about competitors	1	2	3
33	Uses the Internet because it is expected in the industry in which it operates	1	2	3
34	Uses the internet to attract new customers	1	2	3
35	Uses the internet to find suppliers	1	2	3
36	Uses the internet to build business connections	1	2	3
37	Uses the internet to recruit new staff	1	2	3
38	Uses the Internet to do industry and/or market research	1	2	3
39	Uses the Internet to receive payments for services rendered	1	2	3
40	Does Internet banking	1	2	3
41	Uses the Internet to order non inventory items (eg stationery, travel bookings)	1	2	3
42	Allows staff to use the internet to search for information	1	2	3
43	Uses email for internal communication between staff	1	2	3
44	Uses email to communicate with customers	1	2	3
45	Uses email to communicate with suppliers	1	2	3
46	Gives staff training on using the internet and email	1	2	3
47	Uses the internet and email to streamline its internal operations	1	2	3

THANK YOU FOR COMPLETING THIS QUESTIONNAIRE AND CONTRIBUTING TO THE RESEARCH STUDY

Adapted from (Stansfield and Grant, 2003)

Page | 2

8.5 APPENDIX E: CORRELATION TABLE- FACTORS INHIBITING INTERNET ADOPTION

SPEARMAN'S RHO		rec_q7: The internet is too expensive	rec_q8: The Internet is too complex	rec_q9 : The Internet is too slow	rec_q10: The Internet poses a security threat to businesses	rec_q12 : My staff will waste time using the Internet	rec_q18: IT consultant services are too expensive	rec_q19: IT consultants are hard to find	rec_q21: Cost of equipment required to use the Internet is too high	rec_q22: I do not understand how the Internet works	rec_q23: There is a lack of support from the government for businesses to use the Internet	rec_q24: There is a lack of information on how to use the Internet for business purposes	rec_Us eInternet
rec_q7: The internet is too expensive	Correlation Coefficient Sig. (1- tailed) N	1.000 61	0.081 0.267 61	0.090 0.244 61	.306(**) 0.008 61	-0.072 0.290 61	0.069 0.300 61	0.187 0.074 61	.478(**) 0.000 61	-0.001 0.496 61	0.045 0.366 61	.328(**) 0.005 61	0.014 0.459 61
rec_q8: The Internet is too complex	Correlation Coefficient Sig. (1- tailed) N	0.081 0.267 61	1.000 61	0.102 0.217 61	0.094 0.236 61	0.140 0.140 61	-0.049 0.355 61	.254(*) 0.024 61	-0.108 0.203 61	.339(**) 0.004 61	0.042 0.374 61	.295(*) 0.011 61	.258(*) 0.022 61
rec_q9: The Internet is too slow	Correlation Coefficient Sig. (1- tailed) N	0.090 0.244 61	0.102 0.217 61	1.000 61	0.148 0.127 61	0.061 0.320 61	0.051 0.347 61	.370(**) 0.002 61	.270(*) 0.018 61	0.078 0.276 61	0.020 0.439 61	0.016 0.452 61	0.023 0.431 61
rec_q10: The Internet poses a security threat to businesses	Correlation Coefficient Sig. (1- tailed) N	.306(**) 0.008 61	0.094 0.236 61	0.148 0.127 61	1.000 61	-0.210 0.052 61	0.046 0.363 61	0.132 0.156 61	.411(**) 0.000 61	.272(*) 0.017 61	0.013 0.462 61	0.140 0.140 61	-0.097 0.228 61
rec_q12: My staff will waste time using the Internet	Correlation Coefficient Sig. (1- tailed) N	-0.072 0.290 61	0.140 0.140 61	0.061 0.320 61	-0.210 0.052 61	1.000 61	.251(*) 0.025 61	0.150 0.124 61	-0.001 0.498 61	-0.018 0.445 61	-0.026 0.421 61	-0.049 0.354 61	0.090 0.245 61
rec_q18: IT consultant services are	Correlation Coefficient Sig. (1- tailed) N	0.069 0.300 61	-0.049 0.355 61	0.051 0.347 61	0.046 0.363 61	.251(*) 0.025 61	1.000 61	.369(**) 0.002 61	.305(**) 0.008 61	0.069 0.298 61	-0.070 0.296 61	-0.080 0.271 61	-0.060 0.324 61

Appendix E: Spearman's rho (r_s) correlation Tables: Factors inhibiting Internet adoption

too expensive	tailed)												
	N	61	61	61	61	61	61	61	61	61	61	61	61
rec_q19: IT consultants are hard to find	Correlation Coefficient	0.187	.254(*)	.370(**)	0.132	0.150	.369(**)	1.000	.220(*)	.233(*)	0.064	0.100	0.072
	Sig. (1-tailed)	0.074	0.024	0.002	0.156	0.124	0.002		0.044	0.035	0.312	0.222	0.290
	N	61	61	61	61	61	61	61	61	61	61	61	61
rec_q21: Cost of equipment required to use the Internet is too high	Correlation Coefficient	.478(**)	-0.108	.270(*)	.411(**)	-0.001	.305(**)	.220(*)	1.000	0.013	-.289(*)	-0.036	0.072
	Sig. (1-tailed)	0.000	0.203	0.018	0.000	0.498	0.008	0.044		0.462	0.012	0.390	0.291
	N	61	61	61	61	61	61	61	61	61	61	61	61
rec_q22: I do not understand how the Internet works	Correlation Coefficient	-0.001	.339(**)	0.078	.272(*)	-0.018	0.069	.233(*)	0.013	1.000	0.105	0.196	0.188
	Sig. (1-tailed)	0.496	0.004	0.276	0.017	0.445	0.298	0.035	0.462		0.210	0.065	0.074
	N	61	61	61	61	61	61	61	61	61	61	61	61
rec_q23: There is a lack of support from the government for businesses to use the Internet	Correlation Coefficient	0.045	0.042	0.020	0.013	-0.026	-0.070	0.064	-.289(*)	0.105	1.000	.290(*)	-0.172
	Sig. (1-tailed)	0.366	0.374	0.439	0.462	0.421	0.296	0.312	0.012	0.210		0.012	0.092
	N	61	61	61	61	61	61	61	61	61	61	61	61
rec_q24: There is a lack of information on how to use the Internet for business purposes	Correlation Coefficient	.328(**)	.295(*)	0.016	0.140	-0.049	-0.080	0.100	-0.036	0.196	.290(*)	1.000	-0.006
	Sig. (1-tailed)	0.005	0.011	0.452	0.140	0.354	0.271	0.222	0.390	0.065	0.012		0.481
	N	61	61	61	61	61	61	61	61	61	61	61	61
rec_Uselnternet	Correlation Coefficient	0.014	.258(*)	0.023	-0.097	0.090	-0.060	0.072	0.072	0.188	-0.172	-0.006	1.000
	Sig. (1-tailed)	0.459	0.022	0.431	0.228	0.245	0.324	0.290	0.291	0.074	0.092	0.481	
	N	61	61	61	61	61	61	61	61	61	61	61	61

8.6 APPENDIX F: CORRELATION TABLE- FACTORS FACILITATING INTERNET ADOPTION

			Correlations							
			q11: My staff have the skills to use the Internet	q13: My customers expect us to be on-line	q14: My suppliers expect us to be on-line	q15: My competitors are on-line	q16: The Internet is a valuable business tool	q17: The government should give businesses more incentives to get on the Internet	q25: The Internet can give my business a competitive edge in this industry	rec_UseInternet
Spearman's rho	q11: My staff have the skills to use the Internet	Correlation Coefficient	1.000	.411(**)	.330(**)	.257(*)	.072	.203	-.079	.183
		Sig. (1-tailed)	.	.001	.005	.023	.290	.058	.272	.080
		N	61	61	61	61	61	61	61	61
	q13: My customers expect us to be on-line	Correlation Coefficient	.411(**)	1.000	.664(**)	.518(**)	.185	.226(*)	-.020	.510(**)
		Sig. (1-tailed)	.001	.	.000	.000	.077	.040	.440	.000
		N	61	61	61	61	61	61	61	61
	q14: My suppliers expect us to be on-line	Correlation Coefficient	.330(**)	.664(**)	1.000	.614(**)	.089	.060	.084	.446(**)
		Sig. (1-tailed)	.005	.000	.	.000	.248	.322	.260	.000
		N	61	61	61	61	61	61	61	61
	q15: My competitors are on-line	Correlation Coefficient	.257(*)	.518(**)	.614(**)	1.000	.310(**)	.238(*)	.046	.368(**)
		Sig. (1-tailed)	.023	.000	.000	.	.007	.032	.363	.002
		N	61	61	61	61	61	61	61	61
	q16: The Internet is a valuable business tool	Correlation Coefficient	.072	.185	.089	.310(**)	1.000	.541(**)	.133	.063
		Sig. (1-tailed)	.290	.077	.248	.007	.	.000	.153	.316
		N	61	61	61	61	61	61	61	61
	q17: The government should give businesses more incentives to get on the Internet	Correlation Coefficient	.203	.226(*)	.060	.238(*)	.541(**)	1.000	.087	.087
		Sig. (1-tailed)	.058	.040	.322	.032	.000	.	.252	.252
		N	61	61	61	61	61	61	61	61
	q25: The Internet can give my business a competitive edge in this industry	Correlation Coefficient	-.079	-.020	.084	.046	.133	.087	1.000	.021
		Sig. (1-tailed)	.272	.440	.260	.363	.153	.252	.	.437
		N	61	61	61	61	61	61	61	61
	rec_UseInternet	Correlation Coefficient	.183	.510(**)	.446(**)	.368(**)	.063	.087	.021	1.000
		Sig. (1-tailed)	.080	.000	.000	.002	.316	.252	.437	.
		N	61	61	61	61	61	61	61	61

** Correlation is significant at the 0.01 level (1-tailed).

* Correlation is significant at the 0.05 level (1-tailed).

8.7 APPENDIX G: LANGUAGE COMPETENCY

Reshma Subbaye - Editing of dissertation

From: Catherine Blanchard
To: Reshma Subbaye
Date: 2010-07-19 10:45 AM
Subject: Editing of dissertation

Dear Reshma

I have read the final version of your dissertation. You have made all the changes that were suggested after editing the earlier version. I believe the language therein is now satisfactory.

Kind regards

Dr Catherine Blanchard
BA Hons (English), D Litt et Phil

8.8 APPENDIX H: KOLMOGOROV-SMIRNOV (K-S) TEST

NPAT TESTS

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/K-S(NORMAL)= Rec_BusSize BusActivity BusStart InternetRelevance
REC_InternetRel Expensive REC_EXP Complex Rec_CMPX Slow REC_SLOW
SecurityThreat REC_SECTHRT Staffskills StaffWasteTime rec_StaffWasteTime
CustomerExpectation SupplierExpectation Competitors InternetValuableTool
GovtIncentives ConsultantServices REC_CNSLTSRV Consultants REC_CNSLT
Electricity rec_Electricity ITEquipment REC_ITEQP Understanding Rec_UND
GovtSupport rec_GovtSpp Information rec_Info CompetitiveEdge rec_Webpage
rec_Listed rec_InternetAccess rec_Buying rec_Selling rec_providesInfo
rec_FindsCompetitors rec_IndustryExp rec_AttractNewbies rec_FindSuppliers
rec_BusConnx rec_RecruitStaff rec_MktResearch rec_RecvPay rec_Banking
rec_OrderItems rec_StaffSearch rec_IntlComms rec_EmailCusts rec_EmailSupps
rec_StaffTraining rec_StreamlineOpps rec_UseComps rec_UseEmail
rec_UseInternet rec_UseIntranet rec_UseCell rec_UseTeleFax rec_UseNone
/MISSING ANALYSIS
/METHOD=EXACT TIMER(5).

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NPar Tests

[DataSet1] C:\Documents and Settings\user\Desktop\MBA_110710\RS_dissertation\DataAnalysis\SMEInternetAdoption_WORKINGCOPY.sav

One-Sample Kolmogorov-Smirnov Test

		rec_q2: Number of employees	q3: What is your core business activity	q4: When did the business start?	q6: The internet has no relevance to this business	rec_q6: The internet has no relevance to this business	q7: The internet is too expensive	rec_q7: The internet is too expensive
N		61	61	61	61	61	61	61
Normal Parameters ^{a,b}	Mean	1.38	6.41	2.72	2.07	3.93	3.36	2.6393
	Std. Deviation	.489	3.180	.521	.814	.814	1.170	1.16951
Most Extreme Differences	Absolute	.403	.128	.458	.368	.368	.331	.331
	Positive	.403	.128	.296	.368	.271	.238	.331
	Negative	-.276	-.118	-.458	-.271	-.368	-.331	-.238
Kolmogorov-Smirnov Z		3.146	1.001	3.576	2.876	2.876	2.582	2.582
Asymp. Sig. (2-tailed)		.000	.269	.000	.000	.000	.000	.000
Exact Sig. (2-tailed)		.000	.247	.000	.000	.000	.000	.000
Point Probability		.000	.000	.000	.000	.000	.000	.000

One-Sample Kolmogorov-Smirnov Test

		q8: The Internet is too complex	rec_q8: The Internet is too complex	q9: The Internet is too slow	rec_q9: The Internet is too slow	q10: The Internet poses a security threat to businesses	rec_q10: The Internet poses a security threat to businesses	q11: My staff have the skills to use the Internet
N		61	61	61	61	61	61	61
Normal Parameters ^{a,b}	Mean	2.33	3.67	2.62	3.3770	3.21	2.7869	3.16
	Std. Deviation	.811	.811	1.035	1.03544	1.066	1.06638	1.186
Most Extreme Differences	Absolute	.444	.444	.349	.349	.327	.327	.333
	Positive	.444	.294	.349	.208	.233	.327	.230
	Negative	-.294	-.444	-.208	-.349	-.327	-.233	-.333
Kolmogorov-Smirnov Z		3.467	3.467	2.728	2.728	2.555	2.555	2.604
Asymp. Sig. (2-tailed)		.000	.000	.000	.000	.000	.000	.000
Exact Sig. (2-tailed)		.000	.000	.000	.000	.000	.000	.000
Point Probability		.000	.000	.000	.000	.000	.000	.000

One-Sample Kolmogorov-Smirnov Test

		q12: My staff will waste time using the Internet	rec_q12: My staff will waste time using the Internet	q13: My customers expect us to be on-line	q14: My suppliers expect us to be on-line	q15: My competitors are on-line	q16: The Internet is a valuable business tool	q17: The government should give businesses more incentives to get on the Internet
N		61	61	61	61	61	61	61
Normal Parameters ^{a,b}	Mean	2.97	3.0328	3.39	3.56	3.70	4.08	4.18
	Std. Deviation	1.110	1.11006	1.069	.922	.715	.614	.742
Most Extreme Differences	Absolute	.349	.349	.371	.438	.414	.414	.371
	Positive	.349	.250	.220	.283	.291	.389	.317
	Negative	-.250	-.349	-.371	-.438	-.414	-.414	-.371
Kolmogorov-Smirnov Z		2.727	2.727	2.894	3.424	3.235	3.234	2.899
Asymp. Sig. (2-tailed)		.000	.000	.000	.000	.000	.000	.000
Exact Sig. (2-tailed)		.000	.000	.000	.000	.000	.000	.000
Point Probability		.000	.000	.000	.000	.000	.000	.000

One-Sample Kolmogorov-Smirnov Test

		q18: IT consultant services are too expensive	rec_q18: IT consultant services are too expensive	q19: IT consultants are hard to find	rec_q19: IT consultants are hard to find	q20: Cost of electricity is too high	rec_q20: Cost of electricity is too high	q21: Cost of equipment required to use the Internet is too high
N		61	61	61	61	61	61	61
Normal Parameters ^{a,b}	Mean	3.38	2.6230	2.39	3.6066	4.36	1.6393	3.08
	Std. Deviation	1.143	1.14257	.988	.98790	.708	.70788	1.069
Most Extreme Differences	Absolute	.330	.330	.425	.425	.259	.259	.346
	Positive	.247	.330	.425	.263	.252	.259	.287
	Negative	-.330	-.247	-.263	-.425	-.259	-.252	-.346
Kolmogorov-Smirnov Z		2.579	2.579	3.321	3.321	2.026	2.026	2.700
Asymp. Sig. (2-tailed)		.000	.000	.000	.000	.001	.001	.000
Exact Sig. (2-tailed)		.000	.000	.000	.000	.000	.000	.000
Point Probability		.000	.000	.000	.000	.000	.000	.000

One-Sample Kolmogorov-Smirnov Test

		rec_q21: Cost of equipment required to use the Internet is too high	q22: I do not understand how the Internet works	rec_q22: I do not understand how the Internet works	q23: There is a lack of support from the government for businesses to use the Internet	rec_q23: There is a lack of support from the government for businesses to use the Internet	q24: There is a lack of information on how to use the Internet for business purposes	rec_q24: There is a lack of information on how to use the Internet for business purposes
N		61	61	61	61	61	61	61
Normal Parameters ^{a,b}	Mean	2.9180	1.95	4.0492	4.03	1.9672	3.08	2.9180
	Std. Deviation	1.06919	.617	.61715	.657	.65745	1.130	1.12982
Most Extreme Differences	Absolute	.346	.403	.403	.398	.398	.300	.300
	Positive	.346	.403	.368	.356	.398	.290	.300
	Negative	-.287	-.368	-.403	-.398	-.356	-.300	-.290
Kolmogorov-Smirnov Z		2.700	3.145	3.145	3.110	3.110	2.343	2.343
Asymp. Sig. (2-tailed)		.000	.000	.000	.000	.000	.000	.000
Exact Sig. (2-tailed)		.000	.000	.000	.000	.000	.000	.000
Point Probability		.000	.000	.000	.000	.000	.000	.000

One-Sample Kolmogorov-Smirnov Test

		q25: The Internet can give my business a competitive edge in this industry	rec_q26: Has a webpage	rec_q27: Listed in an on-line directory	rec_q28: On site Internet access	rec_q29: Purchases goods/services over the Internet	rec_q30: Sells goods/services over the Internet	rec_q31: Provides info about its services over the Internet
N		61	61	61	61	61	61	61
Normal Parameters ^{a,b}	Mean	4.13	1.52	1.84	2.43	1.51	1.34	1.95
	Std. Deviation	.591	.829	.934	.903	.868	.704	.902
Most Extreme Differences	Absolute	.375	.425	.339	.442	.459	.474	.280
	Positive	.375	.425	.339	.263	.459	.474	.280
	Negative	-.363	-.263	-.254	-.442	-.279	-.313	-.255
Kolmogorov-Smirnov Z		2.927	3.320	2.649	3.455	3.581	3.705	2.189
Asymp. Sig. (2-tailed)		.000	.000	.000	.000	.000	.000	.000
Exact Sig. (2-tailed)		.000	.000	.000	.000	.000	.000	.000
Point Probability		.000	.000	.000	.000	.000	.000	.000

One-Sample Kolmogorov-Smirnov Test

		rec_q32: Uses Internet to find out about competitors	rec_q33: Uses Internet because its expected in the industry	rec_q34: Uses Internet to attract ne customers	rec_q35: Uses Internet to find suppliers	rec_q36: Uses Internet to build business connections	rec_q37: Uses Internet to recruit new staff	rec_q38: Uses Internet to do industry/mark et research
N		61	61	61	61	61	61	61
Normal Parameters ^{a,b}	Mean	2.80	2.38	2.54	2.82	2.30	1.54	2.77
	Std. Deviation	.572	.897	.743	.500	.843	.867	.589
Most Extreme Differences	Absolute	.520	.412	.420	.510	.339	.438	.504
	Positive	.365	.244	.268	.359	.202	.438	.348
	Negative	-.520	-.412	-.420	-.510	-.339	-.266	-.504
Kolmogorov-Smirnov Z		4.059	3.217	3.281	3.980	2.650	3.425	3.938
Asymp. Sig. (2-tailed)		.000	.000	.000	.000	.000	.000	.000
Exact Sig. (2-tailed)		.000	.000	.000	.000	.000	.000	.000
Point Probability		.000	.000	.000	.000	.000	.000	.000

One-Sample Kolmogorov-Smirnov Test

		rec_q39: Uses Internet to receive payments for services rendered	rec_q40: Does Internet banking	rec_q41: Uses Internet to order non-inventory items	rec_q42: Allows staff to use the Internet to search for information	rec_q43: Uses Email for internal communication	rec_q44: Uses Email to communicate with customers	rec_q45: Uses Email to communicate with suppliers
N		61	61	61	61	61	61	61
Normal Parameters ^{a,b}	Mean	2.20	2.66	1.77	1.98	2.31	2.77	2.70
	Std. Deviation	.928	.750	.956	.991	.958	.616	.691
Most Extreme Differences	Absolute	.348	.497	.380	.331	.420	.514	.501
	Positive	.246	.323	.380	.331	.259	.355	.335
	Negative	-.348	-.497	-.262	-.323	-.420	-.514	-.501
Kolmogorov-Smirnov Z		2.716	3.878	2.969	2.587	3.277	4.015	3.915
Asymp. Sig. (2-tailed)		.000	.000	.000	.000	.000	.000	.000
Exact Sig. (2-tailed)		.000	.000	.000	.000	.000	.000	.000
Point Probability		.000	.000	.000	.000	.000	.000	.000

One-Sample Kolmogorov-Smirnov Test

		rec_q46: Gives staff training on using the Internet and email	rec_q47: Use the Internet to streamline its internal operations	rec_ UseComps	rec_ UseEmail	rec_ UseInternet	rec_ UseIntranet	rec UseCell
N		61	61	61	61	61	61	61
Normal Parameters ^{a,b}	Mean	1.72	1.59	1.93	1.87	1.79	1.08	1.82
	Std. Deviation	.897	.761	.250	.340	.413	.277	.388
Most Extreme Differences	Absolute	.363	.355	.538	.519	.484	.535	.499
	Positive	.363	.355	.396	.350	.303	.535	.321
	Negative	-.218	-.219	-.538	-.519	-.484	-.383	-.499
Kolmogorov-Smirnov Z		2.836	2.771	4.202	4.052	3.780	4.175	3.896
Asymp. Sig. (2-tailed)		.000	.000	.000	.000	.000	.000	.000
Exact Sig. (2-tailed)		.000	.000	.000	.000	.000	.000	.000
Point Probability		.000	.000	.000	.000	.000	.000	.000

One-Sample Kolmogorov-Smirnov Test

		rec_UseTeleFax	rec_UseNone
N		61	61
Normal Parameters ^{a,b}	Mean	1.89	1.00
	Std. Deviation	.321	.000 ^c
Most Extreme Differences	Absolute	.525	
	Positive	.361	
	Negative	-.525	
Kolmogorov-Smirnov Z		4.098	
Asymp. Sig. (2-tailed)		.000	
Exact Sig. (2-tailed)		.000	
Point Probability		.000	

a. Test distribution is Normal.

b. Calculated from data.

c. The distribution has no variance for this variable. One-Sample Kolmogorov-Smirnov Test cannot be performed.

8.9 APPENDIX I: SUM OF RESPONSES (S) – CALCULATION AND INTERPRETATION

Example: Respondents were asked to rate their level of agreement with the following statement “The Internet is a waste of time”. A five point Likert scale where 1=strongly disagree, 2 = disagree, 3= no opinion, 4 = agree, 5 = strongly agree, was used. N=15.

The responses were as categorised as follows: 5 participants strongly disagreed, 4 participants disagreed, 3 participants had no opinion, 2 participants agreed and 1 participant strongly agreed.

Note, the *mid-point* of the scale is **3 = no opinion**. Therefore the mid-point for the sum would be the mid-point of the scale multiplied by the total number of respondents. In this case $3 \times 15 = 45$.

This can be interpreted that if the sum of responses = 45, the respondents had no opinion about the statement

Calculation: From the example above, the sum of responses would be:

$$S = 1(5) + 2(4) + 3(3) + 4(2) + 5(1) = 35$$

This result can be interpreted as follows:

S = 45 indicates no opinion

Therefore, $S < 45$ indicates disagreement and $S > 45$ indicates agreement

Therefore from the example, we can determine that the overall response was disagreement with the statement that “The Internet is a waste of time”.

The sum of responses is an appropriate calculation for ordinal scales and is interpreted in a similar fashion to the mean value calculated for continuous data.

Therefore, in **Table 4-3**, where 1 = No, 2 = Plans to, 3 = Yes, and $n=61$.

The sum of responses (S) is calculated as: $S = 1(a_1) + 2(a_2) + 3(a_3)$.

Note, **2 = Plans to** is the midpoint of the scale.

Therefore, the midpoint of the sum of responses (S) = $2(61) = 122$

Therefore $S < 122$ indicates “non-use of the Internet”

$S = 122$ implies “planned usage” and

$S > 122$ implies “uses the Internet”

Similarly the median = 1 implies non-use, median = 2 implies planned use and median = 3 implies uses the Internet.

In **Tables 4-4 & 4-6**, the mid-point of the sum of responses was $S = 3(61) = 183$

In **Table 4-5**, the mid-point of the sum of responses was $S = 3(13) = 39$

8.10 APPENDIX J: ETHICAL APPROVAL



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05 May 2010

Miss R Subbaye
P O Box 56559
CROFTDENE
4030

Dear Miss Subbaye

PROTOCOL: Internet adoption among small and micro enterprises in the business services sector

ETHICAL APPROVAL NUMBER: HSS/0206/2010: Faculty of Management Studies

In response to your application dated 28 April 2010, Student Number: **205524357** the Humanities & Social Sciences Ethics Committee has considered the abovementioned application and the protocol has been given **FULL APPROVAL**.

PLEASE NOTE: Research data should be securely stored in the school/department for a period of 5 years.

I take this opportunity of wishing you everything of the best with your study.

Yours faithfully

Professor Steve Collings (Chair)
HUMANITIES & SOCIAL SCIENCES ETHICS COMMITTEE

SC/sn

cc: Mr M Marimuthu (Supervisor)
cc: Mrs C Haddon