UNIVERSITY OF KWAZULU-NATAL

ADOPTION OF E-COMMERCE BY SMALL, MEDIUM AND MICRO ENTERPRISES IN PIETERMARITZBURG AND DURBAN

By

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DECLARATION

I, Patrick Ndayizigamiye declare that:

(i) The research reported in this dissertation, except where otherwise indicated, is my original research.

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Patrick Ndayizigamiye November 2012

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ABSTRACT

There are a number of benefits associated with e-commerce adoption. E-commerce provides an opportunity for Small, Medium and Micro Enterprises (SMMEs) to expand their range of transactions and expansion into foreign markets (OECD, 2000). In South Africa, a study on online retail reveals that South Africans spent two (2) billion rands buying goods online in 2010 (WorldWideWorx, 2011a). The projected growth of online spending was 40% for 2011 (ibid). In addition, at the end of the year 2011, the number of internet users in South Africa was approximately 8.5 million (Goldstuck, 2012). Furthermore, the installation of new undersea telecommunications cables in South Africa that will lead to an increase of the internet bandwidth at a cheaper price, the granting of licenses that allows Internet Service Providers to build their own networks and the growth of cell phone internet are indicators that more South Africans will be able to access the internet in the near future. This suggests that there is a market for internet-enabled businesses in South Africa.

It is in this context that this research examines the adoption of e-commerce by South African SMMEs in the Pietermaritzburg and Durban areas. Particularly, this research focuses on four (4) e-commerce options: i) customers payment by credit card through the SMME's website, ii) customers placing orders through the SMME's website, iii) providing customer services through the SMME's website and iv) placing orders with suppliers over the internet.

From a clustered sample of 400 SMMEs from Pietermaritzburg and Durban (200 from each area), this research examines the current usage of the 4 e-commerce options, the determinants and inhibitors of e-commerce, e-commerce readiness in terms of e-commerce enablers that are implemented in those areas and the knowledge that SMMEs from these locations have about the benefits of e-commerce. Variables drawn from the Unified Theory of Acceptance and Use of Technology (UTAUT) and the Diffusion of Innovation (DOI) theory were tested for their significance as determinants of e-commerce within the context of SMMEs. Data were collected by means of questionnaires hand-delivered to SMME owner/managers.

This study reveals that there is a disparity in e-commerce adoption rate by SMMEs between Pietermaritzburg and Durban. Such difference is mainly due to the differences in size of the businesses. In addition, it was found that three UTAUT variables influenced SMMEs' decisions to adopt e-commerce. These variables are i) performance expectancy, ii) effort expectancy and iii) social influence. The social influence factor was found to be moderated by age. In addition, i) relative advantage, ii) compatibility and iii) complexity are the DOI variables that were found

to have exerted some influence in the persuasion phase of the DOI model. The UTAUT and DOI theories were tentatively adapted to reflect the findings emanating from this study.

This research also found that the majority of SMMEs that adopted e-commerce had knowledge of the benefits of e-commerce. Importantly, the research found that the majority of e-commerce adopters had an e-commerce strategy in place which is in contradiction with other research findings from the reviewed literature.

The research shows that the majority of e-commerce adopters in both locations have i) their own company e-mail, ii) internet access and iii) a website. However, non-adopters in Pietermaritzburg show more readiness to e-commerce adoption compared to non-adopters in Durban as the majority of them already have i) an online presence, and ii) electronic mail. As expected, the majority of e-commerce adopters have a computerised inventory of company's products and services. There is also evidence that customers' and suppliers' databases are built to carry out specific e-commerce activities.

Lastly, the research found that whilst low use of e-commerce by customers is the only inhibitor that significantly affects the adoption of e-commerce in Durban, in Pietermaritzburg a number of inhibitors were found to impede e-commerce adoption. These are: i) lack of conviction of the financial and business benefits of e-commerce, ii) limited knowledge of the required technology, iii) low use of e-commerce amongst customers, iv) low use of e-commerce amongst suppliers, v) low level of computerisation within the company, vi) high cost of computers and network technologies, vii) telecommunications services not dependable, viii) concerns about internet security, and ix) concerns about legal issues, contracts and liability.

In light of the research findings, it is recommended that government and policy makers be involved actively in promoting e-commerce adoption by SMMEs. In addition, SMME owners are urged to consider e-commerce adoption from an early stage of their business cycles and to take advantage of existing platforms that enable them to engage in e-commerce activities.

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CHAPTER 1: INTRODUCTION TO THE STUDY

This chapter provides a background to the study. It further delineates the research problem, the sub-problems, and the research questions. Moreover, the theoretical frameworks applied to this study are explained. Potential limitations to the study are also highlighted. Finally, an overview of the study and a summary of this chapter are given at the end of the chapter.

1.1. Introduction

Poon and Swatman (1999:9) define e-commerce as "sharing of business information, maintaining business relationships, and conducting business transactions by means of internet-based technology". There is evidence from the literature to suggest that e-commerce can bring economic benefits. These benefits include improved customer service (Chan and Lee, 2003); expansion of market reach (OECD, 2002); improved customer relationship and communications (Sadowski, Maitland and Van Dongen, 2002; Santarelli and D'altri,2003) and supply chain integration (Lefebvre et al., 2003). However, e-commerce adoption has been slow in Small and Medium Enterprises (SMEs, also known as SMMEs in the South African context) compared to larger organisations and the latter have gained more than SMMEs as far as e-commerce adoption is concerned (MacGregor and Vrazalic, 2005). This is mainly due to SMMEs' specific internal and external factors that influence their prospects of e-commerce adoption.

In the South African context, there is evidence of a steady growth of Business to Consumer e-commerce (B2C) in the area of online retail (WorldWideWorx, 2011a). In addition, there is also evidence of an increase in the number of internet users in South Africa. At the end of the year 2011, the number of internet users in South Africa was about 8.5 million (Goldstuck, 2012). As the number of internet users continues to increase, so is the likelihood that there may be an increase in the number of online shoppers. Thus, South African SMMEs need to take advantage of the growth in online users by having an online presence.

It is in the context delineated above that this research seeks to explore the issue of e-commerce adoption based on four (4) e-commerce activities i.e. i) customers payment by credit card through the SMME's website (B2C), ii) customers placing orders through the SMME's website (B2C), iii) providing customer services through the SMME's website (B2C) and iv) placing orders with suppliers through the internet (B2B[1]). The aim is to examine the current adoption of the four e-commerce options in Durban and Pietermaritzburg. In addition, this research investigates the widely accepted determinants and inhibitors of e-commerce in the specific context of Pietermaritzburg and Durban. This research further seeks to determine whether there

[1] Business to Business e-commerce

are other factors that play a role in this specific context of urban areas within a developing country i.e. South Africa. As the knowledge of the benefits of e-commerce is of paramount importance to its adoption, the research seeks to examine what SMMEs' owner/managers think e-commerce can benefit their businesses and the e-commerce enablers (infrastructure and otherwise) created to facilitate its adoption. The findings from this research will provide recommendations that may help stimulate the growth of e-commerce adoption by SMMEs in South Africa.

1.2. Problem statement

In view of the current and projected B2C growth and the subsequent anticipated continued growth of online users in South Africa, there is a need to explore ways of stimulating e-commerce adoption by South African businesses. In South Africa, the focus is on e-commerce in SMMEs, as they play a vital role in the country's economy. However, due to time and financial constraints, this research is limited to Pietermaritzburg and Durban SMMEs.

The current state of e-commerce adoption by SMMEs in Durban and Pietermaritzburg is unknown. This constitutes the main research problem guiding this research.

To address the main research problem, firstly, there is a need to know to what extent SMMEs have adopted e-commerce. Once the current usage of e-commerce has been established, then a further exploration of factors that had influenced or inhibited such adoption will be conducted. In addition, it is the intention of the researcher to assess the knowledge that SMMEs have about the benefits of e-commerce, and the enablers (technology and otherwise) that SMMEs have put in place, to ensure that adoption takes place.

To sum up, **the intention of this research is to assess the current state of e-commerce adoption by SMMEs in the Durban and Pietermaritzburg areas, with particular reference to determinants of e-commerce adoption, and further, to gather ideas pertaining to SMMEs knowledge of the benefits of e-commerce, the kinds of e-commerce enablers they currently use and the inhibitors of e-commerce adoption from the SMME's perspective**.

The research problem stated above may be split into five (5) sub-problems that capture the intention of this research.

1.2.1. First sub-problem

For the researcher to know the current state of e-commerce adoption in the chosen geographical areas, an investigation into what extent SMMEs have adopted the four (4) e-commerce activities needs to be conducted. To this end, the researcher will investigate the current usage of the four e-commerce options in Durban and Pietermaritzburg. Therefore, the first sub-problem is: **To examine the current usage of e-commerce by SMMEs in Durban and Pietermaritzburg.**

1.2.2. Second sub-problem

In order to understand the reasons behind the level of e-commerce adoption by Durban and Pietermaritzburg SMMEs, a baseline of factors that influence technology adoption need to be extracted from available literature. In this case, the researcher seeks to investigate whether the identified factors (from the literature) or any other factors have played a role in the adoption or non-adoption of e-commerce by SMMEs in Durban or Pietermaritzburg. Thus, the second sub-problem is: **To examine whether SMMEs were influenced by any/all of the listed determinants of e-commerce adoption from the literature**.

1.2.3. Third sub-problem

The third sub-problem seeks to assess Durban and Pietermaritzburg SMMEs' owner/managers knowledge about what e-commerce can do for their business. It is well documented that SMMEs' owner/managers knowledge of e-commerce is directly linked to their decisions to adopt it or not. Hence, the third sub-problem is: **To examine SMMEs knowledge of the benefits of e-commerce.**

1.2.4. Fourth sub-problem

The fourth sub-problem relates to establishing the kinds of e-commerce enablers that SMMEs have put in place in line with e-commerce adoption. Therefore, the fourth sub-problem is: **To examine the kinds of e-commerce enablers, if any, currently used by SMMEs.**

1.2.5. Fifth sub-problem

This sub-problem seeks to determine the factors that inhibit the adoption of e-commerce by SMMEs. The sub-problem will identify the factors that may have constrained the adoption of e-commerce in the surveyed SMMEs. Thus, the fifth sub-problem is: **To examine factors that inhibit e-commerce adoption by SMMEs.**

1.3. Research questions

The following are the research questions pertaining to this study:

1. What is the current usage of e-commerce in Durban and Pietermaritzburg?

2. What is the impact of the determinants identified in the literature, or any other factors, on Durban and Pietermaritzburg SMMEs e-commerce adoption?

3. What do Durban and Pietermaritzburg SMMEs' owner/managers know about the benefits of e-commerce?

4. What e-commerce enablers have SMMEs adopted in line with e-commerce adoption?

5. What are the inhibitors of e-commerce adoption in Durban and Pietermaritzburg from the SMME perspective?

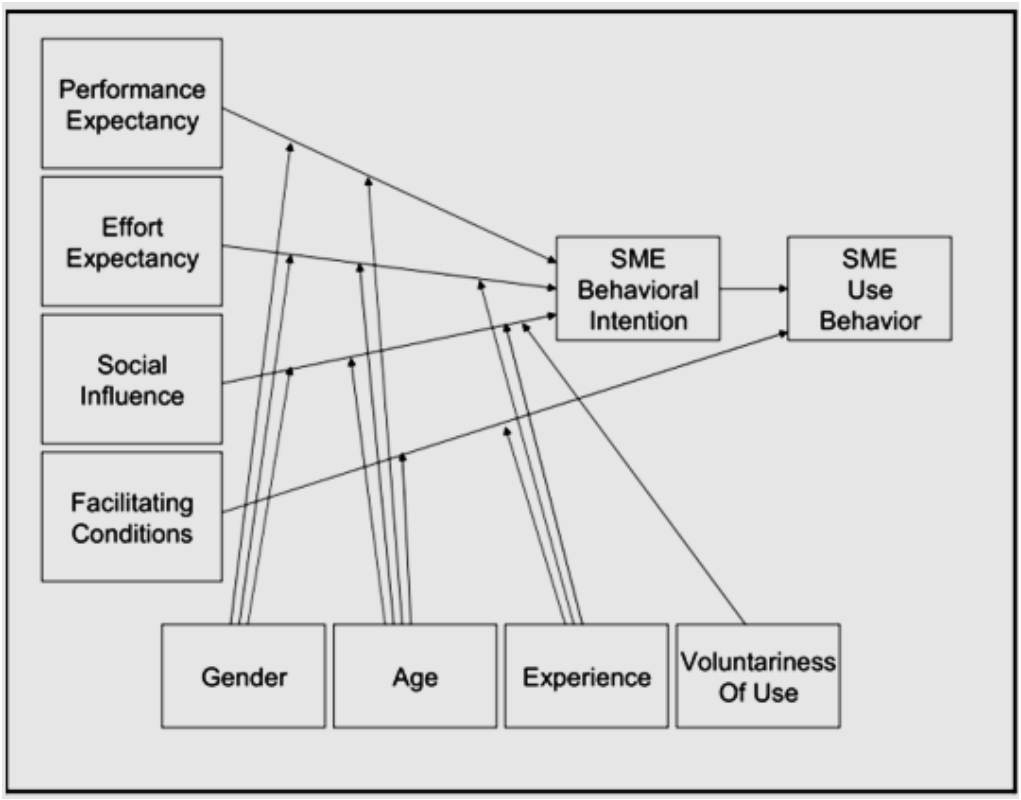
1.4. Theoretical framework

This research adopted two theoretical frameworks to guide in the quest of identifying possible determinants of e-commerce in the surveyed locations. These frameworks are: i) the Unified Theory of Acceptance and Use of Technology (UTAUT) and ii) Diffusion of Innovation (DOI) theory. The following two sections provide an in-depth discussion of these frameworks. The sections further highlight the relevance of the frameworks in relation to this study.

1.4.1. Unified Theory of Acceptance and Use of Technology (UTAUT)

The Unified Theory of Acceptance and Use of Technology (UTAUT) combines several theories that have been used extensively in research to explain Information Systems (IS) usage behaviour, into one theory with four constructs: performance expectancy, effort expectancy, social influence and facilitating conditions (see figure 1.1 below). The UTAUT model integrates eight dominant models. These are i) the Theory of Reasoned Action (TRA) ii) the Theory of Planned Behaviour (TPB), iii) the Technology Acceptance Model (TAM), iv) the Motivational Model (MM), v) a theory combining the TAM and TPB models (C-TPB-TAM), vi) the model of Personal Computer (PC) Utilisation (MPCU), vii) the Diffusion of Innovation theory (DOI), and viii) the Social Cognitive Theory (SCT). Xiaoping and Jing (2008:325-326) state that "according to the empirical validation, this model is better than the eight individual models in explaining user intentions to accept a particular technology".

Figure 1.1: UTAUT model



Source:Venkatesh et al. (2003)

Venkatesh, Morris,Davis and Davis (2003) posit that the four constructs of the UTAUT model are the key determinants of behavioural intention i.e. the intention to use a technology. UTAUT assumes that the actual use of a technology is triggered by the intention to use a technology, which in return is influenced by the four determinants. Performance expectancy refers to the degree to which an individual believes that the use of a system will translate into an increase in job performance. Effort expectancy refers to the extent to which a system is perceived to be easy to use. Social influence is the degree to which individuals perceive that influential people believe they should use a new system. Facilitating conditions refer to the availability of infrastructure (organisational and technical) to support the use of a system. Venkatesh et al. (2003) advocate that gender, age and experience are the most important intervening variables that moderate the effects of the four constructs on the behavioural intention to use the system. Voluntariness of use of a system is also a moderating factor of the social influence on the user's behavioural intention to use a system.

Riemenschneider, Harrison and Mykytyn (2003) propose an integrated model for the study of the determinants of technology adoption in small firms. This need for integration stems from the fact that small firms have idiosyncratic characteristics that need to be recognised. In this

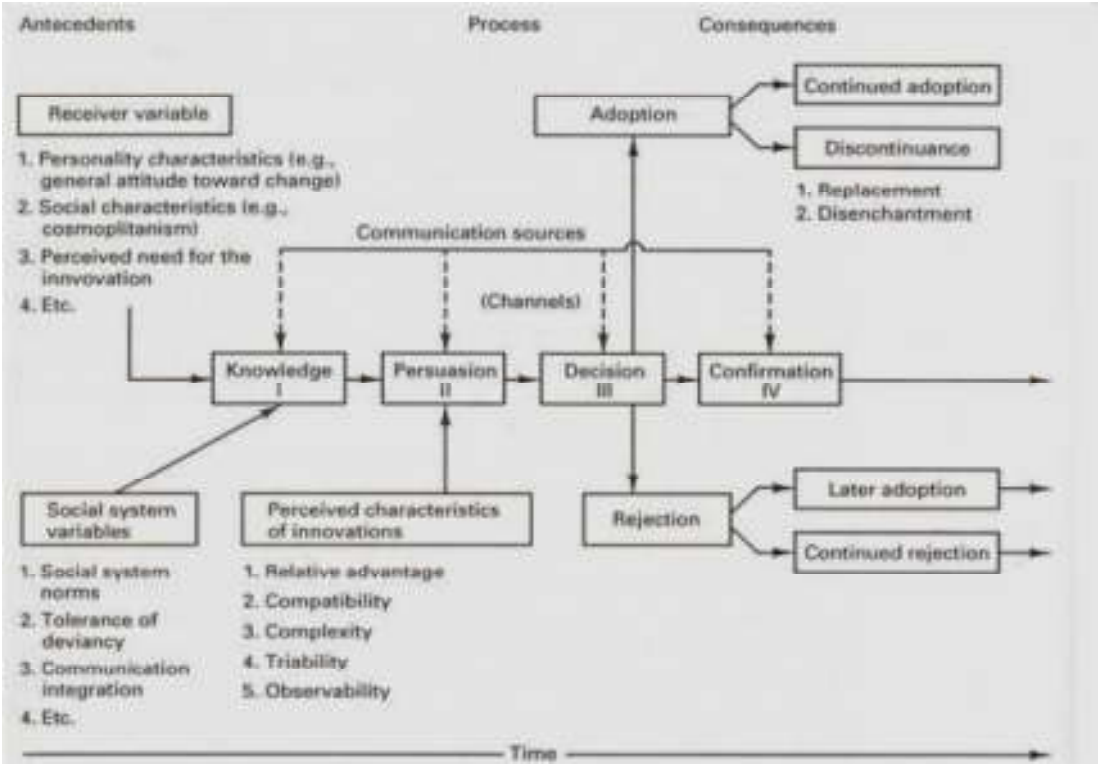
regard, the position of the SMME's owner/manager as the sole decision maker in the firm requires a combination of factors from different models to best explain his/her behavioural intention to adopt a specific technology in small businesses. In the specific context of this study, the four constructs identified in UTAUT are used bearing in mind that the emphasis is on the owner/manager of the firm rather than the user (employee). This stems from the fact that the adoption and use of technology is driven by the SMME's owner/manager who takes the final decision to adopt or not adopt a particular technology. Therefore, the focus on the owner's behavioural intention towards the adoption of a particular system is crucial in SMMEs.

1.4.2. Diffusion of Innovation theory (DOI)

According to Rogers (2003), the diffusion of an innovation is a "decision-making process that occurs through a series of communication channels over a period of time" (Rogers, 2003:5). In essence, the theory provides a conceptual framework through which a new technology is adopted and spread across a social system. Since the theory is being used in the Information System field, the terms innovation and new technology will be used interchangeably.

According to the DOI theory, the adoption process starts with the knowledge phase (see figure 1.2 below), whereby the adopter becomes acquainted with the existence of a technology and learns about it. The adoption process graduates into a second stage which is persuasion. At this stage, the potential adopter collects information about the innovation and makes a judgment on the perceived benefits (utility) of the innovation.

Figure 1.2: DOI theory



Source:Rogers (2003)

Rogers (1995) identifies five major determinants at this stage of persuasion: relative advantage, compatibility, complexity, trialability and observability (see figure 1.2 above).

Relative advantage refers to the perceived benefits of a new technology compared to its predecessor. In this case, potential adopters seek to know the extent to which a new innovation is better than an existing technology. The rate of adoption of an innovation is influenced by the certainty of its anticipated benefits (Rogers, 1995). Thus, the exchange of such innovation information among peers influences the adopters' inclination towards the adoption of the innovation (Rogers, 1995).

Rogers (1995 :233) further argues that relative advantage "is a ratio of the expected benefits and the costs of adoption of an innovation". Relative advantage can be evaluated in terms of "economic profitability, low initial cost, a decrease in discomfort, social prestige, a saving of time and effort and immediacy of reward" (Rogers, 1995 :233) .

Compatibility refers to the perception of the innovation's consistency with the values, previous experiences and needs of potential adopters. Compatibility refers particularly to how close the innovation fits into the individual's situation. An innovation that is compatible with the

individual specific situation reduces the degree of the innovation's uncertainty (Rogers, 1995). Rogers (1995 :241) claims that the degree of an innovation's compatibility is evaluated against "sociocultural values and beliefs, previously introduced ideas, and/or client needs for the innovation". He suggests that a highly compatible innovation is likely to be useful if it is introduced as a starting point of a series of sequential innovations (Rogers, 1995). The idea is to start with what the individual is used to and gradually improve to the attainment of the intended innovation. Rogers cautions that a negative encounter such as the failure of a previously tried innovation can hinder the adoption of future innovations. The degree to which an innovation meets a particular need of a client is one indication of the compatibility of an innovation. He advocates that "when felt needs are met, a faster rate of adoption usually occurs"(Rogers, 1995 :246).

Complexity, according to Rogers (1995 :247), relates to "the degree to which an innovation is perceived as relatively difficult to understand and use." He suggests that in order to minimise the negative influence of complexity to the rate of an innovation's adoption, the complexity needs to be managed by skilled professionals.

Trialability refers to the extent to which an innovation can be tried before its implementation. Rogers argues for a gradual, incremental approach towards the implementation of an innovation. An innovation designed in a way that it can be tried easily will likely be adopted rapidly. Customisation during the trial period might be needed to suit the innovation to specific individual needs.

Observability is the degree to which the results of an innovation are visible to others. In general terms, the more visible the results of an innovation, the more likely is the innovation to be adopted.

The five determinants of the persuasion stage are critical in the adoption process since they determine the outcome of the decision phase. Rogers (1995) indicated that the five perceived characteristics of an innovation influence significantly the decision making process in the adoption process. He stipulated that "49 to 87 % of the variance in the rate of adoption can be attributed to these factors" (Rogers, 1995 :250).

The decision phase in the DOI theory yields two main possible outcomes. A positive outcome will result in the adoption of the innovation permanently. A variation of the positive outcome is discontinuance which is defined as the rejection of the innovation after being previously adopted. Conversely, a negative outcome will lead to the rejection of the innovation with

possibilities of later adoption or permanent discarding of the innovation's implementation option.

The five determinants of the persuasion stage (relative advantage, compatibility, complexity, trialability and observability) have been used in a number of previous studies. Although the focus of Rogers' model has been at an individual level, there is evidence that the model can be applied to IT implementation in business organisations ((Attewell, 1992); (Brancheau, 1990)). Chong et al. (2001), applying Rogers' model to small and medium businesses in Australia, concluded that complexity, perceived relative advantage, and compatibility are important factors that need to be considered in order to implement successful internet-based electronic commerce, the first factor being the most significant contributing factor to e-commerce adoption.

Huizingh and Brand (2009) advocate for a stepwise adoption of e-commerce, an approach that emulates Rogers' innovation adoption model. In a study conducted on Dutch SMMEs (Huizingh and Brand, 2009), it was discovered that experiences at one level in the adoption process influenced the willingness and speed to move to the next level. This coincides with Rogers' compatibility factor as he indicated that to minimize the risks of an innovation' failure, an innovation needs to be introduced in a gradual process starting with what an individual is used to, then moving gradually to the attainment of the final outcome.

In the context of this study, relative advantage, compatibility and complexity variables are tested as potential determinants of e-commerce adoption by SMMEs. These three variables have been used extensively in previous research. Thus, their relevance within the context of SMMEs has been demonstrated.

1.5. Limitations to the study

The study was conducted in two geographical areas only. Thus, more fully representative research is needed to assess whether the findings can be generalised to the whole country. Such research could use larger representative, random samples drawn from across the country.

1.6. Overview of the study

This study comprises the following chapters:

Chapter 1 introduces the study

Chapter 2 covers the literature review

Chapter 3 provides a detailed description of the research design adopted for this study

Chapter 4 presents the findings and analysis of the study

Chapter 5 discusses the results from the analysis in Chapter 4

Chapter 6 concludes the study and provides recommendations. It further provides suggestions for further research.

1.7. Summary of chapter 1

This study presented the general state of e-commerce adoption. To this effect, e-commerce has been defined. In addition, although e-commerce can provide noticeable benefits, its adoption has been slow in SMMEs due to the relatively unique nature of the SMMEs environment. However, the growth of B2C e-commerce and the increase in the number of internet users in South Africa indicate that there is a potential market for online businesses in the country. The chapter also described the four e-commerce activities that are analysed in this study. Furthermore, the chapter presented the problem statement and corresponding sub- problems, the research questions, the adopted theoretical frameworks, the limitations of the study and an overview of the study.

CHAPTER 2: LITERATURE REVIEW

2.1. Introduction

This chapter analyses the existing literature on e-commerce. The focus is on SMMEs within the context of e-commerce adoption. The aim is to provide empirical evidence that supports the use of various variables in this study. The chapter also highlights the relevance of this study in relation to the pool of data/findings from peer reviewed articles as well as delineating gaps in the reviewed literature.

2.2. The SMME environment

Schaper and Volery (2004) state that there are two ways of defining a business: quantitatively and qualitatively. The former refers to the numerical characteristics of businesses, including size. The size of a business as defined in terms of the number of employees and/or annual turnover has been the most used quantitative measure to categorise businesses. Researchers commonly define SMEs based on the number of employees (Hashim, 2009a). The definition of SMEs in terms of the number of full-time employees stems from the fact that employment as a criterion for classification is more objective, transparent and less confidential than company annual turnover (Pratten, 1991).

In South Africa, SMEs also known as SMMEs (Small, Micro and Medium Enterprises), are defined as businesses that employ less than 200 full-time employees as depicted in table 2.1 below. The size of an SMME (in terms of the number of full-time employees) differs according to the business sector it falls under. However, in all sectors, the size limit of an SMME is 200 full-time employees, except in agricultural sector where the size limit is 100 full-time employees (Goldstuck, 2012). A small enterprise has up to 50 employees, a medium enterprise from 51 to 200. Firms with less than 20 employees are classified as very small enterprises. A micro enterprise has up to 5 employees (Goldstuck, 2012). The South African definition of SMMEs based on the company's number of full time employees is adopted throughout this study. In addition, as this research is conducted within the South African context, the acronym "SMMEs" is adopted throughout this research instead of "SMEs".

Table 2.1. Classification of SMMEs in South Africa

Sector or subsector in accordance with the Standard Industrial Classification	Size of class	The total full-time equivalent of paid employees	Total turnover	Total gross asset value (fixed property excluded)
Agriculture	Medium	100	R 5m	R 5m
	Small	50	R3m	R3m
	Very small	10	R0.50m	R0.50m
	Micro	5	R0.20m	R0. 10m
Mining and Quarrying	Medium	200	R39m	R23m
	Small	50	Rl0m	R6m
	Very Small	20	R4m	R2m
	Micro	5	R0.20m	R0. 10m
Manufacturing	Medium	200	R51m	R23m
	Small	50	Rl3m	R6m
	Very Small	20	R5m	R2m
	Micro	5	R 0.20m	R0.10m
Electricity, Gas and Water	Medium	200	R 5lm	R 19m
	Small	50	R 13m	R5m
	Very small	20	R 5.10	R1.90m
	Micro	5	R0.20m	R 0.10m
Construction	Medium	200	R26m	R5m
	Small	50	R 6m	R1m
	Very small	20	R3m	R 0.50m
	Micro	5	R 0.20m	R 0.10m
Retail , Motor Trade and Repair Services	Medium	200	R 39m	R 6m
	Small	50	R19m	R3m
	Very small	20	R 4m	R 0.60m
	Micro	5	R0.20m	R0.10m
Whole Trade, Commercial Agents and allied Services	Medium	200	R 64m	R 10m
	Small	50	R 32m	R 5m
	Very small	20	R 6m	R 0.60m
	Micro	5	R 0.20m	R 0.10m
Catering, Accommodation and other Trade	Medium	200	R 13m	R 3m
	Small	50	R 6m	R 1m
	Very small	20	R 6m	R 0.60m
	Micro	5	R 0.20m	R 0.10m
Transport, Storage and communications	Medium	200	R 26m	R 6m
	Small	50	R 13m	R 3m
	Very small	20	R 3m	R 0.60m
	Micro	5	R 0.20m	R 0.10m

Sector or subsector in accordance with the Standard Industrial Classification	Size of class	The total full-time equivalent of paid employees	Total turnover	Total gross asset value (fixed property excluded)
Finance and Business services	Medium	200	R 26m	R 5m
	Small	50	R 13m	R 3m
	Very small	20	R 3m	R 0.50m
	Micro	5	R 0.20m	0.10m
Community, Social and Personal services	Medium	200	R 13m	R 6m
	Small	50	R 6m	R 3m
	Very small	20	R 1m	R 0.60m
	Micro	5	R 0.20m	R 0.10m

Source: South African National Small Business Amendment Act, 2003.

The qualitative characteristics of SMMEs are based on subjective concepts (Schaper and Volery, 2004). These are:

Independently owned and managed: the owner of the business who is in most cases the sole decision maker runs the SMME. In this case, SMMEs are run independently as they are "not a subsidiary of a public limited company" (Southern and Tilley, 2000:144).

The owners contribute most to the operating capital: The owners take the full responsibility of funding the business. The owners incur all the successes or failures of the business.

The responsibility for decision-making is entrusted to the owners: As the SMME business is run by one or two people, most critical decisions are taken by a few. In most cases, the SMME firm is not big enough to have internal specialists in parts of the business such as finance, logistics, marketing or administration.

The business has only a small share of the market in which it operates: In general, the SMME is not a dominant player in its industry. Rather, it operates in a highly competitive environment**.**

Although the small size characteristic of SMMEs allows for flexibility in terms of technology adoption, there is evidence that larger organisations are ahead in terms of e-commerce adoption. In addition, the rate of adoption of e-commerce by SMMEs has remained relatively low (MacGregor and Vrazalic, 2005) and large organisations have gained more than SMMEs from e-commerce adoption especially in areas of improved sale and cost savings (Riquelme, 2002). This is because larger organisations have substantial resources, thus allowing them to have

access to advanced ICT[2] resources and network infrastructures, which play an essential role in facilitating e-commerce growth (Taylor and Murphy, 2004).

Although large companies are ahead in terms of e-commerce adoption, there is evidence that SMMEs can reap considerable benefits by adopting e-commerce. The Organisation for Economic Development (OECD, 2000) contends that the e-commerce environment comprises either start-up firms designed to operate on the internet or established firms that seek to explore the e-commerce platform. Although start–up e-commerce benefits might be very small, e-commerce offers the possibility of reaching a wide range of customers (OECD, 2000). For established businesses, e-commerce provides an opportunity for SMMEs to expand their range of transactions (OECD, 2000). E-commerce also provides a platform for small firm expansion into foreign markets (OECD, 2000). The internet platform eliminates distribution and marketing barriers that prevail in a traditional business environment (OECD, 2000). Small firms are better able to adopt e-commerce, as they are not bound by legacy technology compared to larger firms (OECD, 2000). Moreover, generally, SMMEs are not strongly tied to traditional retail channels. Hence, SMMEs are more flexible and able to innovate and adapt to rapid change (OECD, 2000). This is a distinctive advantage, which makes it easier for SMMEs to implement a business model aligned with e-commerce adoption.

The rationale behind SMMEs' e-commerce adoption is also based on the important economic role that SMMEs play. There is substantial support in the literature to attest that SMMEs play a pivotal role in economies around the world ((Ballantine, 1998); (Grandon and Pearson, 2004c); (OECD, 2004);(Pratten, 1991)). Generally, SMMEs "constitute more than 95% of the enterprises and account for more than 60% of the employment levels in different countries in the world" (Al Qirim, 2005:2). In fact, the European Commission acknowledges that SMMEs are the backbone of the European economy (Europa, 2003).

Curran and Blackburn (2001) advocate that SMMEs are the cornerstone of modern economies. In the United Kingdom (UK), SMMEs account for 40 % of the UK Gross Domestic Product (GDP) and contribute at least 55 % of the private sector workforce. The Australian government also recognizes that SMMEs are the centre of economic potential (NOIE, 2002). In South Africa, SMMEs play a critical role in the country's economy. SMMEs contribute between 52% and 57% of the country's GDP and up to 61% of the overall employment in South Africa (Abhor and Quartey, 2010). Thus, by adopting e-commerce, SMMEs will take advantage of the benefits described above and contribute to third world countries' development and poverty alleviation.

[2] Information Communication Technology

MacGregor and Vrazalic (2007) contend that although there are substantial benefits that an organisation may gain from e-commerce, there are some issues that come along with e-commerce adoption that organisations need to address. They posit that adopters need to adjust to the new business practices that emanate from e-commerce adoption. In addition, e-commerce post implementation requires resources for maintenance and daily e-commerce activities, thus putting pressures on existing resources. Stauber (2000) acknowledges that for SMMEs operating in a traditional face-to-face business transaction fashion, a complete shift to e-commerce may equate to loss of customer contact and thus, revenues. MacGregor and Vrazalic (2007) echo Stauber (2000) highlighting that e-commerce may lead to a deterioration of relationships with business partners. Thus, they suggest a strategic approach towards e-commerce adoption. Particularly, an e-commerce strategy would address support strategies to address post implementation issues that may arise.

E-commerce adoption hinges on firms' abilities to leverage the internet by setting up and establishing business on the web. Thus, access to the internet including the mode and cost of accessing the internet is crucial for establishing a web- based business. The following section discusses the role that the internet plays in the modern economy. It also highlights the status quo with regard to the availability and access to the internet within the South African context.

2.3. The role of the internet in business

The emergence of a knowledge economy fuelled by globalisation[3] has pushed companies to find new, innovative ways to become competitive in a highly volatile business environment. Particularly, the internet offers opportunities for communication between remote business entities. The traditional face-to-face mode of conducting business is being by-passed as firms are gaining virtual access into international markets. This in turn has allowed companies to venture into new business opportunities at reduced costs of investment (such as marketing and advertising). The emergence of the internet[4] has enabled Information and Communication Technologies (ICTs) to be used as a strategic tool to gain competitive advantage in a modern economy.

A modern economy can be defined as one characterised by "increasing integration of economies particularly through trade and financial flows around the world" (Nakagawa, 2006:1). The improvement in ICTs, especially in communication infrastructure, has been the catalyst of greater integration in a modern economy. In return, the integration has triggered business organisations to find a platform for business interaction with other businesses or with

[3] Refers to increased economic integration which in turn is propelled by increased trade and investment
[4] A global network connecting millions of computers

their customers. Although such interaction is not constrained by physical locations, it requires firms to design their businesses in a flexible manner to embrace new ways of conducting businesses, as the ever-changing business environment requires. In this case, the internet is seen as an important contributor towards bridging the gap between customers and businesses (or suppliers). However, MacGregor and Vrazalic (2005) contend that large firms are more favourably positioned to reap more benefits from the internet medium, as small firms are often unable or reluctant to use and deploy ICT extensively. The use of ICT through the internet and the quest for finding a new platform that provides greater competitive advantage have triggered the formation of new forms of online business such as e-commerce. Czuchry,Yasin and Sallman (2004:717) state "... the explosive evolution and revolution of the internet and related technologies gave birth to the term e-commerce and later made e-business a familiar term". Thus, this suggests that there is a clear link between ICT adoption and internet-enabled businesses. Particularly, the availability of ICT infrastructure that caters for the adoption of e-commerce is a condition for e-commerce adoption. Conversely, it follows that the characteristics of such infrastructure, particularly the cost of internet connection, computers and availability of ICT expertise within a country, are important factors that need to be analysed when considering ICT-enabled technologies such as e-commerce. It is in this context that the following section looks at internet adoption within the South African context.

2.4. Internet adoption in South Africa

The current availability of broadband[5] and narrowband[6] internet connection options has enabled South African consumers to have internet access in their homes. In 2009, it was estimated that South Africa had about 5.3 million internet users, which is about 10% of the South African population (WorldWideWorx, 2010). Although some users have access to the internet from more than one location (i.e. home, work, school/college/university), in 2004, it was estimated that one million internet users were home subscribers (Goldstuck, 2004). Since then, more sophisticated internet media that offer broadband internet access have gradually replaced the predominant dial-up internet access mode for home users. These broadband options range from ADSL[7], 3G wireless[8] broadband and HSDPA[9] (Muller, 2008). In 2008, South Africa had about one million broadband users, with 60% of them being wireless users and about 40% fixed line ADSL users (Muller, 2008). The choice of broadband over the dial up (narrow band) option is

[5] a high data rate connection to the internet. it is offered in four different forms, DSL (or Digital Subscriber Line), also fiber-optic, cable, and satellite

[6] a term used to describe an internet medium delivering speeds up to 56 kbps.

[7] Asynchronous Digital Subscriber Line

[8] 3rd generation mobile telecommunications

[9] High-Speed Downlink Packet Access (HSDPA) is an enhanced 3G (third generation) mobile telephony communications protocol

mainly due to the speed factor (Horrigan, 2005), as the broadband internet connection is faster than the dial up connection.

The table below provides an overview of the most commonly available options for the home internet users in 2008.

Table 2.2. Typical Home internet Access Options in South Africa

	Fixed Line Narrowband		**Fixed Line Broadband**	**Wireless Broadband**		**Wireless Narrowband**
Option	Dial –Up	ISDN	ADSL	3G/ HSDPA	Wireless (iBurst)	GPRS
Speed	56K	64K-128K	384K-1024K	Up to 1.8Mbps	Up to 1 Mbps	50-170K

Source: Brown et al. (2009)

The number of South Africans using broadband connections increased by 50 % between 2009 and 2010 (BrandSouthAfrica, 2011). This considerable growth in broadband connections has been mainly observed in Small and Medium businesses as most of them have upgraded to ADSL broadband connections (BrandSouthAfrica, 2011). In March 2012, there were approximately 3.5 million broadband connections in South Africa (doc, 2012).ADSL broadband connections counted for 26% (850,000 connections), 69 % were 3G/HSPA mobile wireless broadband based (doc, 2012). In mid-2012, it was estimated that "74% of schools, 81 % of health facilities and 83% of police stations had broadband coverage" (doc, 2012:3)

The increase in the number of internet users has also been triggered by the diminishing Telecom[10] monopoly. Currently, Electronic Communications Network Services licenses have been issued to over 400 companies (BrandSouthAfrica, 2011). Thus, internet service providers can build their own networks instead of relying on a single service provider. This has led to access to the internet at a cheaper cost in South Africa.

Undersea cables linking South Africa to the rest of the world have reduced the costs of internet connection in South Africa (BrandSouthAfrica, 2012). The current undersea cable bandwidth was expected to rise from 2.69 to 11.9 Terabits a second (Tbps) by the end of 2012.

Goldstuck (2009) argues that the growth of cell phone internet offers potential for further internet growth in South Africa. In 2011, about 6 million South Africans had internet access on their phones (WorldWideWorx, 2011b). The increasing access to the internet offers business opportunities, particularly within the SMME sector. Goldstuck (WorldWideWorx, 2011a) notes an increase in online sales in South Africa. According to a study on online retail in South

[10] South African State-owned Telecommunications company

Africa (WorldWideWorx, 2011a), South Africans spent two (2) billion rands buying goods online in 2010. The projected growth of online spending was 40% for 2011 (WorldWideWorx, 2011a). SMMEs need to take advantage of such growth by having an online presence.
Goldstuck (WorldWideWorx, 2011c) advocates that it is crucial for SMMEs to have an "effective online presence". He argues "already, many consumers turn to browsers and search engines for assistance in finding the right product or service. This can be expected to increase exponentially as more people access the internet on their phones. Therefore, those SMMEs that are not online, or that have a limited or ineffective presence, could suffer" (WorldWideWorx, 2011c).

At the end of the year 2011, South Africa had approximately 8.5 million internet users (Goldstuck, 2012). This suggests that there is a market for internet–enabled businesses. In terms of e-commerce, Business to Consumer (B2C) e-commerce stands a chance to succeed, as there is a pool of potential customers that has access to the internet. Three (3) main indicators suggest that more South Africans will be able to access the internet in the near future. These are: the installation of new undersea telecommunications cables in South Africa that will lead to an increase of the internet bandwidth at a cheaper price, the granting of licenses that allows Internet Service Providers to build their own networks and the growth of cell phone internet. As the number of internet users increases, so does the likelihood that they may engage in web-related technologies.

2.5. SMMEs and ICT adoption

Levy, Powell and Yetton (2001) note that substantial research on ICT adoption by SMMEs found that ICT investment by SMMEs is mainly driven by operational concerns of cost and efficiency. However, SMMEs stand to benefit from other areas such as innovation, marketing, quality and customer responsiveness (Dyerson, Harindranath and Barnes, 2009). There is also little evidence that SMMEs consider the strategic value of ICT investments (Levy, Powell, and Worrall, 2005). However, in general, the owner/manager's attitude and lack of relevant knowledge and skills pertaining to ICT, often limit the use of ICT as a strategic tool (Pavic, Koh, Simpson and Padmore, 2007). Specific to UK SMMEs, the lack of strategic orientation in terms of ICT adoption compels SMMEs to react to technology adoption rather than being proactive. In addition, the perception of high risk associated with ICTs such as e-commerce results in SMMEs adopting it with caution, introducing it very slowly into their existing set of operations (Eriksson and Hultman, 2005). Bharadwaj and Soni (2007) suggest that SMMEs may not see the need to adopt e-commerce strategically, although in some cases SMMEs might be aware of the strategic value of e-commerce adoption. In fact, a European report underlines

that some SMMEs are beginning to recognize the importance of an e-commerce strategy (EBusinessWatch, 2004).

From the above, it is evident that the study of ICT adoption by SMMEs can be approached from different perspectives. The following section discusses the main/prevalent ICT adoption perspectives.

2.5.1. ICT adoption perspectives

Southern and Tilley (2000) advocate that from the studies on SMMEs and ICT adoption, three ICT adoption perspectives can be identified:

The technological perspective focuses on the adoption of information systems and information technology. In this adoption perspective, a number of studies (Naylor and Williams, 1994; Cragg and King, 1993; Raymond and Pare, 1992) have sought to examine how IT is used in small firms with particular emphasis on determinants of successful IT implementation in small firms.

The second perspective relates to management or organisational issues related to ICT adoption in small firms (see for instance Doherty and King, 1998; Swartz and Boaden, 1997; Thong and Yap, 1995) . Such studies emphasize the strategic approach towards ICT adoption and the capabilities and structures of the small firm to use a specific technology.

The third perspective emphasizes ICT from a small firm's perspective. This approach looks particularly at the characteristics of the small firm owner/manager.

This research will utilize all three perspectives as it seeks to underpin the determinants of e-commerce adoption from the technological, managerial, organisational, and individual perspectives within the context of South African SMMEs.

2.6. E-commerce adoption

There are a number of definitions of e-commerce from the literature. However, Hashim (2009a) argues that there are two common elements to most of those definitions. Firstly, e-commerce is related to business activities that occur by electronic means, such as sharing business information, and buying and selling. Secondly, e-commerce has been defined in relation to the technological means that enable these activities. The literature differs in the way some researchers define these two elements (Hashim, 2009a). Some define e-commerce in a broad sense including all business activities carried out over any electronic media (for instance in

(Wigand, 1997)). Others only focus on certain business activities or technological means (Zwass, 1996). Poon and Swatman (1999:9) define e-commerce as "sharing of business information, maintaining business relationships, and conducting business transactions by means of internet-based technology". This definition narrows the scope of e-commerce to internet-based technology. This definition has been used by many other researchers, such as Scupola (2003) and Pool *et al.* (2006) and is adopted in this study as it encompasses all four (4) e-commerce options studied in this research.

E-commerce activities can be classified into several broad categories depending on the nature of the transactions or the relationship among the participants (Turban, King., Liang and Turban,2010). The major types of e-commerce are: Business to Business (B2B), Business to Consumer (B2C), Business-to-Business-to-Consumer (B2B2C), Consumer-to-Business (C2B), intrabusiness e-commerce, Business-to-Employees (B2E), Consumer-to-Consumer (C2C), collaborative Commerce, e-learning and e-government. However, this research only focuses on B2B and B2C. The focus is limited mainly because the four e-commerce options examined in this study fall under B2B and B2C categories only.

2.6.1. Business to Business e-commerce

Business-to-Business e-commerce activities range between 70 and 85% of total e-commerce activities in OECD[11] countries (OECD, 2004). The global market for B2B was expected to reach $15 trillion by 2012 (Turban *et al.*, 2010). The value of B2B comprises at least 85 % of the total transaction value of e-commerce (Turban *et al.*, 2010). Gebauer and Shaw (2002) argue that knowledge of e-commerce issues remains scarce particularly within the B2B e-commerce environment. B2B e-commerce implies exchanging and sharing information within the firm itself or with external stakeholders (Daniel, Wilson, and Myers, 2002b). Thus, B2B can be used to support internal processes through private networks (e.g. extranet and intranet) or can be used to link with external organisations through public networks such as the internet. The table below depicts some of the benefits associated with B2B e-commerce.

[11] Organisation for Economic Co-operation and Development. Made of 34 countries, its aim is to stimulate economic progress and world trade.

Table 2.3. Benefits of B2B e-commerce

Benefits of B2B e-commerce	Author
Increased visibility offered by a Web presence	(OECD, 2004)
Expansion of market reach	(OECD, 2002)
Reducing market entry barriers and targeting market segments more effectively	(Lefebvre, Lefebvre, Elia and Boeck, 2005)
Improved customer relations and communications	(Sadowski *et al.* ,2002); (Santarelli and D'Altri, 2003)
Improved customer service	(Chan and Lee, 2003)
Supply chain integration	(Lefebvre, Cassivi and Leger, 2003)
Reduction in inventory cost and delivery time	(Frohlich and Westbrook, 2002);(Turner, 2000)

Source: Lefebvre et al. (2005)

2.6.2. Business to Consumer e-commerce

Business to Consumer e-commerce implies sales of goods and/or services to individual customers. B2C e-commerce has been equated in many instances to electronic retailing (see for instance Turban *et al*., 2010), which is retailing moved online as opposed to in-store. (Turban *et al*., 2010) attest that U.S. online retail sales reached $175 billion in 2007. It is estimated that online retail sites get 4.6 million visitors a minute (Turban *et al*., 2010). The growth of B2C e-commerce is projected to reach $335 billion by 2012. In addition, online retailing is expected to grow at an annual rate of 14 % from 2008 to 2012, compared to only 2.6 % for brick and mortar (traditional, not online) stores. In 2007, retailers reported that 27 % of store sales were either directly or indirectly influenced by the web (Turban *et al*., 2010). This demonstrates the web capability to influence brick and mortar retail sales.

Goldstuck (WorldWideWorx, 2011a) argues that online retail in South Africa is growing rapidly, reaching the R2 billion mark in 2010. In addition, the number of online retailers has reached a 30% growth rate in 2011. Compared to traditional physical retail in South Africa which reached R561bn in 2010 (WorldWideWorx, 2011a), online retail only makes up about 0.36 % of the total retail in South Africa (WorldWideWorx, 2011a). However, in 2010, the growth rate of online retail in South Africa was four times higher than physical retail (WorldWideWorx, 2011a). Hence, South African firms who seek to venture into online

business stand to benefit from B2C, as there is potential growth for the demand of e-commerce related services.

Figure 2.1 below shows the rand value of online retail each year since 1996 until 2011.

Figure 2.1: Online Retail revenue in South Africa from 1996 to 2011

Source: Goldstuck (2012)

2.7. E-commerce adoption by SMMEs

The literature suggests that there are at least three ways in which e-commerce is perceived within the SMME context (Hashim, 2009b). In some instances, e-commerce adoption by SMMEs has been explored in terms of internet applications, such as e-mail, website and intranet (for instance in Drew (2003)). In others, the use of e-commerce has been investigated in terms of business activities such as communicating with suppliers and customers (for instance in Daniel and Wilson (2002)). However, there is also a tendency to look at e-commerce as a mix of internet applications and business activities (for instance in Kendal, Tung, Chua and Tan, 2001). Hashim and Mat (2012:3) contend that "regardless of which views researchers hold, there are only three general e-commerce components usually used to demonstrate the prevalence of e-commerce: e-mail, websites (for online selling), and online buying". These three components are part of the measures used in this study to assess e-commerce readiness/ adoption in the selected South African SMMEs.

The adoption of e-commerce is subject to some prerequisites pertaining to an organisation's readiness to adopt e-commerce. Tan, Tyler, and Manica (2007) argue that for firms to adopt e-commerce appropriately in developing countries, they need to be ready both internally and externally. Fathian, Akhavan and Hoorali (2008) define e-readiness as the SMME's ability to successfully adopt, use, and benefit from e-commerce. Molla and Licker (2005) argue that

internal (organisational) readiness is crucial at the initial stage of e-commerce adoption in developing countries. Organisational e-commerce readiness can be defined as the availability of resources (financial and technological), the top management's enthusiasm to adopt e-commerce, e-commerce technology infrastructure, compatibility of the firm's e-commerce, as well as culture and values (Saffu, Walker and Hinson, 2008). External factors such as the readiness of external parties such as business partners only become relevant after the initial e-commerce adoption phase.

There is a substantial gap in terms of e-commerce adoption between developed and developing countries. Thus, it is fair to analyse the adoption of e-commerce within the separate contexts of developed and developing countries. Hence, the following sections provide insights on e-commerce adoption in both scenarios, using specific countries as examples.

2.7.1. E-commerce adoption by SMMEs in developed countries

Parker and Castleman (2007) argue that over half of the journal articles from 2003 to 2006 investigated SMMEs in the United Kingdom, United States of America, Australia, Canada, and New Zealand. For the sake of this research, the focus will be on the United States of America, Australia, New Zealand, and United Kingdom. These countries were chosen due to the large number of research findings in the literature concerning e-commerce adoption in those countries. The analysis of these countries' e-commerce adoption helps in comparing developed countries to developing countries as far as e-commerce adoption is concerned. In return, such comparison provides a better understanding of e-commerce adoption from a global perspective.

2.7.1.1. United States of America (USA)

SMME e-commerce adoption in the USA is limited, to a large extent, to e-mail and company webpages (Grandon and Pearson, 2004c). A previous study by Verizon (Cyberatlas, 2001) showed that 36% of SMMEs in the USA[12] adopted e-commerce for advertisement and promotion of the business, with only 9% selling online. In addition, a survey of 444 SMMEs in the United States revealed that SMMEs are not keen to conduct transactions online with 80% of them using the internet mainly to communicate via e-mail and to gather business information (Pratt, 2002).

Grandon and Pearson (2004c) found that perceived usefulness, perceived ease of use, compatibility, and external pressure are significant determinants of e-commerce adoption in US

[12] In USA, SMMEs are known as SMES (Small and Medium sized enterprises) may have up to 500 employees

SMMEs. Perceived usefulness and perceived ease of use were found to be the most influential factors of e-commerce adoption as perceived by top managers of SMMEs. The results also confirm the studies of Anadarajan, Igbaria and Anakwe (2002) regarding the factors that influence personal computer adoption and Riemenschneider *et al*. (2003) concerning the factors that influence web site adoption, both in the context of SMMEs. Compatibility between e-commerce and the firm's culture, values, and preferred work practices was also found to be an influential factor in terms of e-commerce adoption (Grandon and Pearson, 2004c). Compatibility emerged as a factor that highly influenced e-commerce adoption. Regarding external pressure, the Grandon and Pearson (2004c) study validated previous research. External pressure was found to exert an influence in terms of e-commerce adoption. However, organisational readiness, which includes the financial and technological resources to adopt e-commerce, was not found to be a significant factor in the decision. Finally, managers who have positive attitudes to the adoption of e-commerce also perceived e-commerce as adding strategic value to the firm. Thus, interventions toward changing managers' perceptions about the strategic value of e-commerce can be devised in order to increase the adoption/utilisation of e-commerce by SMMEs.

2.7.1.2. New Zealand

In an empirical investigation of e-commerce adoption, Al-Qirim (2007) found that SMMEs in New Zealand[13] lack knowledge of e-commerce and its applications. The internet was found to be used mainly as a communication tool. In addition, websites were used for publishing organisational information only. There was little evidence that SMMEs in New Zealand were using websites for commercial transactions purposes. The limited use of e-commerce is due to various factors. Firstly, 84% of the New Zealand sector is dominated by micro-enterprises employing up to five employees only (MOED, 2000). Secondly, geographical isolation and time differences which separate the country from the rest of the northern hemisphere are additional factors that hamper the use of e-commerce in New Zealand. Thirdly, the New Zealand population is relatively small, and dominated by low-average income families. Pressure from competitors was singled out as a compelling factor towards extended e-commerce technologies adoption. Perceived lack of business advantage, lack of support from technology vendors, pressure from suppliers and buyers operating online, lack of CEO[14] involvement at the initial stage of e-commerce adoption were identified as barriers to e-commerce adoption by SMMEs in New Zealand. The research also highlighted that adoption of e-commerce in SMMEs was fostered by the inexpensive nature of e-commerce initiatives, the extent of CEO

[13]Generally in Europe, SMMEs are known as SMEs and may have up to 250 employees.
[14] Chief Executive Officer

innovativeness and willingness to adopt e-commerce, the need to remain competitive in the business environment and the apparent compatibility of e-commerce technologies with the business environment of SMMEs. Organisational size emerged as a strong motivator for e-commerce adoption and it was clear that larger SMMEs were more capable of adopting e-commerce and different e-commerce technologies.

2.7.1.3. Australia

In Australia, e-commerce generated about $11.3 billion dollars annually according to 2001 estimates (Cannon and Homburg, 2001). In 2005, Australia was ranked the second top country in the Asia Pacific region in terms of e-commerce infrastructure (EMarketer, 2005). Although the country is highly ranked with regard to internet infrastructure, penetration and activity (Chong, 2006), e-commerce adoption has been slow compared to other countries and larger Australian businesses (NOIE,2000; Sensis, 2003). One of the factors that hamper e-commerce adoption is the perception of e-commerce as being risky, complex, time-consuming, and expensive. Chong (2006) argues that most Australian SMMEs[15] face challenges such as lack of perceived relative advantage over existing systems, lack of visible benefits, competitive pressure, and insufficient sources of information that can propel them to adopt advanced e-commerce applications. Fisher, Craig and Bentley (2007) argue that 57 % of SMMEs in Australia use a website to promote their business. These researchers suggest that once a business has a clear online strategy through a website, they are more likely to move to e-commerce. Although many small business owners have a business strategy, it is likely that the strategy does not include their web presence (Turban *et al.*, 2010). Fisher *et al.* (2007) advocate that many owners see their websites mainly as an advertising tool but few are ready to move to more advanced e-commerce activities.

2.7.1.4. United Kingdom

Small and medium sized enterprises (SMMEs) play an important part in the UK economy, accounting for 99% of the nation's business enterprises and contribute to over half of employment (58.9%) and turnover (51.9%) (Dyerson *et al*., 2009). Thus, the UK government has deployed much effort to provide support to the SMME sector. However, the state's support does not match with the rate of SMME development. Based on research done on UK manufacturing, Dyerson *et al*. (2009) conclude that UK SMMEs[16] differ by region in a number of key characteristics such as innovation rates, profitability, size and ownership structure, which affect UK adoption rates of ICT-related technology. For instance, in Yorkshire whilst 63% of SMMEs were connected to the internet, 46% had a website and 36% traded on-line, 30 %

[15] In Australia, SMMEs are known as SMEs and may have up to 199 employees
[16] Generally in Europe, SMMEs are known as SMEs and may have up to 250 employees.

(mostly micro businesses with less than 10 employees) did not use computers at all (Pritchard, 2006). Those who opt for e-commerce adoption often face difficulties related to the inflexibility of their business operations, especially in the area of business integration with their supply chain partners (Brown, Lockett and Schubert,2005).

Daniel *et al.* (2002a) argue that SMMEs in the UK adopt e-commerce in four (4) sequential stages. Stage one is the developer's stage whereby firms are developing their first e-mail system and website. The communicator's stage involves firms that are using e-mail and exchanging documents and designs electronically with customers and suppliers. The web presence stage includes firms with websites that have online ordering facilities. The transactor's phase encompasses those using online ordering and payment capabilities.

In the year 2000, 90% of UK businesses were connected to the internet and this had increased to 94% by 2001. From a national survey of SMMEs' use of IT in four sectors (Dyerson *et al*., 2009), there is evidence that most UK SMMEs use simple technologies such as email, internet access and websites. However, the use of complex technologies involving electronic data interchange remains highly skewed. The survey also remains inconclusive with regard to strategic use of ICT. Although the use of websites for advertising purposes is common in most of the surveyed SMMEs, there is little evidence of internet usage to build customer databases or online ordering and payment (Dyerson *et al*., 2009).

2.7.2. E-commerce adoption in developing countries

Although a range of research suggests that e-commerce allows organisations to cope with the ever changing, turbulent business environment, studies have shown that there is a delay or failure of SMME adoption of ICT or e-commerce technologies in developing countries (Kapurubandara and Lawson, 2008). According to UNCTAD (2001), e-commerce contributes to the development (or growth) of the SMME sector in developing countries. The development of an ICT-enabled and networked SMME sector through affordable but effective ICT solutions can enable developing countries to achieve rapid and sustainable economic and social development (Kotelnikov, 2007). Importantly, e-commerce technologies enable organisations to improve their internal business processes and communications, and their communications with external trading partners (Chong, 2006).

However, SMMEs face unique challenges in adopting ICT and e-commerce which are further exacerbated within the context of developing countries (UNCTAD, 2001). Studies on issues related to e-commerce reveal that SMMEs in developing countries face issues very different

from their counterparts in developed countries. The table below summarizes some of the impediments to e-commerce adoption in developing countries identified in the literature.

Table 2.4. Impediments to e-commerce adoption in developing countries

Factors	Author(s)
Poor internet connectivity, landline constraints, underdeveloped state of internet Service Providers	1.Hawk (2004) 2. Datta (2010) 3. Taylor and Owusu (2012)
Lack of access to computers, software/hardware, affordable telecommunications, low e-commerce use by supply chain partners; concerns with security and legal issues; low knowledge level of management and employees; and unclear benefits from e-commerce.	(Cloete, Courtney and Fintz, 2002)
Limited diffusion of computers, high cost of internet and lack of online payment processes. Inadequate transportation and delivery networks, limited availability of banking services, and uncertain taxation rules indirectly inhibit e-commerce adoption. Absence of legal and regulatory systems Lack of skills among consumers needed in order to use the internet Low income Lack of qualified staff to develop and support e-commerce sites Low bank account and credit card penetration	(Kapurubandara and Lawson, 2008)
Awareness and education, market size, e-commerce infrastructure, telecommunications infrastructure, financial infrastructure, the legal system, the government's role, pricing structures, and social and psychological factors	(El-Nawawy and Ismail, 1999)
Lack of knowledge and awareness about benefits of e-commerce,	(SLBDC, 2002)

Source: Kapurubandara and Lawson (2008)

Datta (2010:4) argues that from the consumer's side, e-commerce is "often skewed towards information rather than product consumption" in developing countries. Due to landline constraints (telecommunication infrastructure) and high prices of computers, most consumers tend to use cyber cafes and their cell phones as a medium for e-commerce. Thus, the bulk of e-commerce activities in developing countries are centred around access to information on websites (web browsing) rather than online purchases. This situation is further exacerbated by the lack of purchasing power, streamlined payment mechanisms (including payment options), critical mass of vendors (online sellers) and shippers (Datta, 2010).

According to Kofi Annan, the former UN Secretary General, countries that do not adopt e-commerce are susceptible to being left behind in terms of social and economic development (UNCTAD, 2002). Despite such opportunities, developing countries have sporadically adopted e-commerce. In 2002, while developed countries contributed towards 95% of global e-commerce activities, African and Latin American countries contributed for less than 1% (UNCTAD, 2002).

For the majority of developing countries, internet penetration statistics are low: 15.6% in Africa, 27.5% in Asia, and 42.9% in Latin America and the Caribbean (InternetWorldStats, 2012) .

Ghobakhloo, Aranda and Amado (2011) argue that e-commerce adoption in developing countries has been hampered by issues pertaining to the quality, availability, and cost of access to the e-commerce-enabling infrastructure. Developed countries on the other hand, have well developed, accessible and affordable e-commerce infrastructure. Below is the analysis of e-commerce adoption in selected developing countries.

2.7.2.1. Nigeria

According to Ayo,Ekong, Fatudimu, and Adebiy (2007), Nigeria is the fastest growing telecommunication country in Africa. The number of internet users has grown sporadically from 0.1% in 2000 to 29.5% of the Nigerian population in June 2010 (Ayo, Adewoye and Oni, 2011). The increase in the number of internet users has been triggered by the growth of the telecommunications industry with about 20 million telephone lines connected in 2006 (Ndukwe, 2006), alongside vast improvements in telecommunication services (Aghaunor and Fotoh, 2006). The improvements have led to an increase in the number of private telephone operators that provide wireless services with data transfer capabilities. In turn, this has led to an increasing number of people with internet access at home in the major cities and in some rural

areas. In addition, the reduction in tariffs and further anticipated cuts (in terms of tariffs) were seen as stimulus towards an increase in internet usage. However, e-commerce has not been widely adopted in the country. In a study conducted on Business-to-consumer e-commerce in Nigeria (Ayo *et al*., 2011), it was found that internet fraud coupled with the lack of trust of payment methods, insufficient information on the e-commerce site, and the high cost of accessing the internet are major impediments towards e-commerce adoption in Nigeria.

2.7.2.2. Botswana

A study by Olatokun and Kebonye (2010) found that the rate of e-commerce adoption and use by SMMEs in Botswana[17] is very low. The study further shows that e-commerce adoption is mainly limited to point of sale systems, with little evidence of internet technologies adoption. The lack of knowledge of e-commerce related technologies such as e-wallet[18], electronic billing[19], electronic shopping[20] also constituted an impediment towards e-commerce adoption. The study concludes that there is a need for increased awareness about e-commerce, adequate training and skills upgrading and updating in order for SMMEs to better benefit from e-commerce technologies. Thus, there is a need for SMME support in those identified areas.

2.7.2.3. Malaysia

Malaysia has been described as one of the Asian miracle economies (Page, 1994). The Malaysian government considers e-commerce as an important component of the economy. This has been exemplified by various government initiatives to foster the establishment of e-commerce. One of these is the establishment of a number of ICT policy initiatives designed to stimulate SMMEs to adopt e-commerce. However, a study by Hashim (2009b) on e-commerce adoption in Malaysia reveals that few Malaysian SMMEs[21] are deeply involved in e-commerce. E-commerce among SMMEs is still generally limited to e-mail. Websites are used mainly to provide information about company products and/or services. Many SMME managers are yet to acquire much understanding of e-commerce. The findings also suggest that SMMEs adopt websites to enhance the company image and attract new business. SMME managers want their companies to look impressive to impress customers. However, many managers believe that a website is simply a "nice to have".

[17] In Botswana SMMEs are known as SMES and may have up to 49 employees
[18] An encrypted storage medium holding credit card and other financial information that can be used to complete electronic transactions without re-entering the stored data at the time of the transaction
14 electronic delivery of invoices (bills) and related information by a company to its customers
20 Consumers purchasing goods or services on the internet without having to visit a physical store or even leave their home
[21] In Malaysia, SMMEs are known as SMEs and may have up to 150 employees

2.7.3. Overall comparison of e-commerce adoption in developing and developed countries

From the above, there are evident similarities in terms of e-commerce adoption in developing and developed countries. The following similarities are observed:

- SMMEs play an important role in the countries' economies but lag behind large companies in terms of e-commerce adoption
- E-commerce adoption is linked to short rather than long term benefits
- Limited knowledge of e-commerce benefits
- E-commerce adoption by SMMEs is limited by the firm's size, resources and budget
- SMMEs are still at the initial stage of e-commerce adoption
- Lack of strategic intent for e-commerce adoption

However, there are also disparities between developed and developing countries as depicted in the table below:

Table 2.5. Comparison of e-commerce adoption between developing and developed countries

Developed countries	Developing countries
Sophisticated e-commerce infrastructure	E-commerce infrastructure still at developmental stage
High rate of internet connectivity	Poor internet connectivity (Datta,2010)

As explained earlier, e-commerce adoption is subjected to some pre-requisites. The following section analyses the required e-commerce capabilities in order to adopt e-commerce.

2.8. E-commerce capabilities

Cloete *et al.* (2002) claim that e-commerce activities span from entry-level activities to sophisticated activities. Entry-level activities include websites and e-mails whilst advanced activities include amongst others online payments, online purchasing and customer services. Akkeren and Cavaye (1999b) indicate that it is unlikely that advanced e-commerce technologies are adopted before entry-level technologies are put in place. This implies that entry-level e-commerce activities are the enablers of sophisticated e-commerce activities such as online payments, online purchasing and customer services.

Cloete *et al.* (2002) define three stages involved in planning for e-commerce adoption:

- Advertising static pages and e-mail for the purpose of communication with clients
- Database integration, which involves interactive web catalogues. This stage also involves transaction processing through a website by means of shopping cart technology and secure payments
- The final stage is fully fledged e-commerce. This includes all the information processing capabilities of the previous stages with additional features such as "interactive features, personalisation and Customer Relationship Management"(Cloete *et al*., 2002:3)

Cloete *et al*. (2002) further argue that the following e-commerce technological capabilities are enablers of e-commerce adoption within the context of South African SMMEs as SMME businesses go through the above three stages:

- Company electronic e-mail
- Company access to the internet
- Computerised database of company customers
- Computerised database of company suppliers
- Computerised inventory of company products and services

Moreover, they also identified that a company strategy for developing e-commerce is an impetus towards e-commerce adoption. In this research, the above technological capabilities and company strategy for developing e-commerce have been adopted in the researcher's quest to assess whether the surveyed SMMEs have the necessary infrastructure for e-commerce adoption. As the research scope is limited to internet-based e-commerce, a company website has also been included as one of the e-commerce capabilities that are investigated in this study. Akkeren and Cavaye (1999a:4) state that "sophisticated e-commerce technologies are not likely to be adopted before entry-level activities are used more readily". Courtney and Fintz (2001) advocate that the scope of e-commerce activities ranges from entry level activities to more advanced activities. Courtney and Fintz (2001) identify five (5) potential steps that organisations may go through as they progress up the e-commerce adoption ladder. The five progressional steps could be used as an indicator of where a business is situated within the e-commerce adoption process. Although firms can leapfrog one or two steps, the adoption ladder can still be used to assess the extent to which e-commerce is adopted in a business. It may also give an indication of the readiness of a firm to adopt e-commerce. The following is a detailed description of these five steps:

2.8.1. E-mail

At the bottom level of the adoption ladder is e-mail. According to Tagliavani, Ravarini and Antonelli (2001), using e-mail effectively may help SMMEs to acquire new customers, get customers' feedback, establish new business relationships with industry stakeholders, create brand loyalty and carry out market research. In this case, a company must have some means to connect to the internet via an internet connection line provided by an internet service provider.

2.8.2. Website

At the second level of adoption, a website increases the company exposure to potential customers by promoting its image, enhancing customer service quality. A website also allows SMMEs to differentiate themselves by narrowing their scope of activities to specific customer needs through web-based market research. Leong, Stanners and Huang (1998:2) also argue that the most important website objectives are "to enhance the corporate image, increase brand or product awareness and to provide better customer service". The website may provide marketing-related information including prices and stock levels, allowing customers to check the availability of products and services online. In this case, a company will require expert skills in terms of website design, a domain name and web hosting providers in order to publish and maintain its presence on the World Wide Web (WWW).

In South Africa, a recent survey on SMMEs (SMME survey 2012) indicates that websites are key contributors to i) establishing contact with customers, ii) updating inventory, iii) company sustainability, iv) business growth, v) competing for market share (Goldstuck, 2012). In view of the increasing adoption of internet by South Africans, a web presence becomes an imperative for South African SMMEs (Goldstuck, 2012).

2.8.3. E-commerce

At this third level of e-commerce adoption process, a company moves from a simple web presence to online interaction between the business and its customers or a business and its suppliers for the placement of orders. In this case, the online interaction will determine the nature of the business undertaken such as Business to Business (B2B) in case of the interaction between the business and the suppliers and Business to Customers (B2C) in case of interaction between the business and the consumer. The online interaction may result in electronic payment through secure lines and/or issuing and receiving invoices. Although online payment processing optimizes business resources, Tagliavani, Ravarini and Antonelli (2001), Kowtha and Choon (2001) argue that enhancing a website with online processing facilities requires significant investments and skills.

Liu (2010) argues that firms that provide web functionalities that allow customers and trading partners to conduct online transactions are likely to have a successful e-commerce. In this case, the technological resources required become sophisticated.

2.8.4. E-business

In this case, e-commerce is used to support the business relationship between a customer and a supplier by means of interactive order progress tracking or online support (Turban *et al*., 2010). There is also an online link with the suppliers as well as manufacturing and delivery though supply chain integration. The aim is to improve efficiencies and minimizing costs (Turban *et al*., 2010).

2.8.5. Transformed organisations

At this final stage, there is greater integration of all of the above activities with the internal processes of a business (Turban *et al*., 2010). In this regard, a company strategy is required as the integration demands greater coordination for the company to achieve its goals. The focus is on customer service.

E-commerce capabilities are not the only factors that contribute to e-commerce adoption. The following section investigates the determinants of e-commerce adoption i.e. factors that contribute to e-commerce adoption besides e-commerce capabilities.

2.9. Determinants of e-commerce adoption

There are a number of factors that influence the adoption of e-commerce. These factors have been broadly categorised into two types: internal and external factors.

2.9.1. Internal factors

Various authors have identified a number of internal factors that affect a firm's ICT adoption. However, this research focuses only on those that are specifically relevant to SMMEs. These can be classified as owner/manager characteristics, internal IT capabilities, organisational culture and firm's characteristics.

2.9.1.1. Owner/manager characteristics

The influence of the owner/manager in the technology adoption process is of paramount importance within the context of SMMEs. This stems from the fact that in most cases, the owner/manager is the sole decision maker in the company (Schaper and Volery, 2004). Thus,

the decision to adopt or not adopt an innovation (technology) depends largely on the owner/manager. In this research, the focus is on the owner/manager support and the owner/manager perception of the benefits derived from a technology.

2.9.1.1(a). Owner manager support of technology adoption

Akkeren and Cavaye (1999a) argue that SMME owners are primarily concerned with return on investment. This leads small firms to be more concerned about short to medium term viability of an investment rather than long term benefits. Therefore, substantial investments are often not released when there are no short-term benefits envisaged from such investment. In addition, Qirim (2006:5) argues that "the loss of control of the business heightens the fear and anxiety of small business owners". Therefore, SMME owners may not be enthusiastic about adopting a technology that will result in loss of control of the business.

In addition, the decision to adopt a technology is also related to the perceived usefulness of such a technology from the owner's perspective. Kirby and Turner (1993) argue that the perception of the usefulness of a technology is often related to the knowledge that the owner has about the use of such technology. The knowledge about the technology will then inform the owner about the potential benefits of the technology in relation to the business. Such knowledge combined with the perceived benefits will determine whether the owner accepts and supports the implementation of the technology.

Corbitt *et al*. (1997) advocate that e-commerce is more of a management issue than a technical one. Many researchers have found that without the support of top executives, technology cannot be successfully implemented (Beatty, 1998; Gagnon and Tolouse, 1996; Lambert, 1996; Cooper and Zmud, 1990; Kwon and Zmud, 1987; Manross and Rice, 1986). Top management is the key responsible agent for ensuring that strategic and operational rules to govern their business activities and e-commerce initiatives are in place. Therefore, in the context of SMMEs, owner support of a technology coupled with their perception of the potential benefits of e-commerce acts as a catalyst toward its adoption strategically and operationally. On one hand, strategically, e-commerce focuses on marketing, promotional and product/service strategies. On the other hand, operationally, e-commerce focuses on infrastructure, back-end support, logistics and customer services (Razi, Tarn and Siddiqui, 2004).

2.9.1.1(b). Owner/manager perception of e-commerce benefits

The adoption of technology in SMMEs is highly influenced by the perceived benefits derived from its adoption. This stems from the fact that most SMME owners are risk averse (Yang, 2007). Therefore, a technology that presents a degree of uncertainty in terms of its anticipated benefits or Return on Investment (ROI) is likely to be avoided. Chwelos, Benbasat and Dexter (2001) argue that higher perceived benefits would lead to high probability of information technology adoption.

According to Ratnasingam (2002), there are three categories of benefits to be gained from e-commerce adoption.

Technology benefits are the benefits that derive from automating manual processes, thus reducing administrative costs and reducing errors. Murkhopadyay (1995) and Premkumar et al. (1994) argue that the impact of technology benefits are improved speed of delivery[22] and market reach[23].

Operational benefits refer to the quality of information flow and customer service benefits that derive from automated processes. According to Doyle and Melanson (2001), Turban et al. (2000), Vijayasarathy and Robey (1997), operational benefits are shown by reduced errors, improved quality in the flow of information, effective inventory control management, reduced costs, timely marketing, and improved cycle time.
Reduced errors: E-commerce is configured in a way that transactions are performed in a correct, complete and accurate manner. In addition, integrity rules or mechanisms embedded within e-commerce enable organisations to perform transactions with reduced errors (Ratnasingam, 2002).

Improved information flow: E-commerce enables organisational strategic decision making. This stems from the fact that e-commerce applications are compatible with most technology infrastructures. Therefore, e-commerce allows accurate circulation of information between employees, customers and other business partners (Ratnasingam, 2002).

[22] Improved speed of delivery is measured by the decrease in the total time to deliver products or services to business partners as a result of e-commerce adoption.

[23] Improved market reach refers to the ability of an organisation to reach large numbers of trading partners and consumers as a result of adopting e-commerce.

Improved inventory system: Operational benefits that derive from e-commerce can also translate into better inventory management. Such benefits are achieved when e-commerce eliminates or simplifies inventory control processes (Ratnasingam, 2002) .

Reduced costs: E-commerce reduces costs of daily operations by reducing paper work through automation of business processes. These can include transaction costs, operational costs and administrative costs. Such benefits are realised when the total costs of operating a business are lowered through e-commerce adoption (Ratnasingam, 2002).

Reduced time to market: E-commerce benefits are also perceived or realised when an organisation is able to increase its production and provide services to their customers faster than prior to e-commerce adoption (Ratnasingam, 2002).

Reduced cycle time: An operational benefit is perceived or realised when the time it takes to provide a service is reduced through e-commerce adoption (Ratnasingam, 2002).

Relationship-Related Benefits:

These benefits relate to improved communication and relationships with trading partners. According to George (2002), improved customer service, open communications, improved reputation, and increased trust among trading partners are all indicators of relationship related benefits.

Improved customer service: Customer service includes the organisation's activities aimed at increasing sales, retaining its customers and improving the quality of services provided. Thus, relationship benefits are perceived through increased customer satisfaction as a result of e-commerce adoption. Increased customer satisfaction then translates into increased customer's loyalty and purchasing behaviours (Ratnasingam, 2002).

Open communications: Open communications refer to information transfer amongst business stakeholders. In this instance, a relationship related benefit is perceived/realised when the quality of communication is enhanced and the quantity of information that is exchanged between a company and external parties is increased (Ratnasingam, 2002).

Improved reputation: A relationship-related benefit is perceived/realised if the image of the company is enhanced as a result of adopting e-commerce (Ratnasingam, 2002).

Increased trust in commercial relationships: Duncan (2002) advocates that one of the relationship-related benefits is trust amongst business partners. He indicates that there are specific signs that indicate a certain level of trust amongst business partners. These are:

a) Satisfaction in e-commerce performance;

b) Consistency in the quality of products of services delivered;

c) Accessibility as in having the ability to contact and reach their trading partners;

d) Responsive in meeting the needs of the customers and/or trading partners inquiries; and

e) Commitment by investing in more efforts to continue their business relationships;

This research will investigate the influence of the benefits described above (technology, operational and relationship-related benefits) on e-commerce adoption.

2.9.1.2. Internal IT capabilities

2.9.1.2(a). Internal IT skills

SMMEs require different skills as they progress up the e-commerce adoption ladder. At the bottom level of the stepwise adoption process, SMME employees should be able to operate e-mail. This requires minimal computer skills that can be obtained through computer short courses. In the next stages of the adoption process, as the SMME moves towards the setting up of a website and e-commerce functionalities embedded within it, maintenance of e-commerce infrastructure becomes complex, thus requiring expert skills. This is supported by Rogers (2003) as he states that if an innovation (technology) is deemed to be complex, then it needs to be managed by appropriately skilled professionals.

Caldeira and Ward (2003) advocate that staff training is one of the factors that influence e-commerce adoption. The training builds the necessary knowledge required within the company as it moves along the path towards e-commerce adoption. Employees will require different skills as the company moves towards full adoption of e-commerce. In this case, a strategy to adopt e-commerce is needed as it would highlight the need for various staff training programs or/and acquiring skilled staff especially in the early e-commerce adoption process. However, the importance of internal IT skills will vary according to the role that e-commerce plays within the company business strategy. If e-commerce is core to the business, the company might resort

to develop in-house experts to set up and maintain the company e-commerce infrastructure. In other cases, an SMME could outsource all e-commerce set up and maintenance activities to an external third party. In this case, the SMME will exert a heavy reliance on support from vendors and the availability of consultants for the maintenance of both software and hardware required for the daily run of e-commerce activities (Ching and Ellis, 2004; Grandon and Pearson, 2004c, Caldeira and Ward, 2003).

2.9.1.2(b). Availability of technological resources

Technological resources available within the firm are also an important aspect of e-commerce adoption. They not only demonstrate the firm's readiness for e-commerce adoption but also indicate the stage at which the firm is in terms of e-commerce adoption. Applegate, Austin and Mcfarlan (2009) advocate that there are three basic components of internetworking infrastructure: network, processing systems and facilities. Network refers to the hardware and software that allow the exchange of information between processing units and organisations. Here, in the context of e-commerce, the processing units can be understood as the hardware and software that processes the transactions when a customer pays through the company till point or through the company website. A firm can use a dedicated network or a secure internet connection. Processing systems include the hardware and software that, in conjunction, allow an organisation to handle business transactions. These include but are not limited to computers and databases. A database is a repository used to store and extract data. Facilities depict the "physical systems that house and protect computing and network devices" (Applegate, Austin and Mcfarlan, 2009:241). However, Applegate *et al*. (2009) argue that facilities should cater for high levels of availability, reliability and security. This means that facilities should be designed to ensure that data and information requested by users whilst interacting with or performing e-commerce transactions should be available when needed, should be accurate and securely transmitted over the network.

From the above, it is apparent that setting up an internal e-commerce platform requires significant investments in infrastructure and security mechanisms. Thus, a firm may opt to outsource (discussed in the next section) some of its e-commerce components or all of its e-commerce activities. In this regard, the firm extricates the pressure to have its own built in technological infrastructure by transferring its e-commerce into a third party's platform. However, the firm will exert a heavy reliance on the third party's e-commerce platform and expertise.

Outsourcing e-commerce

Outsourcing is generally defined as the process of contracting out company products or service to another organisation that agrees to provide or manage these products/services for a set fee over a set period (Kern and Wilcocks, 2002). Company employees could otherwise carry out these services in-house. In the context of e-commerce, outsourcing means the use of external vendors to acquire e-commerce applications. Large organisations may choose outsourcing when they want to experiment with new e-commerce technologies without a great deal of up-front investment. In addition, outsourcing is advantageous for small firms with limited IT expertise and tight budgets (Turban *et al*., 2010). The decision to outsource or not also depends on the availability of enabling resources and facilities within the organisation. The organisation may then decide to develop e-commerce applications in-house or work with external vendors or consultants. A comparison of the in–house and outsourcing approaches is provided in the table below. Sometimes, after an evaluation of both approaches, a hybrid approach is taken to leverage the benefit of both (Ratnasingam, 2002). Organisations may choose to outsource part or all of the e-commerce implementation process or keep parts of the process in-house. For example, a company may have an external ISP[24] host a website that is developed internally.

Table 2.6. Comparison of the in-house and outsourcing approaches

In- House Development Versus Outsourcing		
Criteria	In-House Development	Outsourcing
Accessibility to the project	Greater	Limited
Knowledge of the systems and its development	More	Less
Retention of knowledge and skills in staff	Higher	Lower
Ownership cost	Higher	Lower
Self-reliance for maintenance, update and expansion	Greater	Limited
Development times	Longer	Shorter
Experienced staff with technical know-how and specialized areas	Less	More

Source: Turban *et al*. (2010)

[24] internet service provider

As depicted in the table above, outsourcing is much more beneficial if an organisation does not have the required technical expertise related to the technology that needs to be implemented. In this regard, the organisation will benefit from the expertise from a third party that has experienced staff vis-à-vis such technology. In addition, the duration of the development process is likely to be shorter due to the third party's experience.

2.9.1.2(c). Availability of financial resources

Beatty, Shim and Jones (2001) argue that the likelihood of e-commerce adoption and the migration of offline transactions into a network-based platform are linked to the firms' web budget. E-commerce budget allocation is linked to its strategic use and its position within the strategic goals of a company. Research has confirmed that a number of SMMEs adopt ICT in response to a trigger (ad hoc) (Antlová, 2009). This could mean that there is no initial budget allocation unless e-commerce has been incorporated within the company overall business strategy. However, the allocation of IT budget is meant to be proportional to the role that IT plays in the company core business (Applegate *et al*., 2009). Lower budgets are likely to be allocated to e-commerce implementation if it is solely implemented for supporting the day-to-day transactions (Applegate *et al*., 2009). A gradual increment in e-commerce budget allocation is likely to be seen as e-commerce evolves to be part of the overall company strategy as it is used to achieve the company strategic goals (Applegate *et al*., 2009). Moreover, budget allocation for e-commerce purposes will determine the stage at which the firm is situated on the adoption ladder. The financial resources are allocated to e-commerce, the more the firm is likely to move from just having an internet presence to web based functionalities such online transaction processing and online-integrated supply chain.

However, the issue of budget specifically allocated to e-commerce is also linked to whether a firm outsources its e-commerce activities or has a dedicated IT department in charge of setting up and maintaining e-commerce infrastructure. A firm that outsources e-commerce is likely to allocate financial resources as the need arises (ad hoc) as compared to a firm that has an IT department. In this case, the IT department can be entrusted with a budget that can be allocated to IT infrastructure development. Again, the e-commerce budget allocation is linked with the role that it plays in the company overall strategy and its stage within the e-commerce adoption process.

2.9.1.3. Firm's organisational culture

Dharmayanti, Coffey and Trigunarsyah (2011) define organisational culture as " a set of values and norms that are shared by people within the organisation that affects the way they interact with each other and with stakeholders from outside the organisation". Cameron and Quinn (1999) advocate that organisational culture can be categorised into four (4) prevailing cultures: clan, market, hierarchy, and adhocracy culture.
In a clan culture, the emphasis is on teamwork. The organisation is structured in a way that provides friendly, supportive work environments. The organisation highly values its employees and customers (Cameron and Quinn, 1999).

In a market culture, the emphasis is on a competitive organisational environment. Employees are valued according to the values that they add, or produce in a competitive market place (Cameron and Quinn, 1999).

A hierarchy culture is driven by formalized, structured work environments. In this case, top-down management is adopted with emphasis placed on coordination. Thus, the management style is procedure driven (Cameron and Quinn, 1999).

The adhocracy culture is the opposite of the hierarchy culture. Organisations that adopt this culture are seen as dynamic, entrepreneurial and creative places to work. In this type of organisation, innovation and experimentation are valued as employees are encouraged to act with individual initiative (Cameron and Quinn, 1999).

It is important to note that Cameron and Quinn (1999) affirm that none of the above organisational profiles is superior to the others. In other words, all of these types of organisational cultures can be equally successful in terms of promoting organisational effectiveness amongst different organisations as they move through various stages of e-commerce adoption. However, Grandon and Pearson (2004c), in their study on Small and Medium businesses in USA, found that compatibility between e-commerce and firm's culture, values, and preferred work practices is one of the determining factors of e-commerce adoption. In addition, Seyal et al. (2004) found that organisational culture is a significant factor that influences the adoption of e-commerce in Pakistan SMMEs. Beatty et al. (2001) also found that organisations that perceive website use as compatible with the existing organisational culture, adopted e-commerce earlier than those perceiving some level of incompatibility between the two. Gibbs et al. (2003) and Teo and Ranganathan (2004) also found that organisational

cultures that do not support innovation and the use of new technologies act as a barrier to Business to Business e-commerce adoption.

2.9.1.4. Firm's characteristics

2.9.1.4(a). Firm size

Van Beveren and Thomson (2002) conducted a survey of manufacturers with the aim of finding out whether the firm size could be one of the determinants of e-commerce adoption. The study reveals that small firms are less likely to adopt e-commerce than larger firms. The major impediment that influences such trends is the lack of skilled human resources to manage web-related tasks of small firms. However, the study used small sample sizes in some instances without case studies or empirical evidence to support the argument.

In contrast, MacGregor and Vrazalic (2005) presented a contrary result to that of Van Beveren and Thomson (2002). The findings from their study show that Swedish and Australian small businesses, especially old small businesses, tend to implement e-commerce due to affordability. Moreover, findings from the study of Al Qirim (2005) present mixed results based on different types of adopters. For starters[25], firm size appears to be insignificant in the adoption of e-commerce in New Zealand SMMEs. However, firm size plays a major role on the adoption of e-commerce technologies for innovators[26] and extended innovators[27] in New Zealand.

Hong and Zhu (2006) presented a different aspect of firm size as a control variable instead of an independent variable as used by Al Qirim (2005). Based on the Technology-Organisation-Environment (TOE) framework, they found that firm size is one of the factors in the organisational context that has some effects on IT adoption. Most importantly, Hong and Zhu (2006) empirical study indicates that firm size is negatively related to e-commerce adoption both in the B2B and B2C e-commerce environment.

2.9.1.4(b). Industry type

Industry type is used in empirical studies by Chatterjee, Grewal and Sambamurthy (2002) and Hong and Zhu (2006) for e-commerce adoption in organisations. The results of both studies suggest that the differences among industries influence e-commerce adoption, especially for firms in-service industry, including marketing, sales, order processing, delivery, customer support services, and recruiting (Chatterjee *et al*, 2002).

[25] SMMEs that have an internet connection and an email account
[26] SMMEs that have a website
[27] SMMEs that have moved beyond the starters' and innovators' stages.

2.9.1.4(c). Web experience

Web experience is identified by Chatterjee *et al* (2002) as the extent of experience in using web technology. They concluded that the assimilation of web technologies to e-commerce activities is influenced by cumulative organisational learning and experience. Firms that have gained web adoption for a prolonged period of time have a greater likelihood of achieving a high level of maturity in e-commerce technology.

2.9.2. External factors

2.9.2.1. Competition and industry pressure

Referring to the earlier work of Davis (1989), Grandon and Pearson (2004b) define external pressure to an organisation as "direct or indirect pressure exerted by competitors, social referents, other firms, the government, and the industry to adopt an innovation in an organisation" (quoted in Sundaravej (2006:20)). The authors found that external pressure is a significant factor that influences e-commerce adoption in Chilean SMMEs (Grandon and Pearson, 2004b). A number of researchers extend the position of Grandon and Pearson (2004b) by including competition and industry pressure (Al qirim, 2005, Looi, 2005, Ching and Ellis, 2004), as the environmental factors that compel an organisation to adopt the B2C e-commerce.

Moreover, Al Qirim (2005) summarized recent research and found intense competition to be a significant factor that drives the adoption of e-commerce. He further found that competition is significant only in the case of extended adopters.

In contrast to the above findings, Ching and Ellis (2004) found no relationship between e-commerce adoption and the intense competition within industries. Based on these contradicting findings, further investigations regarding this factor are needed.

2.9.2.2. Government Support

Unlike Grandon and Pearson (2004b), Seyal, Awais, Shamail and Abbas (2004) investigated government support as a determinant of e-commerce. Their study shows that governmental policies and initiatives stimulated e-commerce adoption in Pakistan SMMEs. The more value perceived in government incentives by an organisation, the higher is the likelihood of an organisation to adopt e-commerce. Further investigations into government support as an e-commerce determinant in other context than Pakistan's is needed.

2.9.2.3. Pressure from customers

Pressure from customers as a determinant of e-commerce adoption has not been widely explored. Ching and Ellis (2004), investigating factors driving e-commerce adoption in Hong Kong SMMEs, found that pressure from customers is a significant determinant of e-commerce adoption. Their study reveals that existing customers play a significant role in SMMEs' decisions to conduct business online. However, the authors do not elaborate on different types of pressure from customers in sufficient detail.

2.10. Inhibitors of e-commerce adoption

There are a number of factors that inhibit e-commerce adoption. Some of the factors were highlighted in the above literature. In the specific South African context, Courtney and Fintz (2001) highlight the following factors as inhibitors of e-commerce adoption. These are:

• "Low use of e-commerce by customers and suppliers. This means that there is little incentive for businesses to engage in e-commerce until their customers and suppliers are also using it.

• Concerns about security aspects.

• High costs of development and computer and networking technologies in commerce.

• Limited knowledge of e-commerce models and methodologies.

• Unconvinced of benefits to the company." (Courtney and Fintz, 2001:5, cited in Cloete, 2003:126).

A more critical factor is the heavy reliance on acceptance of e-commerce technology by the business owner. If the owner does not perceive the technology to be useful, understand its potential, or is willing to use it, then he/she will be reluctant to adopt it (Cloete, 2003).

Business owners are also concerned about short-term return on investment, and this exerts pressure on the business to focus on medium-term survival rather than long-term viability (Cloete, 2003). This might lead owners to hesitate in making substantial investments when short-term returns are not guaranteed.

2.11. Summary of Chapter 2

In summary, the literature review chapter aided in defining SMMEs. The literature suggests that SMMEs can be defined either quantitatively or qualitatively. The quantitative definition of SMMEs based on the number of full time employees (according to SA Small Business Act of 2003) is adopted in this study. The chapter further reviewed the role of the internet in a business with particular reference to internet adoption in South Africa. The installation of undersea cables, the growth in number of cell phone internet users and the granting of licences to new Internet Service Providers are the main factors that contribute to the growth of internet users in South Africa. Such growth is an opportunity for SMMEs that wish to venture into e-commerce enabled business. In addition, three ICT adoption perspectives (technological, organisational and small firms' perspectives) adopted in this study have been discussed. Moreover, the chapter discussed issues pertaining to e-commerce adoption with particular reference to i) developing and developed countries ii) e-commerce capabilities iii) determinants of e-commerce and iv) inhibitors of e-commerce adoption.

The next chapter (Chapter 3) discusses the methodology used to conduct this research.

CHAPTER 3: RESEARCH METHODOLOGY

3.1. Introduction

The previous chapter (Chapter 2) examined various studies pertaining to i) e-commerce adoption, ii) determinants of e-commerce, iii) enablers of e-commerce and iv) factors that inhibit e-commerce adoption. The main focus of this chapter is to describe the research design and methodology used to address the research questions delineated in Chapter 1. It further explains the research instrument used i.e. the questionnaire, the population of the study, sample, sampling method and data analysis method. The issues of validity and reliability of the data are also addressed in this chapter.

3.2. Research objectives

The following are the research objectives based on the research questions delineated in Chapter 1:

1. To examine the current usage of e-commerce by SMMEs in Durban and Pietermaritzburg
2. To examine the determinants of e-commerce adoption from the literature
3. To examine the impact of the determinants on Durban and Pietermaritzburg SMMEs e-commerce adoption
4. To examine Durban and Pietermaritzburg SMMEs knowledge of the benefits of e-commerce
5. To examine e-commerce enablers adopted by Durban and Pietermaritzburg SMMEs
6. To examine the inhibitors of e-commerce adoption from the Durban and PMB SMME's perspective

The study seeks to gather opinions/perceptions of owners/managers of SMMEs in Durban and PMB in relation to the above listed research objectives.

3.3. Research design

3.3.1. Nature of the study

Sekaran and Bougie (2010) identify three types of study:

- **Exploratory study**: is normally conducted when little or nothing is known about a problem or phenomena at hand. This study is undertaken when no information is available on how similar problems or research issues have been solved.

- **Descriptive study**: is conducted in order to describe the characteristics of the variables being studied. Thus, the goal of a descriptive study is to describe relevant aspects of a subject area within the context of individuals, organisations or industry.

- **Hypothesis testing**: usually undertaken to test the relationship between variables.

- **Case study**: is conducted for contextual analyses of similar situations in other organisations

The nature of this study is descriptive. The researcher seeks to find out what types of e-commerce activities SMMEs in Durban and Pietermaritzburg engage in, the inhibitors and determinants of e-commerce adoption and the knowledge that SMMEs have about e-commerce benefits. It is not exploratory since there is readily available literature on the subject (e-commerce).

3.3.2. Descriptive research design

According to Leedy and Ormrod (2010), there are four types of descriptive research design:

- **Observational research design:** is based on objective observation and quantification of a behaviour/phenomena being studied

- **Correlational study design:** where two different characteristics (variables) are measured to determine whether and in what way these characteristics might be related

- **Developmental research design:** where data related to characteristics are collected, in intervals, over time or from different groups of participants

- **Survey research design**: in this case, data is gathered by asking questions of participants and tabulating their answers. The aim is to draw conclusions about a large population by surveying a sample of that population. Data is then summarized by means of statistical analysis.

Survey research designs in a business research context are often designed to describe incidence, frequency and distribution of certain characteristics in a population (Leedy and Ormrod, 2005). Blumberg et al. (2005) attest that survey design is suited for collecting information concerning opinions, attitudes, perceptions, intentions and expectations. Thus, the survey design was opted as the most appropriate research design for this study.

3.3.2.1. Data collection tools for survey designs

i) Interviews: Leedy and Ormrod (2010) indicate that there are two types of interviews. A structured interview entails the researcher asking a standard set of questions only. However, a semi-structured interview will follow standard questions with the flexibility of shaping some questions to gain more understanding of the respondent's perspective or to trigger the respondent to reason on the things/concepts being asked.

ii) Questionnaires: Sekaran and Bougie (2010) indicate that there are different ways of distributing questionnaires. Personally administered questionnaires are hand delivered questionnaires to the respondents. In this case, completed questionnaires can be collected within a short period and the researcher can clarify anything from the questionnaire that the participant does not understand. It is also less expensive to administer questionnaires to a number of respondents at the same time (when questionnaires are administered to a group of people such as companies' employees).

Postal/electronic mail questionnaires are questionnaires posted to respondents through postal mail or electronically. However, Sekaran and Bougie (2010) attest that the response rate for mail questionnaires is very low (30%), and it is difficult to ensure representativeness of the sample. In addition, any query/doubt that the respondent might have cannot be clarified.

In this study, questionnaires were chosen as the survey instrument. Questionnaires were deemed the most appropriate as data were collected in two different locations. Thus, there was a need for a standardised instrument that would measure objectively (without the researcher's interference) the subjects of the study. In addition, due to time constraints, interviews were deemed inappropriate due to the logistics involved in setting up an interview. Postal mail questionnaires were considered inappropriate due to time constraints and costs involved in

mailing the questionnaires. Electronic questionnaires were not considered as the selected sample involved those that have and those that do not have e-mail addresses. Thus, questionnaires were personally administered to respondents.

3.3.3. Questionnaire design

Items included in the questionnaire were mainly drawn from questionnaires used in previous studies on IT/e-commerce adoption. Some items had to be adapted/ adjusted to fit within the context of the study. The questionnaire was divided into sections as follows:

Section A: General information about the respondents

The aim of this section was to capture respondents' responses pertaining to their age, gender, and the position that they occupy in their businesses. In addition, the section was designed to gather information concerning their businesses. Particularly, the instrument was designed to capture i) the extent of their business coverage i.e. whether their businesses operate locally, nationally, internationally or nationally and internationally, ii) how long their businesses have been established, iii) the business sector they belong to, iv) the approximate number of full-time employees in their companies, v) their target customers and vi) whether they sell their products online or not.

Section B: Information about e-commerce adoption

The purpose of this section was to:

1) examine which areas/aspects of e-commerce are currently adopted by SMMEs (research objective 1). SMMEs were asked to choose which of the following e-commerce options have been adopted within their companies: i) Customer payment by credit card through the company's website, ii) receiving customer orders through the company's website, iii) providing customer services through the company website and iv) placing orders with suppliers over the internet (Item 10 from the questionnaire in Appendix E)

2) examine e-commerce enablers that SMMEs currently have in line with e-commerce adoption (research objective 5). The enablers that were examined are: i) company strategy for developing e-commerce, ii) computerised database of company's customers, iii) computerised database of company's suppliers, iv) computerised inventory of company's products or services, v) company's electronic e-mail, vi) company access to the internet, vii) website demonstrating company's products or services (item no 11 from the questionnaire in Appendix E).

3) examine the impact of the determinants of e-commerce on SMMEs e-commerce adoption (research objective 3). Determinants of e-commerce adoption within SMMEs were identified through the literature on e-commerce adoption. The choice of determinants to be examined through the questionnaire was informed by the two theoretical frameworks being used in this study (DOI and UTAUT). SMME owners/managers were requested to indicate the extent to which they agree or disagree about the influence of the determinants on e-commerce adoption in their companies (items 12 and 13 from the questionnaire see Appendix E).

Section C: Information about perceptions of e-commerce

The purpose of this section was to:

1) examine SMMEs knowledge of the benefits of e-commerce (research objective 4). The following e-commerce benefits were examined against SMMEs knowledge of e-commerce benefits (based on their current and anticipated business requirements): i) improve information exchange with customers, ii) increase customer loyalty and retention, iii) improve service to the customer, iv) provide easier access to international markets, v) expand business reach, vi) reduce costs of maintaining up-to- date company information, vii) improve information exchange with suppliers, viii) reduce costs through web based purchasing and procurement, ix) improve the competitive position of the company and x) attracting new investment to the company (Item 14 from the questionnaire).

The following e-commerce benefits were examined to determine the extent to which SMMEs have benefited from them as a result of adopting e-commerce: i) raising/improving company profile, ii) increasing sales/enquiries, iii) extending customer base, iv) improving customer relationships, v) improving supplier relationships, vi) speeding up processes such as transactions, recruitment and marketing processes, vii) reducing costs such as transaction and marketing costs, viii) keeping up to date with products, services and market news, ix) keeping ahead of/abreast of competition, x) flexibility in terms of customer payment options, xi) flexibility in terms of placing orders with suppliers, xii) customer convenience (Item 14 from the questionnaire).

2) examine the inhibitors/limitations of e-commerce adoption (research objective 6).
The importance of the following limitations to the use of e-commerce was examined through item 16 of the questionnaire: i) company not convinced of financial and business benefits, ii) company has limited knowledge of the required technology, iii) e-commerce use is too low among customers, iv) e-commerce use is too low among suppliers, vi) level of computerisation is too low in the company, vii) cost of computers and network technologies is too high, viii)

telecommunications services are not dependable, ix) company has concerns about internet security, x) company has concerns about legal issues, contracts and/ or liability.

3.4. Research methodology

Leedy and Ormrod (2005) identify two primary functions of research methodology:
1. to order and control the acquisition of data
2. to round up the data after their acquisition and extract meaning from them. Thus, there are two processes involved in research methodology: i) Data collection and ii) data analysis and interpretation.

3.4.1. Data collection

3.4.1.1. Sample

A sample is a subset of the population being studied (Sekaran and Bougie, 2010). There are two main sampling designs. In probability sampling, all segments of the population have an equal chance (probability) of being selected through a random selection process (Leedy and Ormrod, 2010). Thus, it is the most suitable sampling design for generalisation to the entire population.

There are different types of probability sampling:

i) Simple random sampling: is the most representative sampling method and offers strong prospects for generalisation to the entire population (Sekaran and Bougie, 2010). However, it is practical when the population is small and its entire members known (Leedy and Ormrod, 2010), Thus, for a large population, simple random sampling is not practical and sometimes not possible.

ii) Stratified random sampling: is used when there are different layers (strata) within the population. The researcher takes equal sub-samples from each one of the layers from the entire population (Sekaran and Bougie, 2010).

iii) Proportional stratified sampling: Unlike in simple stratified random sampling, this sampling method is used when the strata in the population are not equal in size. Thus, the sample is chosen in accordance with the proportions of each stratum of population (Sekaran and Bougie, 2010).
iv) Cluster sampling: is used when the population is spread out over a large area. Thus, the researcher can subdivide the population into small units (clusters). Leedy and Ormrod (2010)

maintain that in cluster sampling, clusters must be as similar as possible to one another. In addition, clusters must equally enclose a heterogeneous mix of individuals.

v) Systematic sampling: entails selecting individuals according to a predefined sequence (Sekaran and Bougie, 2010).

However, Sekaran and Bougie (2010) argue that when time and other factors become critical (rather than the generalisation of the findings), a non-probability sampling design can be adopted . In non-probability sampling design, there is no guarantee that each segment within the population will be represented. There are also different types of non-probability sampling as there is for probability sampling.

i) Convenience sampling: also known as accidental sampling, involves the collection of information from members of the population "conveniently available to provide it" (Sekaran and Bougie, 2010:276). It is considered to be the best way to collect basic information quickly and efficiently. However, It is considered to be the least representative sampling technique (Leedy and Ormrod, 2010).

ii) Quota sampling: involves selecting respondents in the same proportion that they are found in the population but not randomly (Leedy and Ormrod, 2010).

iii) Purposive sampling: involves choosing members of a sample "for a particular purpose" (Leedy and Ormrod, 2010:212).

3.4.1.2. Sampling design for the study

Parahoo (2006) advocates that in order to select a representative sample that can be used to generalise the findings to the target population, a probability sample should be used. Thus, cluster sampling was used. Cluster sampling is the most appropriate as the research investigates e-commerce adoption in two geographic areas i.e. Durban and Pietermaritzburg. In addition, any SMME that belongs to any of the business sectors identified in the National Small Business Amendment Act of 2003 was eligible to participate in the study. This enhanced the representation of SMMEs from all business sectors. Samples were taken from locations that cater for the entire spectrum of SMMEs. In other words, in both geographic areas, samples were taken from places that have Small, Medium and Micro businesses (i.e. Central Business District (CBD)).SMME owners/managers were selected as participants in the study as it is well documented in Chapter 2 that the perceptions of the owner/manager about e-commerce

influence to a large extent its adoption. SMME owners/managers were selected based on their willingness to participate in the research.

Coughlan, Cronin and Ryan (2007) posit that the size of the sample is an important factor to consider in research. Small samples present the risk of being excessively representative of small subgroups (rather than the whole population) within the target population. Gay (1996) provides guidelines for selecting a sample size:

i) For a population that has less than 100 individuals, the whole population should be sampled

ii) If the population size is approximately 500, 50% of the population should be sampled

iii) If the population size is approximately 1500, 20% of the population should be sampled

iv) If the population size is greater than 5000, a sample of 400 participants is required

The population of SMMEs that operate in CBD in both Durban and Pietermaritzburg was estimated to be greater than 5000. Thus, a sample of 400 SMMEs owners/managers was targeted, which was equally spread between the two clusters i.e. 200 SMME owners/managers were selected in each location. The size of the SMMEs business was determined by the number of full time employees (captured through the questionnaire).

Questionnaires were hand delivered to SMME owner/managers at their business premises. Requests were made for the respondents to complete the questionnaire immediately. However, in most cases the respondents were not able to complete the questionnaire promptly. Thus, a maximum period of two weeks was given to the respondents to complete the questionnaires and arrangements were made to collect completed questionnaires. The data collection phase took 5 months (from November 2011 until the end of March 2012). Data collection was extended due to some challenges. In some cases, the respondents had not understood the questions, thus the collection of questionnaires had to be postponed. In other instances, questionnaires were spoiled due to negligence. In these cases, questionnaires had to be re- printed and re-administered which caused delays in collecting data. The longer period of data collection was also due to the fact that data had to be collected in two geographical locations.

Leedy and Ormrod (2005) state that in most cases, data collected by means of questionnaires i) reflect the reading and writing skills of the respondents, ii) and sometimes respondents answer what they think the researcher wants to hear. To address these shortfalls, i) efforts were made to

address and/or clarify any queries that respondents had before and after the respondents answered the questionnaire. ii) The researcher did not interfere with the respondent whilst he/she was filling in the questionnaire in order to minimise any influence over the responses.
A total number of 360 usable responses from SMMEs were gathered at the end of data collection, which represents a 90% response rate.

3.4.1.3. Inclusion and exclusion criteria

1. Inclusion criteria: Owners or managers of businesses i) operating in either the Durban CBD or Pietermaritzburg CBD, ii) whose business falls under the description of an SMME based on the number of full time employees in the company (according to the South African Small Business Act of 2003) iii) whose business falls under any of the business sectors listed in the South African Small Business Act of 2003, iv) willing to participate in the study.

2. Exclusion criteria: All other categories of employees and all other businesses that do not fall under the description of an SMME (based on the number of full-time employees) were excluded from the study. Businesses that do not belong to business sectors identified in the South African Small business Act of 2003 were also excluded.

3.5. Data analysis

Data were analysed using the Statistical Package for Social Science (SPSS) version 19. Items from the research instrument were translated into meaningful variables and were entered into SPSS. Various responses from the participants were coded (See Appendix A) and entered into SPSS. Coughlan et al. (2007) point that one of the most important characteristics of any research instrument is that it should measure the research objectives/hypotheses in a focused and consistent way. Hence, the reliability and validity of the research instrument needed to be tested.

3.5.1. Validity and reliability

Wood, Ross-kerr and Brink (2006) indicate that validity refers to the ability of the instrument to measure what it is intended to measure i.e. research hypotheses/objectives or questions. Reliability refers to the consistency and accuracy of the instrument in addressing/measuring the problem under investigation. According to Coughlan et al (2007), if a previously used questionnaire is re-used without any alteration, there is no need to prove the reliability and validity of the questionnaire since they would have been demonstrated in the previous research. Although items from the research instrument had already been used/tested in other studies, in

some cases, modifications were made to suit the items to the study. Thus, there was a need to test the validity and reliability of the research instrument.

3.5.1.1. Validity

Leedy and Ormrod (2010) identify different types of validity tests:

i) Face validity: This assesses the extent to which an instrument looks like it is measuring a particular characteristic. This test relies on subjective judgment, thus does not guarantee that the instrument truly measures what it is intended to measure.

ii) Content validity: assesses the extent to which the instrument in itself is a representative (in appropriate proportions) sample of the domain being studied. Content validity is predominantly used when a researcher needs to assess people's achievement in some area. For instance, when a researcher wants to assess the knowledge gained after a classroom instruction.

iii) Criterion validity: assesses the extent to which the outcome (results) of a research instrument correlate with another related measure. Thus, the criterion validity can only be established after the instrument has already been administered.

iv) Construct validity: assesses the extent to which a research instrument measures a characteristic that cannot be directly observed.

v) Multitrait-multimethod approach: is used when two or more different characteristics are each measured using two or more different approaches.

vi) Table of specifications: is used in conjunction with content analysis. The aim is to construct a measurement instrument that provides a representative sample of a particular content domain using a two dimensional grid.

vii) Judgment by a panel of experts: In this case, the research instrument is subjected to expert scrutiny. Experts in a particular subject area are requested to provide an informed opinion about instrument validity in relation to research questions/hypotheses at hand.

In the context of this research, the research instrument was subjected to expert scrutiny. The questionnaire was given to a statistician for her expert opinion. In addition, the questionnaire was then given to a Lecturer at the University of KwaZulu-Natal for further assessment. Suggested corrections from both sides were made before the questionnaire was distributed to respondents.

3.5.1.2. Reliability

Leedy and Ormrod (2010) identify the following types of reliability tests:

i) Interrater reliability: measures the similarity between two individuals' judgments about the same subject under study (such as product or performance)

ii) Internal consistency reliability: measures the extent to which all items within a single instrument produce similar results

iii) Equivalent forms reliability: measures the extent to which two different versions of the same research instrument produce similar results

iv) Test-retest reliability: measures the extent to which a single instrument produces the same results for the same people in two different occasions.

The internal consistency reliability was tested statistically through the Cronbach's Alpha coefficient. The Cronbach's Alpha coefficients pertaining to each research question are presented and discussed in the next Chapter (Chapter 4).

3.6. Ethical considerations

According to Beauchamp and Childress (2001), there are four (4) important ethical principles to consider in a research project:

1. Autonomy refers to the individual freedom to choose to participate in a research project without fear and coercion and with knowledge and understanding of what the research is all about. The following steps were taken to ensure such autonomy: i) participants were asked if they were willing to participate in the research project, ii) if the participant was willing to participate, then an explanation of the research was given. Particular care was taken to listen to and answer any queries/concerns emanating from participants. iii) After the explanation, respondents were asked if they still felt comfortable to participate in the research. Those who felt comfortable with the research were then given the questionnaire together with an informed consent letter that they had to sign indicating that they understood the purpose of the study and were willing to participate in the study. Otherwise, for those who felt uncomfortable, no questionnaire was given to them.

2. Non-maleficence means the intention to prevent any physical or psychological harm occurring to research participants. In this case, as part of the research approval procedures of

the University of KwaZulu-Natal, an ethical clearance application was submitted to the Ethical Clearance Committee in which issues of maleficence were addressed.

3. Beneficence is the benefit that the research will bring to the participant and society. This study promotes the adoption of e-commerce. SMMEs can benefit from e-commerce as it (e-commerce) has the potential to reduce costs such as operational and transactional costs. Thus, goods or services can be brought to markets at a cheaper price. This can then translate into savings for participants (customers). In addition, customer convenience is one of the benefits of e-commerce. Such convenience allows people to conduct business and/or conclude transactions anywhere, anytime, thus eliminating the need for them to be physically present at the physical business premises.

4. Justice refers to all participants being treated equally without any preferential treatment. All participants were treated with respect. No special (monetary or whatsoever) favours were granted to any of the participants. The participation in the research was entirely voluntary.

3.7. Summary of Chapter 3

In summary, the following are the main points highlighted in this chapter:

1. The research is descriptive in nature. It follows a survey research design using a self-administered questionnaire as the instrument for data collection

2. The population size encompasses SMMEs (as defined by the South African Small Business Act of 2003) within the Durban and Pietermaritzburg CBDs that belong to any sector identified in the South African Small Business Act of 2003. The sample size was determined to be 400 SMME owner/managers.

3. An adapted questionnaire was subjected to a panel's scrutiny for validity. The questionnaire was then revised before being administered to owners/managers.

4. A request was made for business owner/managers to participate in the study. 400 SMMEs were approached by visiting their business premises and 360 usable questionnaires were collected from the SMME owners/managers. The response rate was 90%.

5. Data was coded and then captured into SPSS version 19

6. Statistical analysis was performed. The results of the analysis are presented in chapter 4.

CHAPTER 4: FINDINGS AND ANALYSIS

4.1. Introduction

This chapter presents the findings from the survey. It further analyses the survey responses in relation to the research questions.

4.2. Response rate

400 questionnaires were distributed evenly to SMMEs in Durban and Pietermaritzburg (200 questionnaires in each geographic location). A total of 360 usable questionnaires were returned, yielding a 90% useful response rate

4.3. Consistency and reliability: Cronbach's alpha

The Cronbach's alpha coefficient is calculated for each category of questions with similar scales. The aim is to find the degree of consistency of responses provided by the participants. It helps to determine whether the research will generate similar results for the tested questions, if the research was expanded to a larger population. Generally, consistency is shown for a particular set of questions if the Cronbach's coefficient is equal to or greater than 0.7. The table below shows the results of the Cronbach's test for the questionnaire items grouped under the research questions.

Table 4.1. Cronbach's Alpha test results

CONSTRUCT	CRONBACH'S ALPHA	QUESTION NUMBERS
RESEARCH QUESTION 1	.949	10
RESEARCH QUESTION 2	.979 .920	12 13
RESEARCH QUESTION 3	.902 .987	14 15
RESEARCH QUESTION 4	.930	11.1,11.2,11.3,11.4,11.5,11.6,11.7
RESEARCH QUESTION 5	.844	16

The Cronbach's coefficients range from 0 to 1. Sekaran and Bougie (2010) indicate that the closer to 1 the coefficient is, the greater the internal consistency and the higher is the reliability of responses. Items for questions 10, 11, 12, 13, 14 and15 present high internal consistencies based on the value of the Cronbach's alpha depicted in the table above. The internal consistency for items of question 16 is also good as it is greater than 0.7.

4.4. Normality tests: Kolmogorov Smirnov and Shapiro-Wilk tests

It is imperative to perform a normality test to determine whether data is distributed normally or not. In return, the result of the normality test will indicate the type of statistical tests that will be appropriate for the data. For normally distributed data, the required tests are parametric tests, for a non-normal distribution, the prescribed tests are non-parametric tests. The Kolmogorov Smirnov and the Shapiro-Wilk tests were run to test the normality of responses from the research's participants. The normality test follows the following hypothesis:

H_0: The tested variables are normally distributed
H_1: The tested variables are not normally distributed.

The normality tests indicate that the significance value of both Shapiro-Wilk and Kolmogorov Smirnov tests for all the questions is less than 0.05 (See Appendix A). If the significance value is greater than 0.05 then the data is normal. Otherwise, the data significantly deviate from a normal distribution (Lund, 2012). Based on the results of the normality tests, it is concluded that the tested variables (questions) do not follow a normal distribution. Consequently, H_0 is rejected for all the variables. Thus, only non-parametric tests such as the Mann-Whitney U test, Chi square and the Kruskal Wallis tests can be applied to variables used in this study, if necessary.

4.5. Descriptive statistics

Detailed descriptive statistics for each question from the survey instrument are show in Appendix A. These statistics include the mean, mode, median and the standard deviation. The descriptives were calculated based on the data code entered into the SPSS software program. For instance, for the gender variable, "1" represents "Female" and "2" "Male". The mode for gender is "2" meaning that most respondents were males. The descriptive statistics help in the analysis and/or validation of results from other statistical analyses.

Appropriate codes were entered into SPSS (as depicted in Appendix A) in order to perform various statistical analyses on the variables from the questionnaire. In case a question was not answered, "999" was entered into SPSS to signify a missing value for that particular question. One variable ("Where is the business based?") not recorded in the questionnaire was added into SPSS to differentiate responses from Durban to those received from Pietermaritzburg.

4.6. Quantitative analysis

The quantitative analysis is divided into two (2) sections. The first section deals with general information from section A of the questionnaire. The subsequent section aims at answering research questions using various statistical analyses.

4.6.1. Section A-General information about respondents and their businesses

This section provides background information about respondents such as age, gender and the position they hold in their companies. It also delineates the respondent's business type, business coverage, business age, and business sector, the number of full-time employees in the business, target customers and business inclination towards online selling. Although this section does not answer any of the research questions, it provides a general idea of the sample population[28] and the business environment in which they operate.

4.6.1.1. Cross tabulation between age, gender and role in the company

In Appendix B, the demographic distribution of the respondents is depicted according to their gender, age and the position that they occupy in the company. Out of 360 respondents (N=360), 4.2% (15) did not disclose either their gender, age or the position that they occupy in their companies. A crosstabulation between age, gender and role (see Appendix B) illustrates that male respondents were in the majority in all three companies' positions (owner managers/owners, owners, managers) and in all age categories.

4.6.1.2. Association between e-commerce adoption and age of the business

A Chi square test indicates that there is a significant relationship between e-commerce adoption and how long a business has been established (19.720, df=2, p=0.000). More specifically, significantly ($p<0.05$) more than expected SMMEs that have been established for 4 years or more have adopted e-commerce. However, significantly more than expected SMMEs that are less than 1 year old have not adopted e-commerce. The results show that there is a difference in terms of the adoption of e-commerce based on how long SMMEs have been in business. Particularly, SMMEs at the start up level show significantly low e-commerce adoption. Thus, it is important to unveil factors that contribute/encourage e-commerce adoption as well as those that inhibit it. Determinants and inhibitors of e-commerce adoption are dealt with in this research through research questions 2 and 5

[28] The size of the SMMEs business was determined by the number of full time employees (captured through the questionnaire)

4.6.1.3. Association between e-commerce adoption and the extent of business coverage

A Chi-square analysis reveals that there is a significant relationship between e-commerce adoption and the extent of business coverage (Chi-square value = 69.556, df =3, $p<0.05$). More than expected SMMEs that operate locally have not adopted e-commerce. However, more than expected SMMEs operating nationally, nationally and internationally have adopted e-commerce. This could mean that the wider the business geographic coverage of an SMME, the more e-commerce is likely to be adopted.

4.6.1.4. Cross tabulation between e-commerce adoption and size of the business

Table 4.2.Cross tabulation between e-commerce adoption and size of the business (Number of full-time employees)

What is the approximate number of full-time employees in your company?		The company has adopted E-Commerce		
		Yes	No	Total
Less than 10	Count	16	131	147
	%	10.7%	63.6%	41.3%
10 to 50	Count	46	52	98
	%	30.7%	25.2%	27.5%
51 to 100	Count	60	21	81
	%	40.0%	10.2%	22.8%
101 to 200	Count	28	2	30
	%	18.7%	1.0%	8.4%
Total	Count	150	206	356
	%	100.0%	100.0%	100.0%

Table 4.3.Cross tabulation between e-commerce adoption and size of the business (Total annual turnover)

What is the approximate annual turnover of your company?		The company has adopted E-Commerce		
		Yes	No	Total
Less than R 100,000	Count	6	50	56
	%	4.2%	29.8%	17.9%
R 100,000 to 300,000	Count	10	41	51
	%	6.9%	24.4%	16.3%
R 300,001 to R 500,000	Count	12	28	40
	%	8.3%	16.7%	12.8%
R 500,001 to R 1,000,000	Count	27	20	47
	%	18.8%	11.9%	15.1%
1,000,001 to R 2,000,000	Count	44	8	52
	%	30.6%	4.8%	16.7%
2,000,001 to R 3,000,000	Count	24	7	31
	%	16.7%	4.2%	9.9%
Above R 3,000,000	Count	21	14	35
	%	14.6%	8.3%	11.2%
Total	Count	144	168	312
	%	100.0%	100.0%	100.0%

Table 4.2 above depicts a crosstabulation between e-commerce adoption and the size of the business (total number of full-time employees within SMMEs). The table indicates that the majority (40.0%, N= 60) of surveyed SMMEs that adopted any of the four e-commerce options have between 51 and 100 full-time employees in their businesses. However, the majority of those that have not adopted e-commerce have less than 10 employees. A Chi square test applied to the crosstabulation reveals that there is a significant relationship between e-commerce adoption and the size of SMMEs (125.952, df=3, p=0.000). Specifically, significantly ($p<0.05$) more than expected SMMEs that employ between 51 and 100 have adopted e-commerce. However, significantly ($p<0.05$) more than expected SMMEs that employ less than 10 full-time employees have not adopted e-commerce.

The size of a business as a determinant of e-commerce has implications for e-commerce adoption within each location. The majority (53.9%, N=96) of SMMEs in Durban have less than 10 employees whilst the majority (34.3%, N=61) of SMMEs in Pietermaritzburg have

between 51 and 100 employees. Consequently, the number of SMMEs that adopted e-commerce in Pietermaritzburg is greater than those that adopted e-commerce in Durban.

In terms of the South African Classification of SMMEs (National Small Business Amendment Act, 2003), the results show that the majority of e-commerce adopters are medium enterprises (51 and 100). However, the majority of non-adopters are micro businesses (less than 5 employees) and to a certain extent small businesses (between 6 and 50 employees).

In terms of the annual turnover (as a second measure of the size of the business), the findings in table 4.3 above also reveal that SMMEs with a total turnover between R 100,000 and R 1,000,000 account only for 38.2% of those that adopted e-commerce. However, the majority (61.8%) of SMMEs that adopted e-commerce have a minimal annual turnover of above R1, 000,000.

The above further concurs with findings from previous research on e-commerce adoption (Van Beveren and Thomson (2002); (Hong and Zhu, 2006)) that confirms the importance of business size as an important factor to consider within the context of SMMEs.

4.6.2. Section B- Answering the research questions

4.6.2.1. Research Question 1:

What is the current usage of e-commerce by SMMEs in Pietermaritzburg and Durban?

The second part of the questionnaire (section B) examined which of the four (4) aspects of e-commerce is/are currently being used by SMMEs, and why they are used. The four aspects of e-commerce that were tested are : customer payment by credit card, receiving customers' orders through the company's website, providing customer services through the company website and placing orders with suppliers over the internet.

A Chi square test on the relationship between e-commerce adoption and business location revealed that there is a significant ($p<0.05$) relationship between each one of the four (4) e-commerce options and business location (see Appendix C). Thus, the analysis of each e-commerce option will be performed within the individual context of each location (Durban and Pietermaritzburg).

4.6.2.1(a). Customer payment by credit card through the company's website

The results of the findings are summarised below:

A significant relationship (Durban, Fisher's test=24.992, p=0.000; Pietermaritzburg, Fisher's test=27.416, p=0.000) was found between customer payment via credit card and the extent of business coverage in both locations. The majority of SMMEs from Durban (57.7%, N=15) and Pietermaritzburg (59.6%, N=56) that operate nationally allow customer payments by credit card through their websites. In addition, the majority of SMMEs from Durban (71.9%, N=110) and Pietermaritzburg (66.3%, N=57) that operate locally do not allow customer payments by credit card through their websites. This suggests that the majority of SMMEs in Durban and Pietermaritzburg begin to consider online customer payment by credit card through their websites once their business expands beyond the local level.

In addition, there is a significant relationship between online payment and expanding business reach in Durban (Fisher's test=9.066, p=0.043) and Pietermaritzburg (Fisher's test=15.588, p=0.001). Specifically, in Durban and Pietermaritzburg, significantly more than expected SMMEs that allow customer payments through their companies websites perceive business expansion as an important benefit of e-commerce (based on their current and anticipated business requirements). Furthermore, in Pietermaritzburg, significantly more than expected SMMEs that do not allow customer payments through their companies websites perceive business expansion as a very important benefit of e-commerce (based on their current and anticipated business requirements). This could mean that in Pietermaritzburg and Durban, SMMEs have adopted customer online payment option as a means to expand their business reach.

Moreover, a significant ($p<0.05$) relationship was found between customer payment via credit card and access to international markets (as a potential benefit of e-commerce) in Durban (10.901, df=2, p=.004) and Pietermaritzburg (11.386, df=2, p=0.003). Specifically in Durban and Pietermaritzburg, significantly more than expected SMMEs that have adopted e-commerce perceive access to international markets as an important benefit (based on their current and anticipated business benefits). Additionally, significantly more than expected SMMEs in Pietermaritzburg that have not adopted Ecommerce still perceive access to international markets as a very important benefit (based on their current and anticipated business benefits).This could mean that SMMEs in Durban and Pietermaritzburg could have adopted customer online payment option as a means to gain access to international markets.

However, a Chi square and a crosstabulation between online customer payments and concerns about internet security reveal that significantly more than expected SMMEs in Pietermaritzburg (Fisher's test=24.615,p=.000) that allow online customer payments through their company's website consider concerns about internet security to be an important limitation to the use of e-commerce in their companies. In addition, more than expected SMMEs that do not allow online customer payments through the company's website in Pietermaritzburg consider such concerns to be a very important limitation to the use of e-commerce. This suggests that although SMMEs in Pietermaritzburg allow customers to make payments using their credit cards via their websites, they still consider internet security to be an important hindrance to the use of e-commerce. This could suggest that such security concerns have been mitigated through online security mechanisms. Another explanation could be that the benefits associated with online customer payment may outweigh the pitfalls emanating from internet security concerns. However, customer payment by credit card could be used more widely by surveyed SMMEs if the perceived risks associated with internet security could be mitigated.

4.6.2.1(b). Customer orders placed through the company's website

A Chi square test was performed to test the significance of the association between SMMEs allowing customers to place orders through their websites and the geographic area covered by the SMME's business. It was found that in Durban, significantly (Fisher's test value=22.237, p=0.05) more than expected SMMEs that operate both nationally and internationally allow customers to place orders through their websites. Similarly, in Pietermaritzburg, significantly (Fisher's test value=25.872, p=0.05) more than expected SMMEs that operate nationally allow customers to place orders through their websites. However, significantly more than expected SMMEs that operate locally in Pietermaritzburg do not allow customers to place orders through their website. This could mean that SMMEs introduce online placing of orders in an attempt to reach customers from remote areas.

Additionally, it was found that there is a significant relationship between customer credit card payment and customers placing orders through the company's website. Specifically, in Pietermaritzburg (Pearson Chi square=133.191, df=1, p=0.000) and Durban (Fisher's test=84.538, p=0.000) more than expected SMMEs that allow customers to place orders through their websites also allow customer payment by credit card. Furthermore, more than expected SMMEs have adopted none of the two (2) e-commerce options. This suggests that there is a trend for both options to be adopted concurrently in both locations (Durban and Pietermaritzburg).

The researcher tested for any significant association between customers placing orders through the SMMEs websites and SMMEs anticipated business benefits that could derive from e-commerce adoption. It was found that significantly ($p<0.05$) more than expected SMMEs that allow customers to place orders through their websites find i) increasing customer loyalty and retention (in Durban and Pietermaritzburg), ii) improving the competitive position (in Pietermaritzburg only) to be important e-commerce benefits for their companies (based on their current and anticipated business requirements).

4.6.2.1(c). Customer services provided through the company's website

A test of association (Chi square of independence test) between providing customer services through the SMME's website and extent of business coverage reveals that in Pietermaritzburg significantly (Fisher's test=32.965, $p<0.05$) more than expected SMMEs operating locally do not provide customer services through their websites. However, in Pietermaritzburg there are more than expected SMMEs operating nationally that provide customer services through their websites. In addition, in Durban there are significantly (25.839, $p<0.05$) more than expected SMMEs operating nationally and internationally that provide customer services through their websites.

There is also evidence to suggest that in Pietermaritzburg SMMEs that provide customer services through their websites might be doing so in order to improve their customer services. As expected, significantly ($p<0.05$) more than expected SMMEs that provide customer services through their websites indicated that improving their customer service is an important benefit of e-commerce based on their current and anticipated business requirements.

4.6.2.1(d). Company places orders with suppliers over the internet

In Durban and Pietermaritzburg, significantly more than expected SMMEs operating locally do not place orders with suppliers over the internet. In Durban, significantly (23.296, $p<0.05$), there are more than expected SMMEs operating nationally that place orders with suppliers over the internet. On the other hand, in Pietermaritzburg, significantly (27.970, $p<0.05$) there are more than expected SMMEs operating internationally that place orders with suppliers over the internet.

In addition, there is a significant ($p<0.05$) relationship between placing orders with suppliers over the internet and anticipated benefits. In Durban and Pietermaritzburg, significantly ($p<0.05$) more than expected SMMEs that place orders with suppliers over the internet indicated that reducing costs through web-based purchasing and procurement is an importantly

anticipated e-commerce benefit (based on their current and anticipated business benefits). In addition, in Pietermaritzburg, significantly ($p<0.05$) more than expected SMMEs that place orders with suppliers over the internet indicated that improving information exchange with suppliers is an importantly anticipated e-commerce benefit (based on their current and anticipated business benefits). This suggests that SMMEs could be placing orders with suppliers over the internet in order to i) reduce costs through web-based purchasing and procurement and/or ii) to improve information exchange with suppliers.

In summary, the findings pertaining to research question 1 reveal that:

i) All the four e-commerce options are currently used by SMMEs in Durban and Pietermaritzburg. In addition, the adoption of each one of the e-commerce options is significant for SMMEs that operate beyond the local level. In fact, e-commerce adoption is insignificant for SMMEs that operate at the local level only.

ii) There is a trend for concurrent adoption of customer payment by credit card through the SMME's website and customers placing orders through the SMME's website

iii) Concerns about internet security hinder SMME adoption of customer payment by credit card through their websites

iv) There are some e-commerce-related specific business benefits that may have informed the SMMEs' decision to adopt specific e-commerce options. Such benefits are summarized below:

E-commerce options	**Anticipated business benefits (based on current and anticipated business requirements)**
1.Customer payment by credit card through the company's website	i)Business expansion ii)Access to international markets
2.Customer orders placed through the company's website	i)Improve the competitive position ii)Increase customer loyalty and retention
3.Customer services provided through the company's website	i)Improve customer service
4.Placing orders with suppliers over the internet	i)Cost reduction through web-based purchasing and procurement ii)Improve information exchange with suppliers

4.6.2.2. Research Question 2:

What is the impact of the determinants identified in the literature, on Durban and Pietermaritzburg SMMEs e-commerce adoption?

The researcher used two (2) theoretical frameworks, namely Unified Theory of Acceptance and Use of Technology (UTAUT) and Diffusion of Innovation (DOI) theories to test variables as possible determinants of the adoption of e-commerce in the surveyed SMMEs. The UTAUT variables tested in this study are: performance expectancy, effort expectancy, social influence and facilitating conditions. Gender and age were also tested as potential moderating factors in accordance with the UTAUT model. The DOI variables tested in this study are: relative advantage, compatibility and complexity. For this research question, only responses of respondents who have adopted e-commerce are considered.

UTAUT model:

i) Performance expectancy: refers to the degree to which an individual believes that the use of a system will translate into an increase in job performance. Performance expectancy was tested through variables addressed in question 13.2 and 13.3 of the questionnaire (see Appendix E)

4.6.2.2(a). Association between performance expectancy and e-commerce adoption

Variable 1 (V1): e-commerce technology enhances the job performance of company employees

H_0: There is no relationship between V1 and e-commerce adoption
H_1: There is a relationship between V1 and e-commerce adoption

Variable 2 (V2): e-commerce enables company employees to accomplish specific tasks more quickly

H_0: There is no relationship between V2 and e-commerce adoption
H_1: There is a relationship between V2 and e-commerce adoption

In order to determine the relationship between performance expectancy and e-commerce adoption, the variables described above were crosstabulated with each of the four (4) e-commerce options. In addition, a Chi square independence test was run to test the significance of the relationship. The output of the tests is shown in table 4.5 below and only significant relationships are further elaborated.

Table 4.4. Summary of Chi square tests results between performance expectancy and e-commerce adoption.
(The table shows the p values*)

	Online payment by credit card		Online ordering		Customer services		Placing orders with suppliers over the internet	
	DURBAN	PMB	DURBAN	PMB	DURBAN	PMB	DURBAN	PMB
V1	0.62**	**0.004****	1.000**	0.195**	0.647**	0.861**	1.000**	0.932**
V2	0.252**	0.157**	0.596**	0.77**	0.056**	1.00**	0.308**	0.806**

*$p<0.05$= significant relationship; $p>=0.05$= no significant relationship
** Fisher's test (more than 20% of data has count less than 5)

Table 4.4 indicates that adoption of credit card payment by customers in Pietermaritzburg (PMB) is significantly ($p<0.05$) related to V1 of performance expectancy. Further analysis shows that the majority (95.1%, N=58) of SMMEs that allow customer credit card payment through their websites in Pietermaritzburg agree that e-commerce technology enhances the job performance of company's employees. Thus, H_0 for V1 is rejected for online payment by credit card. This implies that performance expectancy (V1) could have influenced the decision to adopt online credit card payments in Pietermaritzburg. No other significant relationships between performance and e-commerce adoption were found in Durban (DBN) or in Pietermaritzburg for other variables tested with the Chi square of independence test.

4.6.2.2(b). Association between performance expectancy and gender/age

The following hypotheses were formulated in order to test the relationship between performance expectancy and gender:

H_0: There is no relationship between performance expectancy and gender
H_1: There is a relationship between performance expectancy and gender

The following hypotheses were formulated in order to test the relationship between performance expectancy and age:

H_0: There is no relationship between performance expectancy and age
H_1: There is a relationship between performance expectancy and age

Table 4.5: Summary of Chi square tests results between Performance expectancy and gender/age.
(The table shows the p values*)

	Gender		Age	
	DURBAN	PMB	DURBAN	PMB
V1	0.805**	.087	0.972**	0.197
V2	0.351**	0.151	0.946**	0.97

*p<0.05= significant relationship; p>=0.05= no significant relationship
** Fisher's test (more than 20% of data has count less than 5)

Table 4.5 portrays the significance of the relationship between performance expectancy and gender/age for V1 and V2 respectively. The Chi square results depicted in the tables reveals that there is no significant (p>0.05) relationship between performance expectancy and gender for V1 and V2 in Durban and Pietermaritzburg, thus, H_0 is accepted for gender. In addition, there is no significant relationship between performance expectancy and age for V1 and V2 in Durban and Pietermaritzburg. Thus, H_0 is accepted for age.

***ii) Effort expectancy*:** refers to the extent to which a system is perceived to be easy to use. In this research, effort expectancy is represented by ease of use of e-commerce (Question 13.10). The following hypotheses were formulated in order to test the significance of the relationship between effort expectancy (ease of use of e-commerce) and e-commerce adoption.

4.6.2.2(c) Association between effort expectancy and e-commerce adoption

The following hypotheses were formulated in order to test the relationship between effort expectancy and e-commerce adoption:

H_0: There is no relationship between effort expectancy and e-commerce adoption
H_1: There is a relationship between effort expectancy and e-commerce adoption

Table 4.6. Summary of Chi square test between effort expectancy and e-commerce adoption.
(The table shows the p values*)

	Online payment by credit card		Online ordering		Customer services		Placing orders with suppliers over the internet	
	DBN	PMB	DBN	PMB	DBN	PMB	DBN	PMB
Ease of use of e-commerce	0.589**	0.895**	0.515**	**0.036****	1.000**	0.242**	0.190**	0.067**

*p<0.05= significant relationship; p>=0.05= no significant relationship
**Fisher's test (more than 20% of data has count less 5)

Ease of use of e-commerce (as a variable of effort expectancy) was cross tabulated with each of the four (4) e-commerce options. The results of the Chi square tests depicted in table 4.6 indicate that there is a significant ($p<0.05$) relationship between online ordering and effort expectancy in Pietermaritzburg. The majority (54.9%, N=56) of SMMEs that allow customers to place orders online in Pietermaritzburg agree that e-commerce is easy to use.

4.6.2.2(d). Association between effort expectancy and gender/age

The following hypotheses were formulated in order to test the relationship between effort expectancy and gender/age:

H_0: There is no relationship between effort expectancy and gender

H_1: There is a relationship between effort expectancy and gender

H_0: There is no relationship between effort expectancy and age

H_1: There is a relationship between effort expectancy and age

Table 4.7. Summary of Chi square test between effort expectancy and gender/age.
(The table shows the p values*)

	Gender		Age	
	DURBAN	PMB	DURBAN	PMB
Ease of use of e-commerce	0.742**	0.583	0.420**	0.223

*p<0.05= significant relationship; p>=0.05= no significant relationship
**Fisher's test (more than 20% of data has count less than 5)

The Chi square test results depicted in table 4.8 reveal that there is no significant ($p>0.05$) relationship between effort expectancy (ease of use of e-commerce) and gender/age. Thus H_0 is accepted for both gender and age.

***iii) Social influence*:** the degree to which individuals perceive that influential people believe they should use a new system.

4.6.2.2(e). Association between social influence and e-commerce adoption

In this research, social influence was tested through two variables:
Variable 1 (V1): Owner manager support
Variable 2 (V2): Owner/manager enthusiasm about e-commerce adoption

The two variables were tested in the questionnaire in question 12.1 and 13.1 respectively.

The following hypotheses were used to test the relationship between i) owner/manager support, ii) owner/manager enthusiasm about e-commerce and e-commerce adoption

a) H_0: There is no relationship between owner manager support and e-commerce adoption

H_1: There is a relationship between owner manager support and e-commerce adoption

b) H_0: There is no relationship between top management enthusiasm about e-commerce adoption and gender

H_1: There is a relationship between top management enthusiasm about e-commerce adoption and gender

Table 4.8. Summary of Chi square tests between social influence (V1and V2) and e-commerce adoption.
(The table shows the p values*)

	Online payment by credit card		Online ordering		Customer services		Placing orders with suppliers over the internet	
	DBN	PMB	DBN	PMB	DBN	PMB	DBN	PMB
V1	0.319**	0.244	0.552**	0.978	1.000**	0.918**	0.338**	0.837
V2	**0.048****	0.166**	.083	0.462	0.331**	0.862**	0.230**	0.875**

***p<0.05**= significant relationship; p>=0.05= no significant relationship
**Fisher's test (more than 20% of data has count less than 5)

The Chi square test results depicted in table 4.8 above show that the relationship between top management enthusiasm about e-commerce adoption (V2) and online credit card payment is significant in Durban ($p<0.05$). The corresponding crosstabulation results indicate that the majority (70%, N=21) of SMMEs that allow customers to pay by credit card through their websites agree that their top management is enthusiastic about e-commerce adoption.

Thus, H_0 is rejected for V2 in Durban. However, no significant ($p>0.05$) relationship was found between V1 and e-commerce adoption. Thus, H_0 is accepted for V1.

4.6.2.2(f).Association between social influence and gender/age

The following hypotheses were formulated in order to test the relationship between social influence and gender/age

1. **H_0: There is no relationship between owner manager support and gender**
   H_1: There is a relationship between owner manager support and gender

2. **H_0: There is a relationship between top management enthusiasm about e-commerce adoption and gender**
   H_1: There is no relationship between top management enthusiasm about e-commerce adoption and gender

3. **H_0: There is no relationship between owner manager support and age**
   H_1: There is a relationship between owner manager support and age

4. **H_0: There is no relationship between top management enthusiasm about e-commerce adoption and age**
   H_1: There is a relationship between top management enthusiasm about e-commerce adoption and age.

Table 4.9. Summary of Chi square test between social influence (V1and V2) and gender/age.
(The table shows the p values*)

	Gender		Age	
	DURBAN	PMB	DURBAN	PMB
V1	0.064**	0.269	0.75**	**0.022**
V2	0.807**	0.275	**0.032****	**0.028**

*$p<0.05$= significant relationship; $p>=0.05$= no significant relationship
**Fisher's test (more than 20% of data has count less than 5)

The above summary indicates that:

There is no significant ($p>0.05$) relationship between owner/manager support and gender in both Durban and Pietermaritzburg. Thus, H_{01} is accepted for V1

There is no significant ($p>0.05$) relationship between top management enthusiasm about e-commerce adoption and gender in both Durban and Pietermaritzburg. Thus, H_{01} is accepted for V2.

There is a significant ($p<0.05$) relationship between owner/manager support and age in Pietermaritzburg. A closer look at the crosstabulation results between the two variables reveals that the majority (54.5, N=6) of respondents above 35 years of age strongly agree that owner/manager support has influenced the decision to adopt e-commerce.

There is a significant ($p<0.05$) relationship between top management enthusiasm about e-commerce adoption and age in Pietermaritzburg and Durban. In Durban, the majority (94.7, N=18) of respondents above 35 years of age strongly agree that top management enthusiasm about e-commerce adoption has influenced the decision to adopt e-commerce. In Pietermaritzburg, the majority of respondents who are 25 years old or younger agree that top management enthusiasm about e-commerce adoption has influenced the decision to adopt e-commerce.

iv) Facilitating conditions

4.6.2.2(g). Association between facilitating conditions and e-commerce adoption

The influence of facilitating conditions on e-commerce adoption was captured through the questionnaire in question 12.2 (presence of IT skills), 12.14 (availability of financial resources) and 12.15 (availability of technological resources).
Subsequently, the following hypotheses were formulated to test the significance of the relationship between the facilitating conditions and each of the four e-commerce options:

i) **H_0: There is no relationship between presence of IT skills and e-commerce adoption**
H_1: There is a relationship between presence of IT skills and e-commerce adoption

ii) **H_0: There is no relationship between availability of financial resources and e-commerce adoption**
H_1: There is a relationship between availability of financial resources and e-commerce adoption

iii) **H_0: There is no relationship between availability of technological resources and e-commerce adoption**
H_1: There is a relationship between availability of technological resources and e-commerce adoption

Table 4.10. Summary of Chi square tests between facilitating conditions and each of the e-commerce options.
(The table shows the p values*)

	Presence of IT skills		Availability of financial resources		Availability of technological resources	
	DBN	PMB	DBN	PMB	DBN	PMB
Online payment by credit card	0.576	0.358 **	0.636**	0.374**	0.446**	0.692**
Online ordering	0.699**	1.000 **	0.60**	0.119**	0.314**	0.719**
Customer services	0.384**	0.932**	1.000**	0.084**	0.664**	1.000**
Placing of orders with suppliers through the internet	0.684**	0.605**	0.085**	0.135**	0.749**	0.557**

*$p<0.05$= significant relationship; p>=0.05= no significant relationship
**Fisher's test (more than 20% of data has count less than 5)

The results of the Chi square tests depicted in table 4.10 above indicate that there is no significant relationship (p>0.05) between the facilitating conditions and each of the e-commerce options. Thus, H_0 is accepted for all hypotheses.

4.6.2.2(h). Association between facilitating conditions and age

In order to test the relationship between the facilitating conditions and age, the following hypotheses were formulated:

i) **H_0: There is no relationship between presence of IT skills and age**

H_1: There is a relationship between presence of IT skills and age

ii) **H_0: There is no relationship between availability of financial resources and age**
H_1: There is a relationship between availability of financial resources and age

iii) **H_0: There is no relationship between availability of technological resources and age**
H_1: There is a relationship between availability of technological resources and age

Table 4.11. Summary of Chi square tests between facilitating conditions and age. (The table shows the p values*)

	Age	
	DBN	PMB
Presence of IT skills	0.226**	**0.007****
Availability of financial resources	0.371**	0.494**
Availability of technological resources	0.802**	0.180**

***p<0.05**= significant relationship; p>=0.05= no significant relationship
**Fisher's test (more than 20% of data has count less than 5)

Table 4.11 above indicates that there is a significant relationship ($p<0.05$) between presence of IT skills and age in Pietermaritzburg. Furthermore, a crosstabulation between the two variables indicate that in Pietermaritzburg, the majority (78.1%, N=25) of respondents of 25 years of age or younger agree that presence of IT skills in the company has influenced the decision to adopt e-commerce.

In summary, in order to identify determinants of e-commerce within the context of the study, the following UTAUT variables were tested: i) performance expectancy, ii) effort expectancy, iii) social influence and iv) facilitating conditions. It is concluded that performance expectancy could have influenced the decision to adopt e-commerce in Pietermaritzburg. Significantly, the majority (95.1%, N=58) of SMMEs that allow customer credit card payment through their websites in Pietermaritzburg agree that e-commerce technology enhances the job performance of company's employees. Thus, performance enhancement could have been one of the reasons that propelled SMMEs to adopt such e-commerce option. In addition, effort expectancy could have influenced the decision to adopt e-commerce in Pietermaritzburg. Significantly, the majority (54.9%, N=56) of SMMEs that allow customers to place orders online in Pietermaritzburg agree that e-commerce is easy to use. Thus, the fact that e-commerce is easy to use could have contributed into the decision to adopt e-commerce. Top management enthusiasm about e-Commerce adoption as a social influence factor, is a determinant of e-commerce adoption. The social influence factor is further moderated by age in both locations. However, facilitating conditions have not influenced the decision to adopt e-commerce in the surveyed SMMEs.

Diffusion of Innovation (DOI) model:

***i) Relative advantage*:** refers to the perceived benefits of the technology.

In this research, the following variables pertaining to relative advantage were tested through question 14: i) Improve information exchange with customers (V1), ii) increase customer loyalty and retention (V2), iii) improve service to the customer (V3), iv) easier access to international markets (V4), v) expand business reach (V5), vi) reduce costs of maintaining up-to-date company information (V6), vii) improve information exchange with suppliers (V7), viii) reduce costs through web based purchasing and procurement (V8), ix) improve the competitive position of your company (V9), x) attract new investment to the company (V10).

2.6.2.2 (i). Association between relative advantage and e-commerce adoption

The following hypotheses were formulated in order to test the relationship between relative advantage and each one of the four e-commerce options

H_0: There is no relationship between relative advantage and e-commerce adoption

H_1: There is a relationship between relative advantage and e-commerce adoption

The relationship between the relative advantage variables described above and each one of the four e-commerce options was tested by means of a Chi square test of independence.

Table 4.12. Summary of Chi square tests between relative advantage and e-commerce adoption.
(The table shows the p values*)

	Online payment by credit card		Online ordering		Customer services		Placing orders with suppliers through the internet	
	DURBAN	PMB	DURBAN	PMB	DURBAN	PMB	DURBAN	PMB
V1	**0.013****	**0.000****	**0.048****	**0.001****	0.093**	**0.001****	0.351**	**0.000****
V2	0.204**	**0.000****	0.085**	**0.000****	0.782**	**0.000****	0761**	**0.000****
V3	0.233**	**0.000****	0.892**	**0.000****	0.834**	**0.000****	0.626**	**0.000****
V4	**0.004**	**0.001****	**0.04**	**0.003****	**0.001**	**0.000****	**0.004**	**0.000****
V5	**0.043****	**0.001****	0.245**	**0.000****	0.116**	**0.000****	0.086**	**0.000****
V6	**0.005****	**0.000****	0.112**	**0.000****	**0.015****	**0.000****	**0.003****	**0.000****
V7	**0.030****	**0.000****	0.087**	**0.000****	0.322**	**0.000****	0.313**	**0.000****
V8	0.070**	**0.001****	0.122**	**0.000****	**0.044****	**0.000****	0.070	**0.001****
V9	0.278**	**0.000****	0.416**	**0.000****	0.164**	**0.000**	0.260**	**0.000****
V10	0.057**	**0.000****	**0.030****	**0.000****	**0.047**	**0.000****	0.173**	**0.001****

***p<0.05**= significant relationship; p>=0.05= no significant relationship
**Fisher's test (more than 20% of data has count less than 5)

Table 4.12 above shows that in Pietermaritzburg, all the relative advantage variables are significantly ($p<0.05$) related to each one of the e-commerce options. However, in Durban, there are only a few significant relationships as follows:

There is a significant relationship between V1 and online payment by credit card, V1 and online ordering.

There is a significant relationship between V4 and all the four e-commerce options

V5 is significantly related to online payment by credit card only

V6 is significantly related to all of the four e-commerce options except online ordering

V7 is significantly related to online payment by credit card only

V10 is significantly related to online ordering and customer services only.

A closer look at the crosstabulation between the relative advantage variables and each one of the e-commerce options reveals that: i) in Durban, for significant relationships ($p<0.05$) there are more than expected SMMEs that consider the above relative advantage variables to be **very important** for their companies based on their current and anticipated business requirements, ii) in Pietermaritzburg, for significant relationships ($p<0.05$), there are more than expected SMMEs that consider the above relative advantage variables to be **important** for their companies based on their current and anticipated business requirements. This suggests that the relative advantage variables could have influenced the decision to adopt e-commerce in Durban and Pietermaritzburg

ii) Compatibility: refers to the perception of the innovation's consistency with the values, previous experiences and needs of potential adopters.

In this research, the analysis of the compatibility factors is specifically limited to SMMEs that have adopted any of the four e-commerce options (customer payments by credit card, customers placing orders through the company website, customer services through the company website and placing orders with suppliers over the internet).The influence of compatibility as a determinant of e-commerce adoption in Durban and Pietermaritzburg was tested through the following variables: i) compatibility with company business processes (V1), ii) compatibility with existing company's technology infrastructure (V2), iii) compatibility with existing company's organisational culture (V3), iv) compatibility with company values (V4), v) compatibility with company's preferred work practices (V5).

2.6.2.2(j). Association between compatibility and e-commerce adoption

The following hypotheses were formulated in order to test the relationship between compatibility variables and each one of the e-commerce options:

H_0: There is no relationship between compatibility and e-commerce adoption

H_1: There is a relationship between compatibility and e-commerce adoption

Table 4.13. Summary of Chi square tests between compatibility and e-commerce adoption.
(The table shows the p values*)

	Online payment by credit card		Online ordering		Customer services		Placing orders with suppliers through the internet	
	DBN	PMB	DBN	PMB	DBN	PMB	DBN	PMB
V1	0.376**	0.193**	0.376**	0.451**	0.49**	0.326**	0.257**	0.346**
V2	0.310**	0.397**	0.397**	0.455**	0.860**	0.186**	**0.003****	0.306**
V3	0.969**	0.066**	0.076**	0.698**	0.497**	0.499**	0.180**	0.300**
V4	0.501**	0.208**	0.246**	0.742**	0.315**	0.396**	**0.032****	0.216**
V5	0.080**	**0.018****	0.300**	0.518**	0.588**	0.642**	0.509**	0.147**

*$p<0.05$= significant relationship; p>=0.05= no significant relationship
**Fisher's test (more than 20% of data has count less than 5)

The summary table above shows that:

In Pietermaritzburg, the relationship between company's preferred work practices and online payment by credit card is the only significant ($p<0.05$) relationship. Specifically, the majority (66.3%, N=61) of SMMEs that allow customers to pay by credit card through their websites agree that compatibility with company's preferred work practices has influenced the decision to adopt e-commerce in their companies.

In Durban, the relationship between placing orders with suppliers through the internet and i) compatibility with existing company's technology infrastructure, ii) compatibility with company values are the only significant relationships. More specifically, the majority (54.1%, N=59) of SMMEs that place orders with suppliers over the internet agree that compatibility with existing company infrastructure has influenced the decision to adopt e-commerce in their companies. In addition, the majority (68.2%, N=75) of SMMEs that place orders with suppliers over the internet agree that compatibility with company values has influenced the decision to adopt e-commerce in their companies.

iii) Complexity: refers to the degree to which an innovation is perceived as relatively difficult to understand and use.

In this research, the analysis of the complexity factors is specifically limited to SMMEs that have adopted any of the four e-commerce options (customer payments by credit card, customers placing orders through the company's website, customer services through the company's website and placing orders with suppliers over the internet).

The influence of complexity as a determinant of e-commerce in the surveyed SMMEs was tested through the following variables: i) learning to operate e-commerce is easy (V1), ii) e-commerce is flexible to interact with (V2), iii) the interaction with e-commerce is clear and understandable (V3), iv) it is easy to become skilful at using e-commerce (V4), v) e-commerce requires basic computer skills (V5), vi) expert skills are needed to use e-commerce (V6).

2.6.2.2(k). Association between compatibility and e-commerce adoption

The following hypotheses were formulated:

H_0: There is no relationship between complexity and e-commerce adoption

H_1: There is a relationship between complexity and e-commerce adoption

Table 4.14. Summary of Chi square tests between complexity and e-commerce adoption.
(The table shows the p values*)

	Online payment by credit card		Online ordering		Customer services		Placing orders with suppliers through the internet	
	DURBAN	PMB	DURBAN	PMB	DURBAN	PMB	DURBAN	PMB
V1	0.938**	1.000**	0.874**	1.000**	0.680**	0.945**	0.155**	0.570**
V2	0.748**	0.449**	0.780**	0.628**	0.818**	0.799**	0.556**	0.922**
V3	0.764**	0.207**	0.662**	0.736**	1.000**	0.639**	0.748**	0.681**
V4	0.303**	1.000**	0.348**	0.214**	0.862**	0.324**	0.519**	0.590**
V5	0.785**	0.312**	0.847**	0.175**	1.000**	0.460**	0.744**	0.391**
V6	0.792**	0.136**	0.342**	0.169**	0.712**	0.408**	0.680**	**0.013****

* **p<0.05**= significant relationship; p>=0.05= no significant relationship
**Fisher's test (more than 20% of data has count less than 5)

Table 4.14 indicates that variable (V6) (expert skills are needed to use e-commerce) is the only complexity variable that is significantly related to e-commerce (placing orders with suppliers through the internet). The relationship is only significant in Pietermaritzburg. Specifically, the majority (66.3%, N=57) of SMMEs that place orders with suppliers over the internet agree that expert skills are needed to use e-commerce.

In summary, relative advantage, compatibility and complexity are the variables from the Diffusion of Innovation theory that have been tested in this study. The variables were tested in order to determine their influences on e-commerce adoption in both locations. It is found that relative advantage is significantly related to e-commerce. Additionally, the majority of adopters and non-adopters of e-commerce are aware of the potential benefits (relative advantage) of e-commerce. Furthermore, compatibility with a company's preferred work practices, compatibility with a company's technology infrastructure and compatibility with company values have influenced significantly the adoption of e-commerce. Complexity is also identified as a significant determinant of e-commerce adoption. Significantly, the majority of e-commerce adopters agree that expert skills are needed in order to use e-commerce.

4.6.2.3. Research Question 3:

What do Durban and Pietermaritzburg SMMEs know about the benefits of e-commerce?

The findings in research question 2 show that there is a significant relationship between relative advantage and e-commerce adoption. The relative advantage variables used in this research are the potential benefits of e-commerce. In other words, there is a significant relationship between the potential benefits of e-commerce and e-commerce adoption. In addition, it was found that in Durban, i) there are more than expected SMMEs that consider the relative advantage (potential benefits of e-commerce) variables to be **very important** for their companies based on their current and anticipated business requirements, ii) in Pietermaritzburg, there are more than expected SMMEs that consider relative advantage (potential benefits of e-commerce) variables to be **important** for their companies based on their current and anticipated business requirements. This suggests that both adopters and non-adopters were aware of the benefits that could derive from e-commerce adoption.

The following section examines to what extent the knowledge of the benefits of e-commerce has benefited those that adopted e-commerce. To test this, the following hypotheses were formulated:

H_0: There is no correlation between perceived/anticipated e-commerce benefits and realised benefits

H_1: There is a correlation between perceived/anticipated e-commerce benefits and realised benefits

To test the hypotheses, a Spearman correlation test was performed between perceived/anticipated e-commerce benefits and realised benefits. The correlation was based on (Ratnasingam, 2002)'s classification of e-commerce benefits (perceived/realised). The following is a summary of significant correlations found in Durban:

Table 4.15. Summary of significant correlation between anticipated and realised benefits

Perceived benefits / Realised benefits	Reduce costs of maintaining up to date company information	Increase customer loyalty and retention	Improve customer service	Improve information exchange with customers	Improve information exchange with suppliers	improving the competitive position	Attracting new investment to the company
Extending customer base	*rho*=0.566, p=0.000						
Increasing sales\inquiries		*rho*=0.421, p=0.008	*rho*=0.360, p=0.024				
Customer convenience		*rho*=0.366, p=0.022					
Improving customer relationship				*rho*=0.575, p=0.00			
Improving supplier Relationship					*rho*=0.444, p=0.005		
Flexibility in terms of placing orders with suppliers					*rho*=0.398, p=0.012		
Keeping ahead/abreast of competition						*rho*=0.544, p=0.000	*rho*=0.450, p=0.004

Perceived benefits / Realised benefits	Reduce costs of maintaining up to date company information	Increase customer loyalty and retention	Improve customer service	Improve information exchange with customers	Improve information exchange with suppliers	improving the competitive position	Attracting new investment to the company
Raising/improving company profile						*rho*=0.396, p=0.013	*rho*=0.391, p=0.014

rho=correlation coefficient

Swinscow (1997) indicates that a correlation coefficient within the range of 0.20 to 0.39 depicts a weak correlation, 0.40 to 0.59 depicts a moderate correlation, 0.6 to 0.79 depicts a strong correlation, and 0.8 to 1 depicts a very strong correlation. Although the correlation coefficients depicted in table 4.15 indicate weak to moderate correlations, they, additionally, show that there is a positive relationship between perceptions of the benefits of e-commerce and realised benefits. In addition, as explained above, in Durban there are more than expected SMMEs that consider the potential benefits of e-commerce to be very important for their companies based on their current and anticipated business requirements. This means that the more SMMEs are aware of the benefits of e-commerce (thus, the positive perceptions of e-commerce), the more they are likely to make informed decisions in terms of e-commerce adoption that materialize in tangible/intangible business benefits.

There is no significant correlation found between perceived and realised benefits in Pietermaritzburg.

4.6.2.4. Research Question 4:

What enablers have SMMEs adopted in line with e-commerce adoption?

The following e-commerce enablers were tested: i) e-commerce strategy, ii) computerised database of company customers, iii) computerised database of company suppliers, iv) computerised inventory of company products or services, v) company electronic mail (E-mail), vi) company access to the internet. In order to answer research question 4, the following hypotheses were formulated:

H_0: There is no relationship between e-commerce enablers and e-commerce adoption

H_1: There is a relationship between e-commerce enablers and e-commerce adoption.

A Chi square test between each one of the enablers and each one of the four e-commerce options was run. The results are shown in table 4.17 below

Table 4.16. Results of Chi square tests between e-commerce strategy and e-commerce adoption.
(The table shows the p values*)

	Online payment by credit card (E1)		Online ordering (E2)		Customer services (E3)		Placing orders with suppliers through the internet (E4)	
	DBN	PMB	DBN	PMB	DBN	PMB	DBN	PMB
e-commerce strategy	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

* $p<0.05$= significant relationship; $p>=0.05$= no significant relationship

Table 4.16 indicates that all of the four e-commerce options are significantly related to e-commerce strategy.

In question 11 of the survey questionnaire, respondents were requested to indicate when they are expecting to have the above-mentioned e-commerce enablers. The table below (table 4.18) and subsequent crosstabulation tables pertaining to research question 4 depict the majority of the responses in both locations in %ages.

Table 4.17. Summary of cross tabulations between adoption of e-commerce and e-commerce strategy
(The table displays the responses of the majority in % and actual number of respondents N)

	When does your company expect to have an e-commerce strategy?	
	Now	
	DBN	PMB
+E1	76.%,N=16	91%,N=71
+E2	82.%,N=19	89.9,N=62
+E3	80%,N=24	89%,N=24
+E4	74.%,N=20	93%,N=66

Table 4.17 above indicates that the majority of respondents that adopted e-commerce have an e-commerce strategy already in place.

Table 4.18. Summary of crosstabulation between non-adoption of e-commerce and e-commerce strategy
(The table displays the responses of the majority in % and actual number of respondents N)

	When does your company expect to have an e-commerce strategy?	
	Within 1 year	**Within 3 years**
	DBN	PMB
-E1	29.1%,N=44	30.3%,N=23
-E2	29.5%,N=44	27.1%,N=23
-E3	31%,N=44	28.4%,N=23
-E4	30.3%,N=44	30.1%,N=25

Table 4.18 above, as expected, indicates that the majority of respondents that have not adopted e-commerce do not have an e-commerce strategy in place. In Durban, the majority of non-adopters indicated that they will have an e-commerce strategy within a year whilst the majority of non-adopters in Pietermaritzburg will have an e-commerce strategy within 3 years.

Table 4.19. Results of Chi square tests between computerised database of company's customers and e-commerce adoption.
(The table shows the p values*)

	Online payment by credit card		Online ordering		Customer services	
	DBN	PMB	DBN	PMB	DBN	PMB
Computerised database of company's customers	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****

*p<0.05= significant relationship; p>=0.05= no significant relationship
**Fishers' test (more than 20% of data have count less than 5)

Table 4.19 above indicates that there is a significant relationship between having a computerised database of company customers and i) online payment, ii) online ordering, iii) customer services.

Table 4.20. Summary of crosstabulation between adoption of e-commerce and computerised database of company customers
(The table displays the responses of the majority in % and actual number of respondents N)

	When does your company expect to have a computerised database of company's customers?	
	Now	
	DBN	PMB
+E1	81%, N=95	95.1%, N=78
+E2	78.3%, N=18	94.7%, N=71
+E3	80.0%, N=97	93.6%, N=73

Table 4.20 indicates that the majority of respondents that have adopted E1, E2 and E3 have a computerised database of company customers.

Table 4.21. Summary of crosstabulation between non-adoption of e-commerce and computerised database of company's customers
(The table displays the responses of the majority in % and actual number of respondents N)

	When does your company expect to have a computerised database of company's customers?			
	Within 1 year		Never	
	DBN	PMB	DBN	PMB
-E1			28.9%, N=43	35.1%, N=26
-E2	29.9%, N=44			32.1%, N=26
-E3			31.4%, N=44	32.1%, N=25

Table 4.21 indicates, as expected, that the majority of respondents that have not adopted either one of the three e-commerce options (E1, E2, and E3) do not have a computerised database of company customers. A large portion of non-adopters indicated that they will never have a computerised database of company customers.

Table.4.22. Results of Chi square tests between computerised database of company suppliers and e-commerce adoption.
(The table shows the p values*)

	Placing orders with suppliers through the internet	
	DURBAN	PMB
Computerised database of company's suppliers	**0.000** **	**0.000**

* **p<0.05**= significant relationship; p>=0.05= no significant relationship
** Fishers test value (more than 20% of data have count less than 5)

Table 4.22, as depicted above, indicates that there is a significant relationship between placing orders with suppliers through the internet and having a computerised database of company suppliers.

Table 4.23. Summary of crosstabulation between placing orders with suppliers and computerised database of company suppliers
(The table displays the responses of the majority in % and actual number of respondents N)

	When does your company expect to have a computerised database of company's suppliers?			
	Now		**Never**	
	DBN	PMB	DBN	PMB
+E4	65.2%, N=15	92.0%, N=69		
-E4			32.2%, N= 47	29.6%, N= 24

Table 4.23 indicates that the majority of respondents that place orders with suppliers over the internet (+E4) have a database of company suppliers in place. However, the majority of those that do not place orders with suppliers over the internet (-E4) will never have a computerised database of company suppliers.

Table 4.24. Results of Chi square tests between computerised inventory of company's products or services and e-commerce adoption.
(The table shows the p values*)

	Online payment by credit card		Online ordering		Customer services		Placing orders with suppliers over the internet	
	DURBAN	PMB	DURBAN	DURBAN	DURBAN	PMB	Durban	PMB
computerised inventory of company's products or services	**0.001****	**0.000****	**0.000****	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

* **p<0.05**= significant relationship; p>=0.05= no significant relationship

** Fishers test value (more than 20% of data have count less than 5)

Table 4.24 above indicates that there is a significant relationship between having a computerised inventory of company products or services and i) online payment, ii) online ordering, iii) customer services and iv) placing orders with suppliers over the internet.

Table 4.25. Summary of crosstabulation between e-commerce adoption and computerised inventory of company's products or services

(The table displays the responses of the majority in % and actual number of respondents N)

	When does your company expect to have a computerised inventory of company's products or services?	
	Now	
	DBN	PMB
+E1	60.0%, N=12	95.4%, N=83
+E2	63.6%, N=14	94.9%, N=75
+E3	69.0%, N=20	92.7%, N=76
+E4	76.9.0%, N=20	96.3.0%, N=77

Table 4.25 above indicates that the majority of SMMEs that adopted any of the four e-commerce options have a computerised inventory of their company products or services.

Table 4.26. Summary of crosstabulation between non-adoption of e-commerce and computerised inventory of company products or services
(The table displays the responses of the majority in % and actual number of respondents N)

	When does your company expect to have a computerised inventory of company's products or services?	
	Never	
	DBN	PMB
-E1	30.2%, N=45	34.7%, N=25
-E2	32.0%, N=47	31.3%, N=25
-E3	32.9%, N=46	31.2%, N=24
-E4	32.9%, N=47	31.6%, N=25

Table 4.26 above indicates that the majority of SMMEs that have not adopted e-commerce will never have a computerised inventory of their company products or services. This could be an indication that these SMMEs do not anticipate any change in their business that may require a computerised inventory of their products or services.

Table 4.27. Results of Chi square tests between company e-mail and e-commerce adoption.
(The table shows the p values*)

	Online payment by credit card		Online ordering		Customer services		Placing orders with suppliers over the internet	
	DBN	PMB	DBN	DBN	DBN	PMB	Durban	PMB
Company's E-mail	**0.001****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****

* **p<0.05**= significant relationship; p>=0.05= no significant relationship
** Fishers test value (more than 20% of data have count less than 5)

Table 4.27 above indicates that there is a significant relationship between having a company e-mail and i) online payment, ii) online ordering, iii) customer services and iv) placing orders with suppliers over the internet

Table 4.28. Summary of crosstabulation between e-commerce adoption and company e-mail
(The table displays the responses of the majority in % and actual number of respondents N)

	When does your company expect to have a company's e-mail	
	Now	
	DBN	**PMB**
+E1	83%, N=20	96.5%, N=83
+E2	92.0%, N=23	96.2%, N=76
+E3	87.5%, N=28	97.6%, N=80
+E4	89.7%, N=26	96.2%, N=76

Table 4.29. Summary of crosstabulation between non-adoption of e-commerce and company e-mail
(The table displays the responses of the majority in % and actual number of respondents N)

	When does your company expect to have a company e-mail?	
	Now	
	DBN	PMB
-E1	41.3%, N=62	65.3%, N=49
-E2	39.6%, N=59	68.3%, N=56
-E3	38.0%, N=54	65.8%, N=52
-E4	38.6%, N=56	68.3%, N=56

Tables 4.28 and 4.29 indicate that the majority of adopters and non-adopters of e-commerce have a company e-mail already in place.

Table 4.30. Results of Chi square tests between company access to the internet and e-commerce adoption.
(The table shows the p values*)

	Online payment by credit card		Online ordering		Customer services		Placing orders with suppliers over the internet	
	DBN	PMB	DBN	PMB	DBN	PMB	DBN	PMB
Access to internet	**0.001****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****

* **p<0.05**= significant relationship; p>=0.05= no significant relationship
** Fishers test value (more than 20% of data have count less than 5)

Table 4.31. Summary of crosstabulation between adoption of e-commerce and company access to internet
(The table displays the responses of the majority in % and actual number of respondents N)

	When does your company expect to have access to the internet?	
	Now	
	DBN	**PMB**
+E1	88.5%, N=23	100%, N=89
+E2	92.3%, N=24	100%, N=82
+E3	87.5%, N=28	100%, N=86
+E4	89.7%, N=26	98.8%, N=82

Table 4.32. Summary of crosstabulation between non-adoption of e-commerce and company access to internet
(The table displays the responses of the majority in % and actual number of respondents N)

	When does your company expect to have access to the internet?	
	Now	
	DBN	PMB
-E1	31.1%, N=46	68.1%, N=49
-E2	30.4%, N=45	70.9%, N=56
-E3	28.9%, N=41	69.3%, N=52
-E4	29.7%, N=43	71.8%, N=56

Tables 4.31 and 4.32 indicate that the majority of adopters and non-adopters of e-commerce indicated that their companies have access to the internet.

Table 4.33. Results of Chi square tests between company website and e-commerce adoption.
(The table shows the p values*)

	Online payment by credit card		Online ordering		Customer services		Placing orders with suppliers over the internet	
	DBN	PMB	DBN	DBN	DBN	PMB	DBN	PMB
Having a company's website demonstrating products or services	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****

* **p<0.05**= significant relationship; p>=0.05= no significant relationship
** Fishers test (more than 20% of data have count less than 5)

Table 4.33 above indicates that there is a significant relationship between having a company website demonstrating products and services and i) online payment, ii) online ordering, iii) customer services and iv) placing orders with suppliers over the internet

Table 4.34. Summary of crosstabulation between adoption of e-commerce and company website
(The table displays the responses of the majority in % and actual number of respondents N)

	When does your company expect to have a website demonstrating company's products or services?	
	Now	
	DBN	PMB
+E1	100%, N=94	100%, N=94
+E2	100%, N=85	100%, N=85
+E3	100%, N=33	100%, N=33
+E4	93.3%, N=28	98.9%, N=86

Table 4.35. Summary of crosstabulation between non-adoption of e-commerce and company website
(The table displays the responses of the majority in % and actual number of respondents N)

	When does your company expect to have a website demonstrating company's products or services?			
	Now		Never	
	DBN	PMB	DBN	PMB
-E1	28.8%, N=44	32%, N=24		
-E2		38.1%, N=32	28.8%, N=44	
-E3		35.0%, N=28	30.1%, N=44	
-E4		37.8%, N=31	29.5%,N=44	

Table 4.34 indicate that in Durban and Pietermaritzburg, the majority of adopters have a website demonstrating their products or services. Likewise, table 4.35 indicates that, in Pietermaritzburg, the majority of non-adopters have a website demonstrating their products or services. However, in Durban, the majority of non-adopters indicated that they will never have a website demonstrating their products or services.

In summary, research question 4 aimed at finding out the e-commerce enablers that SMMEs have put in place in line with e-commerce adoption. It is found that the majority of SMMEs that adopted e-commerce in Durban and Pietermaritzburg have i) a company strategy for e-commerce adoption ii) a computerised inventory of company products and services, iii) a computerised database of company customers and iv) a computerised database of company suppliers. However, the majority of non-adopters have none of these enablers. In addition, the majority of adopters and non-adopters have i) a company e-mail and ii) internet access. Additionally, in Pietermaritzburg, non-adopters of e-commerce have websites.

4.6.2.5. Research Question 5:

What are the inhibitors of e-commerce adoption in Durban and Pietermaritzburg from the SMME perspective?

In this research, the following e-commerce inhibitors were tested within the context of Durban and Pietermaritzburg SMMEs: i) lack of conviction of the financial and business benefits of e-commerce (V1), ii) limited knowledge of the required technology (V2), iii) low use of e-commerce amongst customers (V3), iv) low use of e-commerce amongst suppliers (V4), v) low level of computerisation within the company (V5), vi) high cost of computers and network technologies (V6), vii) telecommunications services not dependable (V7), viii) concerns about internet security (V8), ix) concerns about legal issues, contracts and liability (V9).

In order to answer the research question 5, the following hypotheses were formulated:

H_0: There are no factors that restrict e-commerce adoption in Durban and Pietermaritzburg

H_1: There are factors that restrict e-commerce adoption in Durban and Pietermaritzburg

Table 4.36. Results of Chi square tests between e-commerce inhibitors and customers online payment.
(The table shows the p values*)

	Online payment by credit card	
	DURBAN	PMB
V1	0.763	**0.000****
V2	0.440**	**0.000****
V3	**0.010****	**0.000****
V5	0.054**	**0.000****
V6	0.706**	**0.000****
V7	0.355**	**0.000****
V8	0.282**	**0.000****
V9	0.775**	**0.000****

***p<0.05**= significant relationship; p>=0.05= no significant relationship
**Fishers' test (more than 20% of data have count less than 5)

Table 4.36 above indicates that there is a significant relationship between online payment by credit card and all of the above inhibitors of e-commerce in Pietermaritzburg. However, in

Durban, online payment by credit card is significantly related with low use of e-commerce amongst customers only.

Table 4.37. Summary of Cross tabulations between online payment by credit card and e-commerce inhibitors
(The table displays the responses of the majority in % and actual number of respondents N and only values for significant relationships are displayed)

	Adopters of online payment by credit card		Non-adopters of online payment by credit card	
	DBN	PMB	DBN	PMB
V1		82.1%, N=69		28.1%, N=18
V2		83.3%, N=70		51.6%, N=33
V3	40.0%, N=10	82.1%, N=69	35.9%, N=51	35.9%, N=23
V5		71.1%, N=59		34.4%, N=22
V6		60.7%, N=51		40.6%, N=26
V7		57.1%, N=48		36.5%, N=23
V8		54.8%, N=46		48.4%, N=31
V9		53.6%, N=45		54.4%, N=34

Figures in table 4.37 depict the proportions of SMMEs that perceive the e-commerce inhibitors as important limitations to the adoption of customers' online payments by credit card. The table indicates that in Pietermaritzburg, the majority of adopters and non-adopters of online payment by credit card perceive the e-commerce inhibitors as important limitations to the adoption of customers' online payment by credit card.

Table 4.38. Results of Chi square tests between e-commerce inhibitors and customers' online ordering.
(The table shows the p values*)

	Online ordering	
	DBN	PMB
V1	0.834**	**0.000****
V2	0.404	**0.000****
V3	0.005**	**0.000****
V5	0.080**	**0.000****
V6	0.528**	**0.000****
V7	0.995**	**0.000****
V8	0.352	**0.000****
V9	0.499**	**0.000****

***p<0.05**= significant relationship; p>=0.05= no significant relationship
**Fishers' test (more than 20% of data have count less than 5)

Table 4.38 above indicates that there is a significant relationship between online ordering and all of the above inhibitors of e-commerce in Pietermaritzburg. However, in Durban, no significant relationship was found.

Table 4.39. Summary of crosstabulations between customer online ordering and e-commerce inhibitors
(The table displays the responses of the majority in % and actual number of respondents N and only values for significant relationships are displayed)

	Adopters of customers online ordering		Non-adopters of customers online ordering	
	DBN	PMB	DBN	PMB
V1		86.5%, N=64		31.1%, N=23
V2		86.5%, N=64		52.7%, N=39
V3		86.5%, N=64		37.8%, N=28
V5		72.6%, N=53		37.8%, N=28
V6		60.8%, N=45		37.8%, N=28
V7		59.5%, N=44		35.6%, N=26
V8		58.1%, N=43		48.6%, N=36
V9		56.8%, N=42		53.4%, N=39

Figures in table 4.39 depict the proportions of SMMEs that perceive e-commerce inhibitors as important limitations to the adoption of customers online ordering. The table indicates that in Pietermaritzburg, the majority of adopters and non-adopters of online payment by credit card perceive the e-commerce inhibitors as important limitations to the adoption of customers' online payment by credit card.

Table 4.40. Results of Chi square tests between e-commerce inhibitors and providing customer services through the SMME websites.
(The table shows the p values*)

	Customer services	
	DURBAN	PMB
V1	0.730**	**0.000****
V2	0.532**	**0.000****
V3	0.011	**0.000****
V5	0.063**	**0.000****
V6	0.728**	**0.000****
V7	0.375	**0.000****
V8	0.259	**0.000****
V9	0.417**	**0.000****

***p<0.05**= significant relationship; p>=0.05= no significant relationship
**Fishers' test (more than 20% of data have count less than 5)

Table 4.40 above indicates that there is a significant relationship between customer services and all of the above inhibitors of e-commerce in Pietermaritzburg. However, in Durban, no significant relationship was found.

Table 4.41. Summary of crosstabulations between providing customer services through SMMEs' websites and e-commerce inhibitors
(The table displays the responses of the majority in % and actual number of respondents N and only values for significant relationships are displayed)

	Adopters of online customer services		Non-adopters of online customer services	
	DURBAN	PMB	DURBAN	PMB
V1		84.2%, N=64		31.9%, N=23
V2		85.5%, N=65		52.8%, N=38
V3	31.3%, N=10	86.8%, N=66	31.9%, N=43	36.1%, N=26
V5		86.8%, N=66		36.1%, N=26
V6		60.5%, N=46		38.9%, N=28
V7		60.5%, N=46		36.6%, N=26
V8		59.2%, N=45		50%, N=36
V9		57.9%, N=44		54.9%, N=39

Figures in table 4.41 depict the proportions of SMMEs that perceive e-commerce inhibitors as important limitations to the adoption of online customer services. The table indicates that in Pietermaritzburg, the majority of adopters and non-adopters of online customer services perceive the e-commerce inhibitors as important limitations to the adoption of online customer services.

Table 4.42. Results of Chi square tests between e-commerce inhibitors and placing orders with suppliers over the internet.
(The table shows the p values*)

	Placing orders with suppliers over the internet	
	Durban	PMB
V1	0.504**	**0.000****
V2	0.312**	**0.000****
V4	0.065**	**0.000****
V5	0.242**	**0.000****
V6	0.452**	**0.001****
V7	0.241**	**0.000****
V8	0.244**	**0.000****
V9	0.278**	**0.000****

***p<0.05**= significant relationship; p>=0.05= no significant relationship
**Fishers' test (more than 20% of data have count less than 5)

Table 4.42 above indicates that there is a significant relationship between placing orders with suppliers through the internet and all of the above inhibitors of e-commerce in Pietermaritzburg. However, in Durban, no significant relationship was found.

Table 4.43. Summary of crosstabulations between placing orders with suppliers over the internet and e-commerce inhibitors (The table displays the responses of the majority in % and actual number of respondents N and only values for significant relationships are displayed)

	Adopters of placing orders with suppliers over the internet		Non-adopters of placing orders with suppliers over the internet	
	DURBAN	PMB	DURBAN	PMB
V1		85.5%, N=65		30.6%, N=22
V2		84.2%, N=64		54.2%, N=39
V3		84.2%, N=64		37.5%, N=27
V5		72.0%, N=54		37.5%, N=27
V6		60.5%, N=46		38.9%, N=28
V7		59.2%, N=46		35.2%, N=25
V8		56.6%, N=43		47.2%, N=34
V9		55.3%, N=42		52.1%, N=37

Figures in table 4.43 depict the proportions of SMMEs that perceive e-commerce inhibitors as important limitations to the adoption of online customer services. The table indicates that in Pietermaritzburg, the majority of adopters and non-adopters of online placement of orders with suppliers over the internet perceive the e-commerce inhibitors as important limitations to the adoption of online customer services.

In summary, in Durban, low use of e-commerce by customers is the only inhibitor that significantly affects the adoption of e-commerce. However, in Pietermaritzburg, the adoption of e-commerce is significantly affected by i) lack of conviction of the financial and business benefits of e-commerce, ii) limited knowledge of the required technology, iii) low use of e-commerce amongst customers, iv) low use of e-commerce amongst suppliers, v) low level of computerisation within the company, vi) high cost of computers and network technologies, vii) telecommunications services not dependable and viii) concerns about internet security, ix) concerns about legal issues, contracts and liability.

4.7. Summary of chapter 4

Chapter 4 presented the findings from the data analysis. The Kolmogorov and Smirnov and Shapiro tests indicated that the distribution of data is not normal. Thus, non -parametric tests i.e. Chi Square test of independence and Spearman correlation test were used for data analysis. The analysis aided in answering each research question. The summary of findings for each research questions are provided at the end of each research question findings section above. The following chapter (chapter 5) discusses these findings in light of the research questions.

CHAPTER 5: DISCUSSION

5.1. Introduction

This chapter revisits the research questions and discusses findings pertaining to those questions. The focus is on interpreting the findings in relation to the guiding research questions.

5.2. Answering research questions

5.2.1. Research Question 1 :

What is the current usage of E-Commerce by SMMEs in Pietermaritzburg and Durban?

5.2.1.1. Business to Consumer (B2C) e-commerce adoption

B2C e-commerce adoption in Durban and Pietermaritzburg was analysed through the following E-Commerce options:

i) Customer payment by credit card through the company website
ii) Customer orders placed through the company website
iii) Customer services provided through the company website

5.2.1.1(a). Customer payment by credit card through the company website

The study found that there is a difference in terms of the adoption of customers' credit card payment between Durban and Pietermaritzburg. Whilst the majority of SMMEs in Pietermaritzburg have adopted this e-commerce option (payment by credit card through the SMME's website), the majority of those in Durban have not. This is mainly due to the fact that the majority of SMMEs in Durban are micro to small enterprises with less than 10 employees (53.9%, N=96). Data analysis in Section A of the questionnaire revealed that generally, the majority of micro and small businesses (less than 10 employees) have not adopted e-commerce. Thus, the difference in sizes of businesses has influenced the difference in adoption of e-commerce and particularly in adoption of online payment by SMMEs between Durban and Pietermaritzburg.

In addition, SMMEs that allow customers' online payments indicated that concerns about internet security are an important limitation to the use of e-commerce. Such concerns are more pronounced (significant) in Pietermaritzburg than Durban whereby both adopters and non-adopters consider such concerns to be important to the use of e-commerce in their companies. Such concerns have been identified in previous studies as impediments to of e-commerce

adoption in South Africa (Cloete *et al.,*2002) and Malaysia (Commerce21, 2011) amongst others.

Access to international markets and business expansion emerged as significant motivators/benefits of the online payment by credit card adoption by SMMEs in both Durban and Pietermaritzburg. This research is in agreement with the findings of Murkhopadyay (1995) and Premkumar *et al* (1994). They posit that improved market reach is one of the technological benefits that derive from e-commerce adoption. Such benefit is closely related to access to international markets and business expansion.

5.2.1.1(b). Customer orders placed through the company website

The majority of surveyed SMMEs that allow customers' orders to be placed through their websites are transactors (i.e. using online ordering and payment capabilities). This means that there is a trend for online ordering to be concurrently adopted with payment capabilities through SMME websites in both Durban and Pietermaritzburg. Providing both e-commerce options could be a competitive strategy over new entrants on the markets. Such strategy minimises the threats of new entrants by acting as a barrier to new entrants in the industry (Porter, 1998).

In addition, online ordering was identified as one of the means used by SMMEs to expand or sustain their business reach. This is further corroborated by the significant relationship between online ordering and the extent of business coverage. The majority of SMMEs that allow customers to place orders through their websites operate beyond the local level in both locations.

5.2.1.1(c). Customer services provided through the company website

The results show that, in Pietermaritzburg, there are more SMMEs that provide customer services through a website compared to Durban's SMMEs. Similarly to the previous e-commerce option (customers placing orders through the SMME's website), the extent of providing customer services through a website is related to how far the business reaches in terms of geographic coverage. The option of providing customer services becomes significant only once the business reaches beyond the local level.

5.2.1.2. Business to Business (B2B) e-commerce adoption

5.2.1.2(a). Company places orders with suppliers over the internet

Similarly to the previous e-commerce option (providing customer services through the SMMEs' website), there are more SMMEs that place orders with suppliers over the internet in Pietermaritzburg compared to Durban. In addition, in both locations, there is a significant relationship between placing orders with suppliers over the internet and business coverage. In Durban and Pietermaritzburg, the majority of SMMEs that place orders with suppliers over the internet operate beyond the local level.

5.2.2. Research Question 2: What is the impact of the determinants identified in the literature, on Durban and Pietermaritzburg SMMEs e-commerce adoption?

5.2.2.1. Internal factors

5.2.2.1(a). Owner/manager characteristics

Owner manager characteristics were analysed as social influence factors within the UTAUT theory. Owner/manager characteristics were examined in this study through the following variables: i) owner/manager support and ii) top management enthusiasm about e-commerce adoption. The findings indicate that there is no significant relationship between owner/manager support and e-commerce adoption in both locations. However, a significant relationship was found between owner/ manager support and age in Pietermaritzburg. Importantly, top management enthusiasm about e-commerce adoption is significantly related to age in both locations. In Durban, older respondents (above 35 years of age) believe that top management in their companies is enthusiastic about e-commerce adoption. However, in Pietermaritzburg younger respondents (25 years old or younger) believe that top management in their companies is enthusiastic about e-commerce adoption. Thus, the perceived influence of owner/manager characteristics differs according to the age of respondents and the business location of the company.

5.2.2.1(b). Owner/manager perception of e-commerce benefits

In this research, the majority of those who adopted e-commerce indicated that the potential benefits delineated in the questionnaire (Section C, question 14) are important based on their current and anticipated business requirements. This confirms the findings by Chwelos *et al.*, (2001) that perceptions of e-commerce are related to e-commerce adoption/non-adoption.

5.2.2.1(c). Business processes

In this research, no significant relationship was found between e-commerce adoption and compatibility with company business processes. Compatibility with company business processes did not influence SMMEs' decision to adopt e-commerce. The findings are in contrast with the findings by Mirchandani and Motwani (2001) on factors that influence e-commerce adoption.

5.2.2.1(d). Technology infrastructure

Compatibility with technology infrastructure was found to be one of the perceived characteristics of innovations within the DOI theory that persuaded the respondents to adopt e-commerce. Specifically, compatibility with technology infrastructure was found to have exerted an influence in the SMMEs decision to place orders with suppliers through the internet in Durban. Compatibility with technology infrastructure was also found to influence e-commerce adoption by SMMEs in Chile (Grandon and Pearson, 2004a).

5.2.2.1(e). Firm's characteristics

i) Firm size

The size of a firm can be determined quantitatively by i) the number of full-time employees within a company and ii) the company's annual turnover (Schaper and Volery, 2004). The findings reveal that there are fewer SMMEs with less than 10 full-time employees that adopted e-commerce compared to those with between 51 and 100 full-time employees. In addition, e-commerce adoption was found to be very low for SMMEs that generate between R 100,000 and R 500,000 annually. However, the rate of e-commerce adoption for SMMEs that generate more than R 500,000 annually is significantly high. Hence, this study reveals that the firm size is one of the factors that influence e-commerce adoption by SMMEs. The larger the SMME, the more it is likely to adopt e-commerce. A similar finding was obtained by Al-Qirim (2007) through his research on e-commerce adoption by SMMEs in New Zealand.

Goldstuck (2012) indicates that a survey of SMMEs in South Africa reveals that having a website depends on the size or for how long the SMME has been in business. He states that "the larger an organisation, or the longer it has been around for, the more likely it is to have a website"(Goldstuck, 2012:11). Since SMMEs must have a website in order to adopt web-related e-commerce, it makes sense that the larger the SMME, the more likely it is to adopt web-based e-commerce.

ii) Organisational culture and preferred work practices

The research found that there is no significant relationship between e-commerce adoption and organisational culture in both locations. This is in contrast to Seyal *et al.* (2004:11) research on e-commerce adoption by Pakistan SMMEs, Beatty *et al.* (2001) Beatty et al. (2001) , Gibbs, Kraemer and Dedrick (2003) and Teo and Ranganathan (2004) as they found a significant influence of organisational culture on e-commerce adoption. However, in this research, a significant relationship was found between e-commerce adoption and organisations' preferred work practices. Compatibility with the company's preferred work practices influenced the decision to adopt e-commerce in most of the surveyed SMMEs in Pietermaritzburg that adopted e-commerce.

5.2.2.2. Suggested adaptation of the UTAUT model in light of the study

5.2.2.2(a). Performance expectancy

Performance expectancy refers to the degree to which an individual believes that the use of a system will translate into an increase in job performance. The influence of performance expectancy as a possible determinant of e-commerce adoption was examined through the following variables: i) job performance of company employees (question 13.2) and ii) company employees accomplishing tasks more quickly (question 13.3). The results indicate that the influence of performance expectancy (e-commerce technology enhances the job performance of company employees) on SMME adoption of customers credit card payment through the SMMEs' websites is only significant in Pietermaritzburg. No other significant relationship between e-commerce adoption and performance expectancy was found either in Durban or in Pietermaritzburg. In addition, there is no significant relationship between performance expectancy and gender and performance expectancy and age in both locations (Durban and Pietermaritzburg).

5.2.2.2(b). Effort expectancy

Effort expectancy refers to what extent the system is easy to use. The influence of effort expectancy on e-commerce adoption was examined through the following variable: i) ease of use of e-commerce. The research shows that there is a significant relationship between ease of use of e-commerce and customers placing orders through the SMMEs' websites in Pietermaritzburg only. However, no significant relationship between effort expectancy (ease of use of e-commerce) and gender and effort expectancy (ease of use of e-commerce) and age were found in Durban and Pietermaritzburg.

5.2.2.2(c). Social influence

Social Influence refers to the degree to which individuals perceive that influential people believe they should use a new system (Venkatesh *et al.,* 2003). (Venkatesh et al., 2003). The social influence factor was examined in this study through the following variables: i) owner/manager support and ii) top management enthusiasm about e-commerce adoption. The findings indicate that there is no significant relationship between owner/manager support and e-commerce adoption in both locations. However, a significant relationship was found between owner/manager support and age in Pietermaritzburg.

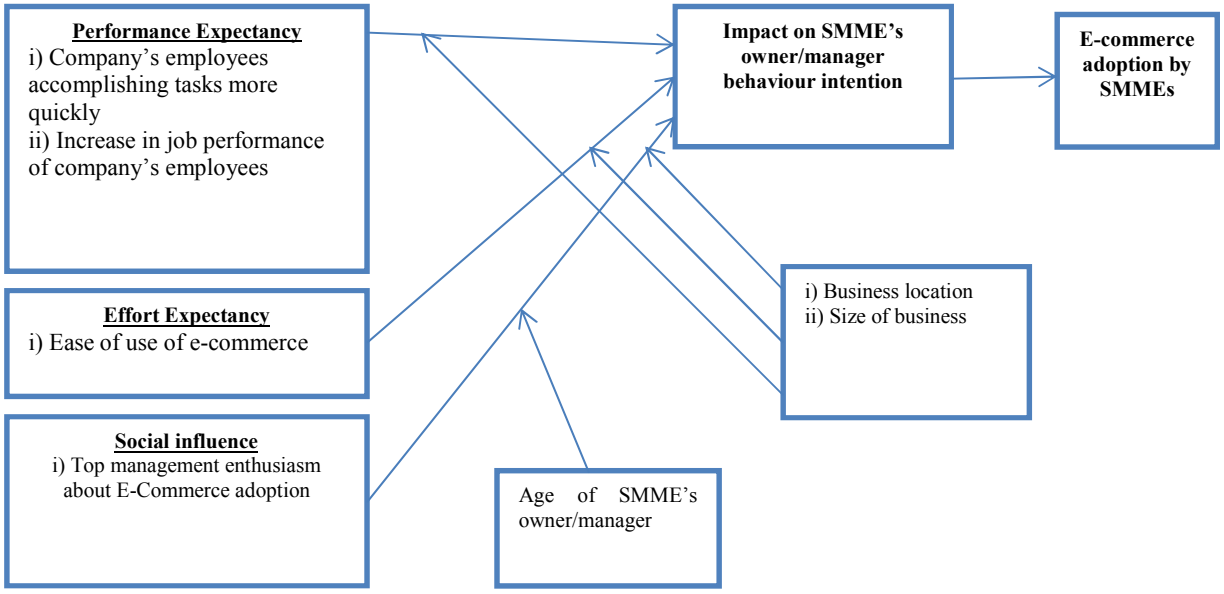
The findings also reveal that top management enthusiasm about e-commerce adoption is significantly related to customers' credit card payment through SMME websites in Durban. Importantly, top management enthusiasm about e-commerce adoption is significantly related to age in both locations. In Durban, older respondents (above 35 years of age) believe that top management in their companies are enthusiastic about e-commerce adoption. However, in Pietermaritzburg, younger respondents (25 years old or younger) believe that top management in their companies are enthusiastic about e-commerce adoption. Thus, the perceptions of social influence on e-commerce adoption differ according to the age of respondents and the business location of the company.

5.2.2.2(d). Facilitating conditions

The following facilitating conditions were examined in this research: i) presence of IT skills in the company, ii) availability of financial resources and iii) availability of technological resources. This research shows that there is no significant relationship between the facilitating conditions and e-commerce adoption. It is therefore concluded that the facilitating conditions have not influenced the decision to adopt e-commerce adoption in the surveyed SMMEs. However, the results indicate that a significant relationship exists between presence of IT skills within the SMMEs and age. Younger respondents (25 years of age or younger) agree that presence of IT skills in the company has influenced the decision to adopt e-commerce.

In view of the findings related to UTAUT variables, the UTAUT model is tentatively adapted to e-commerce adoption within the context of this study as depicted in Figure 5.1 below.

Figure 5.1: Adaptation of the UTAUT model to the study



This study reveals that SMME owner/managers indicated that performance expectancy and effort expectancy variables have influenced their decisions to adopt e-commerce. In addition, the influence of these variables was found to be moderated by the business location and the size of the business. Specifically, the influence of these variables was found to be significant in Pietermaritzburg as the majority of SMMEs in this location (Pietermaritzburg) have more than 50 employees (see 4.6.1.4 and 5.2.2.1(e)**).** Moreover, the social influence variable was found to exert an influence on e-commerce adoption by SMME owner/managers as the majority of SMME owner/managers indicated that their top management is enthusiastic about e-commerce adoption. The influence of social influence was found to be moderated by age in both locations.

Figure 5.1 depicted above reflects the adaptation of the UTAUT model to this study of e-commerce adoption in an attempt to portray the findings in Durban and Pietermaritzburg. Further research is needed to determine its significance/validity in large random representative sample surveys.

5.2.2.3. Suggested adaptation of the DOI model in light of the study

5.2.2.3(a). Relative advantage

Relative advantage refers to the perceived benefits of the technology. The influence of relative advantage on e-commerce was examined through questions 14.1 to 14.10 (See Appendix E). The majority of both adopters and non-adopters perceived the potential benefits of e-commerce to be important or very important to their businesses. In addition, this research indicates that there is a significant and positive correlation between perceptions of e-commerce benefits and realised benefits. Thus, this research re-emphasizes the importance of SMMEs' owners' knowledge of the benefits of e-commerce within each individual SMME's context. This knowledge will then inform the type of e-commerce option to adopt in relation to the SMME's business strategy. This research confirms the findings by Mirchandani and Motwani (2001) study on e-commerce adoption by small businesses and Premkumar and Potter (1995) study on the adoption of Computer-Aided Technology.

5.2.2.3(b). Compatibility

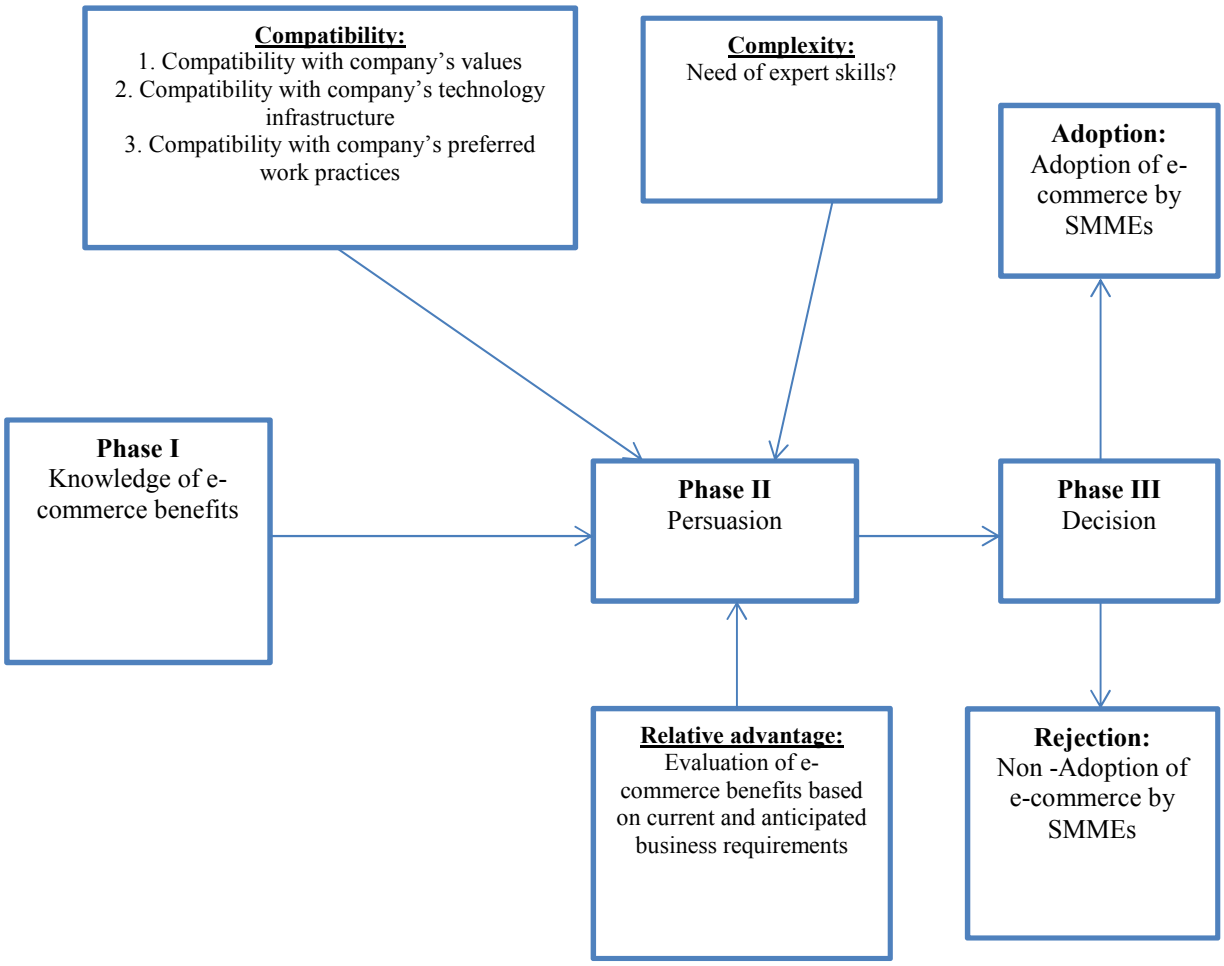
Compatibility refers to the perception of the innovation's consistency with the values, previous experiences and needs of potential adopters. In this research, the influence of the compatibility factor on e-commerce adoption was examined through questions 12.9, 12.10, 12.11, 12.12, 12.13 in the questionnaire. The following variables were examined: compatibility with company business processes, compatibility with company's preferred work practices, compatibility with company's organisational culture, compatibility with company values, and compatibility with the company's technology infrastructure. This research found a significant relationship between customers' online payment by credit card (e-commerce option) and compatibility with company's preferred work practices in Pietermaritzburg. The majority of SMMEs that allow customers to pay by credit card through their websites agree that compatibility with company's preferred work practices has influenced the decision to adopt e-commerce in their companies. In addition, in Durban it was found that placing orders with suppliers (e-commerce option) is significantly related to i) compatibility with company's technology infrastructure, ii) compatibility with company values. Hence, this study re-emphasizes the importance of these factors as determinants of e-commerce adoption. E-commerce adoption by SMMEs was found to be influenced by compatibility issues in other studies by Hong and Zhu (2006) and Saffu, Walker and Hinson, (2008).

5.2.2.3(c). Complexity

Complexity factors were examined through questions 13.6, 13.7, 13.8, 13.9, 13.11 and 13.12. This research found that the relationship between placing orders with suppliers over the internet (e-commerce option) and expert skills are needed to use e-commerce (complexity variable) is the only significant relationship between e-commerce adoption and complexity. The significance of the relationship is only found in Pietermaritzburg. More specifically, the majority of SMMEs that place orders with suppliers over the internet agree that expert skills are needed to use e-commerce. Thus, e-commerce is still regarded as a complex technology, hence the need for outsourcing. Further analysis reveals that the majority of SMMEs operating in Durban and Pietermaritzburg, i) outsource all of their e-commerce activities (42.1%, N=16 in Durban and 39.2%, N=40 in Pietermaritzburg), ii) rely on the skills of an external third party to run some of their e-commerce activities (59%, N=23 in Durban and 45.1%, N=46 in Pietermaritzburg). The influence of complexity on e-commerce adoption was also found in Chong, Pervan and Bauer (2001) research on factors that influence internet based e-commerce in Small and Medium businesses in Australia.

In view of the findings related to the DOI variables, the DOI model is tentatively adapted to e-commerce adoption within the context of this study as depicted in Figure 5.2 below:

Figure 5.2: Adaptation of the DOI model to the study



In phase I, the initial phase of e-commerce adoption process, SMMEs ask this crucial question: What can e-commerce do for us? In other words, what benefits will the company get from e-commerce? The phase is followed by the persuasion phase (phase II) whereby SMMEs evaluate the benefits that could derive from e-commerce adoption based on their current and anticipated business requirements. In this phase, SMMEs evaluate the compatibility of e-commerce option(s) that they want to adopt with i) company values, ii) company's technology infrastructure and ii) preferred work practices. In addition, the need of expert skills to operate e-commerce is assessed. The outcome of this second phase is the decision phase (phase III) that leads to either adoption or non-adoption of the chosen e-commerce option.

The DOI model depicted above reflects the adaptation of the DOI model to this study of e-commerce adoption in an attempt to portray the findings in Durban and Pietermaritzburg. Further research is needed to determine its significance/validity in large random, representative sample surveys.

5.2.3. Research Question 3: What do Durban and Pietermaritzburg SMMEs know about the benefits of e-commerce?

5.2.3.1. Perceptions of e-commerce benefits

This research found that the majority of adopters and non-adopters of e-commerce were aware of the benefits that derive from e-commerce adoption. The research also shows that there is a significant and positive link between perceptions of e-commerce benefits and realised benefits. This implies that the more SMMEs are aware of e-commerce benefits, the more they are likely to make an informed decision in terms of e-commerce adoption that will generate some business benefits.

Kirby and Turner (1993) argue that the perception of the usefulness of a technology is often related to the knowledge that the owner has about the use of such technology. In the context of this research, this could mean that those that adopted e-commerce were aware of the benefits of e-commerce prior or after adopting e-commerce. In addition, this research also reveals that the majority of e-commerce adopters had a company strategy geared towards e-commerce (as depicted in the next section). Hence, it is believed that the formulation of such strategy involved some kind of cost benefit analysis (Eadie, 1983). Thus, it is concluded that most of the SMMEs that adopted e-commerce had some knowledge of what e-commerce can do for their companies.

5.2.4. Research Question 4: What enablers have SMMEs adopted in line with e-commerce adoption?

5.2.4.1. Company strategy for developing e-commerce

Turban *et al*. (2010) advocate that the majority of small business owners' business strategies do not include a web presence. However, in the context of this research, there is evidence that there is a relationship between e-commerce adoption and e-commerce strategy. The majority of those who adopted e-commerce in both locations had an e-commerce strategy already in place. Although this research did not assess the nature and extent of such strategy, however, having an e-commerce strategy indicates that SMMEs had planned for e-commerce adoption. On the contrary, none of those that have not adopted e-commerce had an e-commerce strategy. Hence, this research re-emphasizes the need for SMMEs to establish an e-commerce strategy before moving to e-commerce adoption.

5.2.4.2. Technological capabilities

5.2.4.2(a). Internet access, e-mail and website

The research found that the majority of SMMEs that adopted e-commerce in Durban and Pietermaritzburg had i) their own company e-mail, ii) internet access and iii) a website. In addition, the majority of non-adopters of e-commerce in Pietermaritzburg had a website. This means that those that did not adopt e-commerce (specifically in Pietermaritzburg) were at the bottom of the adoption ladder. Courtney and Fintz (2001) advocate that the scope of e-commerce activities ranges from entry level activities to more advanced activities. In addition, Akkeren and Cavaye (1999a:4) state that "sophisticated e-commerce technologies are not likely to be adopted before entry-level activities are used more readily". In the context of this research, there is evidence that non-adopters in Pietermaritzburg have i) an online presence, and ii) electronic mail.

The evidence of online presence from non-adopters is not surprising as two-thirds of SMMEs in South Africa have a website (Goldstuck, 2012). The increase in the number of SMMEs with an online presence may have been stimulated by the recent Woza online initiative. Woza online is a platform (created through a joint venture between South African Department of Trade and Industry, Vodacom, the Human Resources Development Council and Google) that enables SMMEs to create their own websites through easy-to-follow steps without any cost (Goldstuck, 2012). Although non-adopters have the necessary "ingredients" for e-commerce, further research is needed to investigate the readiness of non-adopters towards e-commerce. Such readiness would be assessed based on the purposes for which e-mail and website are used.

In Durban, the majority of non- adopters were not ready to adopt web-based e-commerce as the majority of them indicated that they will never have a website.

According to Goldstuck (2012), SMMEs with websites are highly likely to generate substantial profits as compared to those that do not have an online presence on the Web. He argues that, according to the SMME survey 2012,

> "As many as 79 % of SMMEs with a website report that they are profitable, with 30 % of these stating they are strongly profitable. Of those without a website, only 59 % report profitability and just 14 % of these, claim to be strongly profitable" (Goldstuck, 2012:10).

The SMME survey 2012 report indicates that one of the major constraints towards having an online presence through a website is the perception that in South Africa, "there are not enough people online to justify a web presence" (Goldstuck, 2012:10). However, in South Africa, the

number of people having access to internet and World Wide Web (WWW) is increasing rapidly (Goldstuck, 2012). There are three main reasons for such an increase, i) the installation of new undersea telecommunications cables in South Africa that will lead to an increase of the internet bandwidth at a cheaper price, ii) the granting of licenses that allow internet Service Providers to build their own networks and iii) the growth of cell phone internet.

The above suggests that SMMEs that do not have a web presence (such as the majority of surveyed non-adopters of e-commerce in Durban) are "losing out on a major channel of potential communication" (Goldstuck, 2012:10). As many people are getting access to the internet, a web presence could be a channel for i) advertisement, ii) customer acquisition, iii) sales, and iv) customer retention.

5.2.4.2(b). Computerised inventory of company products and services

As expected, this research found a significant relationship between e-commerce adoption and having a computerised inventory of company products and services. In both locations, the majority of e-commerce adopters have a computerised inventory of company products and services. However, the majority of non-adopters do not have computerised inventory of company products and services. Conrad (2012) argues that a computerised inventory of products and services, if properly managed, can yield significant gains such as i) speed and efficiency through automation of processes, ii) document generation as documents such as purchase orders, invoices and account statements can be generated automatically, iii) timely data as managers have the right information at the right time through computer generated reports from the database containing the products or/services.

5.2.4.2(c). Computerised database of company customers

In contradiction to Dyerson *et al*. (2009) research findings about e-commerce adoption by UK SMMEs, this research found that there is evidence of e-commerce usage to build customer databases. The majority of SMMEs that adopted e-commerce in both locations (online payment by credit card, online ordering, providing customer services through the SMMEs' websites) already had a computerised database of their company's customers. On the contrary, those that have not adopted e-commerce did not have a computerised database of customers in place. A computerised database of customers may contribute to customer loyalty and retention (Hughes, 2012). A customer database assists in designing specific personal marketing strategies based on the buying behaviour of customers (Hughes, 2012). This allows the SMMEs to generate products that are specifically tailored to the needs of their clients. Such specifically tailored database-based marketing may result in loyalty and retention of customers. However, SMMEs

are cautioned that database marketing yields positive gains if the target customers benefit from the database-based retention strategies used. Therefore, the setting up of a computerised database of company customers should be integrated with the marketing plan of SMMEs so that it may be beneficial to the company.

5.2.4.2(d). Computerised database of company suppliers

As expected, this research found that there is a significant relationship between placing orders with suppliers through the internet and having a computerised database of company suppliers. In both locations, the majority of SMMEs that place orders with suppliers over the internet have a computerised database of their suppliers. However, the majority of those that do not place orders with suppliers over the internet indicated that they will never have a computerised database of their suppliers. This suggests that SMMEs could be using the database to foster relationships with their suppliers. However, further research is needed to determine the purpose (s) for which such database is built. It will be particularly interesting to investigate the impact of having a computerised database of company suppliers on the prospects of instituting a Just-in-Time delivery system.

5.2.5. Research Question 5: What are the inhibitors of e-commerce adoption in Durban and Pietermaritzburg from an SMME perspective?

The research found that there are different inhibitors of e-commerce between the two locations. In Durban, low use of e-commerce by customers is the only inhibitor that significantly affects the adoption of e-commerce. However, in Pietermaritzburg, the adoption of e-commerce is significantly affected by i) lack of conviction of the financial and business benefits of e-commerce, ii) limited knowledge of the required technology, iii) low use of e-commerce amongst customers, iv) low use of e-commerce amongst suppliers, v) low level of computerisation within the company, vi) high cost of computers and network technologies, vii) telecommunications services not dependable, viii) concerns about internet security, ix) concerns about legal issues, contracts and liability. The findings in Durban and Pietermaritzburg coincide with findings by Cloete (2003:126) on factors that inhibit e-commerce adoption in South Africa.

5.3. Summary of chapter 5

Chapter 5 provided an in-depth discussion of findings from chapter 4. It is noted that there are notable differences in e-commerce adoption between Durban and Pietermaritzburg SMMEs. Such differences pertain mainly to the size and extent of SMMEs business coverage. In addition, internal factors such as owner/manager perception of e-commerce benefits and organisational preferred work practices influenced SMMEs decision to adopt e-commerce.

Variables from the UTAUT model were found to have exerted some influence on e-commerce adoption. Particularly, performance expectancy (Company's employees accomplishing tasks more quickly, increase in job performance of company's employees), effort expectancy (ease of use of e-commerce) and social influence (top management enthusiasm about e-commerce adoption) had an influence on SMMEs e-commerce adoption. In the context of this study, these variables were found to be moderated by SMMEs business location and the size of their businesses.

Moreover, DOI factors persuaded SMMEs to adopt e-commerce. These are i) compatibility (Compatibility with company's values, compatibility with company's technology infrastructure and compatibility with company's preferred work practices), ii) complexity (need of expert skills) and relative advantage (e-commerce benefits).

The DOI and UTAUT models were adapted to reflect the findings described above.

It was also found that the majority of SMMEs that adopted e-commerce in both locations had i) an e-commerce strategy ii) their own company e-mail, iii) internet access and iv) a website, v) a computerised inventory of company products and services, vi) a computerised database of company customers and vii) computerised database of company suppliers (significantly related to placing orders with suppliers over the internet).

There are notable differences between the two locations in terms of factors that hamper e-commerce adoption. In Durban, low use of e-commerce by customers is the only inhibitor that significantly affects the adoption of e-commerce. However, in Pietermaritzburg, the adoption of e-commerce is significantly affected by i) lack of conviction of the financial and business benefits of e-commerce, ii) limited knowledge of the required technology, iii) low use of e-commerce amongst customers, iv) low use of e-commerce amongst suppliers, v) low level of computerisation within the company, vi) high cost of computers and network technologies, vii) telecommunications services not dependable, viii) concerns about internet security, ix) concerns about legal issues, contracts and liability.

CHAPTER 6: CONCLUSIONS AND RECOMMENDATIONS

6.1. Introduction

This chapter restates the research questions in order to crystallise the findings and conclusions. It further summarises the study with a particular emphasis on conclusions vis-à-vis the major findings. Recommendations are made in relation to the research questions and findings from the data analysis.

6.2. Research questions revisited

The current state of e-commerce adoption by SMMEs in Durban and Pietermaritzburg is unknown. This constituted the main research problem. To answer this problem, the following research questions were formulated:

1. What is the current usage of e-commerce in Durban and Pietermaritzburg?
2. What is the impact of the determinants identified in the literature, or any other factors, on Durban and Pietermaritzburg SMMEs e-commerce adoption?
3. What do Durban and Pietermaritzburg SMMEs know about the benefits of e-commerce?
4. What e-commerce enablers have SMMEs adopted in line with e-commerce adoption?
5. What are the inhibitors of e-commerce adoption in Durban and Pietermaritzburg from the SMME perspective?

6.3. Summary of the study

Chapter 1 provided an introduction to the study. It further delineated the problem statement and subsequent sub-problems and research questions. Additionally, the first chapter explained the theoretical frameworks adopted in this study, the limitation to the study and provided an overview of the study's chapters.

Chapter 2 assisted in defining SMMEs qualitatively and quantitatively. The chapter further reviewed the role of the internet in a business with particular reference to internet adoption in South Africa. In addition, three ICT adoption perspectives adopted in this study were discussed. Moreover, the chapter discussed issues pertaining to e-commerce adoption with particular reference to i) developing and developed countries ii) e-commerce capabilities iii) determinants of e-commerce and iv) inhibitors of e-commerce adoption.

Chapter 3 provided a detailed description of the methodology used to collect and analyse data. Data was collected from a sample of 400 SMMEs equally distributed between Durban and Pietermaritzburg areas (200 in each location). A stratified sampling method was used to choose the sample. Cross tabulations, Chi square tests of independence and Pearson correlations were performed through SPSS 19 to generate relevant, meaningful and significant results from the collected data.

Chapter 4 presented the findings from data analysis with a succinct discussion. A detailed discussion of the findings was compiled in Chapter 5.

The following section concludes this study with reference to the findings in Chapter 4.

6.4. Conclusion of the study

This research aimed at finding out to what extent e-commerce has been adopted by SMMEs in Durban and Pietermaritzburg. To this end, four e-commerce options were examined within the context of Durban and Pietermaritzburg. These are: i) customers payment by credit card through SMMEs' websites, ii) allowing customers to place orders through SMMEs' websites, iii) providing customer services through SMMEs' websites and iv) placing orders with suppliers over the internet. The determinants and inhibitors of e-commerce adoption were also examined in light of the four e-commerce options. In addition, SMMEs readiness to adopt e-commerce was examined based on enablers (technology related and otherwise) such as e-mail, internet, websites and databases that have been put in place. In addition, e-commerce strategy as an enabler of e-commerce adoption was assessed. Moreover, SMMEs' knowledge of e-commerce benefits as a contributing factor to e-commerce adoption was examined. Lastly, inhibitors of e-commerce adoption were examined within the context of the selected areas (Durban and Pietermaritzburg).

The study reveals that there are more SMMEs that adopted at least one of the four e-commerce options in Pietermaritzburg than Durban. The difference in adoption is mainly due to the smaller size (measured in terms of number of employees) on average of surveyed SMMEs from Durban compared to Pietermaritzburg. Thus, the size of SMMEs plays a significant role in the adoption of e-commerce.

Using the Unified Theory of Acceptance and Use of Technology (UTAUT) and Diffusion of Innovation theory (DOI) as the theoretical frameworks, the research found that there are a number of variables from both theories that have influenced significantly the adoption of the four e-commerce options depicted above. These factors are summarised in the table below:

UTAUT	DOI
Performance expectancy	Compatibility
Effort expectancy	Complexity
Social influence moderated by age	Relative advantage

Consequently, in chapter 5, the UTAUT and DOI were tentatively adapted to reflect the findings in chapter 4.

This research found that the majority of adopters and non-adopters were aware of the benefits that could derive from e-commerce adoption based on their current and anticipated business requirements. In addition, for SMMEs that adopted e-commerce, a positive correlation was found between perceived/anticipated e-commerce benefits and the actual, realised benefits. This means that the more SMMEs are aware of the benefits of e-commerce (thus, the positive perceptions of e-commerce), the more they are likely to make informed decisions in terms of e-commerce adoption that materialize in tangible/intangible business benefits.

This research found that the majority of adopters in Durban and Pietermaritzburg had adopted the following e-commerce enablers: i) a company strategy for e-commerce adoption ii) a computerised inventory of company products and services, iii) a computerised database of company customers and iv) a computerised database of company suppliers. However, the majority of non-adopters had none of those enablers. The majority of non-adopters in Durban had company e-mail and internet access. However, non-adopters in Pietermaritzburg were more ready to adopt web-based e-commerce as the majority of them had websites in addition to company e-mail and internet access.

Findings also revealed that, in their quest to adopt e-commerce, SMMEs in Pietermaritzburg are constrained by i) lack of conviction of the financial and business benefits of e-commerce, ii) limited knowledge of the required technology, iii) low use of e-commerce amongst customers, iv) low use of e-commerce amongst suppliers, v) low level of computerisation within the company, vi) high cost of computers and network technologies, vii) telecommunications services not dependable and viii) concerns about internet security, ix) concerns about legal issues, contracts and liability. However, in Durban, low use of e-commerce by customers is the only inhibitor that significantly affects the adoption of e-commerce.

6.5. Limitations to the study

The study was conducted in two geographical areas only. Thus, more fully representative research is needed to assess whether the findings can be generalised to the whole country. Such research could use larger representative, random samples drawn from across the country.

6.6. Recommendations

There is a strong body of literature that argues for the value of e-commerce to SMMEs. In support of this position, the following recommendations have emerged from this study:

6.6.1. Government and policy makers

i) The study shows that the majority of SMMEs in the Pietermaritzburg area that did not adopt e-commerce have at least an online presence. Although the majority of SMMEs perceive the benefits associated with e-commerce as important for their businesses, few actually have moved to e-commerce implementation. In view of the increasing contribution of the internet in the South African economy, especially in the sustainability of SMMEs and job creation, there is a need for South Africa to introduce policies that foster "the growth of internet use and accessibility to the tools of internet by SMMEs"(Goldstuck, 2012:14).

ii) There is a need for South Africa (SA) to spearhead the move towards access to high speed wireless such as 4G[29] or Long Term Evolution[30] (LTE) by a larger proportion of the population (Goldstuck, 2012). This move will likely contribute to an increased digital participation by a larger portion of the country's population. An increase in digital participation will lead to an increase of the pool of potential online customers that SMMEs can leverage in their quest to generate online revenues.

iii) This research found that the SMME's owner/manager perception that the cost of computers and network technologies is high is one of the factors that limit e-commerce adoption. The SA government may assist in lowering such cost by reducing the market price of internet access devices and equipment. This could

[29] The fourth generation of mobile phone standards
[30] A standard for wireless communication of high-speed data for mobile phones and data terminals

be achieved "through lowering or removal of duties and taxes relating to such products" (Goldstuck, 2012:24).

iv) The government may also increase SMME participation in the digital economy by providing more incentives/assistance to SMMEs that i) are willing to adopt e-commerce and ii) those that are already engaging in revenue-generating e-commerce activities.

v) This research found that top management enthusiasm about e-commerce adoption has a significant influence on the adoption of e-commerce by SMMEs. Thus, there is a need for an educational program/training to educate SMME owners of the value and/or benefits of e-commerce. Such programmes could be devised by the government or the private sector.

vi) The research also shows that most SMMEs exert heavy reliance on outsourcing for adoption or maintenance of e-commerce within their companies. Thus, the need for consultant agencies that are knowledgeable of e-commerce applications is crucial as most of the surveyed SMMEs are hindered by lack of knowledge of suitable e-commerce technology for their businesses. In this case, there is need to invest in skills building especially in the area of e-commerce and related technology.

vii) SMMEs need to be trained in the strategic adoption of e-commerce. This research shows that the majority of SMMEs that adopted e-commerce had a company strategy to adopt e-commerce. The emphasis should be on the formulation of an e-commerce strategy stipulating how e-commerce is to be integrated into the overall business strategy.

6.6.2. South African Information Technology industry

i) This research found that concerns about internet security are obstacles towards e-commerce adoption. Thus, there is a need to enhance internet security by establishing rigorous security measures (both digital and legal) to counter digital crime fraud.

ii) In addition, there is a need to educate the public on internet security especially in areas of phishing, password protection and other security concerns in order to boost consumer confidence whilst on the internet.

6.6.3. SMME owners

i) SMMEs are encouraged to establish an online presence so that they may have access to a pool of potential online customers. The onus is on SMMEs to get acquainted with existing support mechanisms (such as Woza online) that may help them start their online businesses

ii) This research shows that the majority of start-up SMMEs that operate locally have not adopted e-commerce. However, SMMEs need to establish an online presence at the earliest stage in their life span. In this case, the earlier SMMEs adopt e-commerce, the greater are the prospects for business expansion. The results show that the majority of SMMEs start expanding their business coverage once they have been established for at least 4 years. However, in view of e-commerce benefits, SMMEs are likely to expand earlier their business coverage, if they adopt e-commerce at an early stage of their life span.

6.7. Suggestions for future research

The UTAUT and DOI theories were adapted in the light of the findings in this study. Further research is needed to assess whether such adaptation holds up for larger representative samples. Additionally, the researcher used a quantitative approach. It is acknowledged that a qualitative or a mixed method could have added a different dimension to the study. Specifically, a qualitative approach would provide more information (that was not covered in this research) in line with i) perceptions of owner/managers about e-commerce and ii) e-commerce adoption. Other theoretical approaches may also shed light into the issues pertaining to e-commerce adoption by SMMEs from other perspectives that were not addressed in this research.

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APPENDICES

Appendix A

i. Descriptive Statistics

	Mean	Median	Mode	Std. Deviation
Your age	2.21	2.00	2	.741
Where is the business based?	1.50	1.50	1[a]	.501
Your gender	1.66	2.00	2	.474
Your role in the company	2.20	2.00	3	.774
The business is	3.43	4.00	4	.748
Which business sector best describes your company's primary business	4.53	5.00	5	1.529
What is the approximate number of full-time employees in your company?	1.98	2.00	1	.990
Who do you sell your products to?	1.83	1.00	1	.953
Are your products sold on the internet?	1.65	2.00	2	.476
The company has adopted E-Commerce	1.58	2.00	2	.494
Company allows customer credit card payment through the company's website	1.67	2.00	2	.472
Customers can place orders through the company's website	1.69	2.00	2	.462
Customer services are provided through the company's website	1.66	2.00	2	.474
The company places orders with suppliers over the internet	1.68	2.00	2	.469
When does your company expect to have a strategy for developing E-Commerce?	2.57	2.00	1	1.523
When does your company expect to have a computerised database of your company's customers	2.57	2.00	1	1.578
When does your company expect to have a computerised database of your company's suppliers	2.62	2.00	1	1.576
When does your company expect to have a computerised inventory of your company's products or services	2.59	2.00	1	1.589
When does your company expect to have an electronic E-mail?	1.77	1.00	1	1.225
When does your company expect to have access to the internet?	1.81	1.00	1	1.236
When does your company expect to have a website demonstrating your company's products or services?	2.42	2.00	1	1.610
When does your company expect to have customer payment by credit card through the company's website?	2.77	2.00	1	1.671
When does your company expect to receive customers' orders through the company's website?	2.74	2.00	1	1.603
When does your company expect to provide customer services through the company's website?	2.68	2.00	1	1.629
When does your company expect to place orders with suppliers over the internet?	2.68	2.00	1	1.634
Owner/manager support has influenced the decision to adopt E-commerce in your company	3.94	4.00	4	.679
Presence of IT skills in the company has influenced the decision to adopt E-commerce	3.89	4.00	4	.679

Owner/manager understanding of the benefits of E-Commerce has influenced the decision to adopt E-commerce in your company	4.24	4.00	4	3.451
External pressure from competitors has influenced the decision to adopt E-Commerce in your company	3.90	4.00	4	.673
External pressure from industry has influenced the decision to adopt E-Commerce in your company	3.84	4.00	4	.715
External pressure from government has influenced the decision to adopt E-Commerce in your company	3.73	4.00	4	.791
External pressure from suppliers has influenced the decision to adopt E-Commerce in your company	3.88	4.00	4	.756
External pressure from customers has influenced the decision to adopt E-Commerce in your company	3.92	4.00	4	.649
Compatibility with company's business processes has influenced the decision to adopt E-Commerce in your company	4.01	4.00	4	.668
Compatibility with existing company's technology infrastructure has influenced the decision to adopt E-Commerce in your company	4.06	4.00	4	.700
Compatibility with existing company's organisational culture has influenced the decision to adopt E-Commerce in your company	3.94	4.00	4	.689
Compatibility with company's values has influenced the decision to adopt E-Commerce in your company	4.01	4.00	4	.611
Compatibility with company's preferred work practices has influenced the decision to adopt E-Commerce in your company	4.06	4.00	4	.612
Availability of financial resources to adopt E-Commerce has influenced the decision to adopt E-Commerce in your company	3.96	4.00	4	.600
Availability of technological resources to adopt E-Commerce has influenced the decision to adopt E-Commerce in your company	3.94	4.00	4	.654
The size of the company has influenced the decision to adopt E-Commerce	3.85	4.00	4	.798
The business type of the company has influenced the decision to adopt E-Commerce	3.99	4.00	4	.765
Previous use of E-Commerce has influenced the decision to adopt E-Commerce	3.86	4.00	4	.836
Top management is enthusiastic about the adoption of E-Commerce	3.97	4.00	4	.610
E-Commerce technology enhances the job performance of the company's employees	3.96	4.00	4	.624
E-Commerce enables the company's employees to accomplish specific tasks more quickly	3.99	4.00	4	.668
E-Commerce is integrated into the company's business strategy	4.01	4.00	4	.636
E-Commerce is integrated into business management long term objectives	4.02	4.00	4	.660
Learning to operate E-Commerce is easy	3.89	4.00	4	.787
E-Commerce is flexible to interact with	3.99	4.00	4	.758
The interaction with E-Commerce is clear and understandable	3.96	4.00	4	.723
It is easy to become skillful at using E-Commerce	4.01	4.00	4	.613
E-Commerce is easy to use	3.95	4.00	4	.613
E-Commerce requires basic computer skills	4.09	4.00	4	.656

Expert skills are needed to use E-Commerce	3.84	4.00	4	.804
E-Commerce is consistent with the company's technology infrastructure	4.05	4.00	4	.579
E-Commerce is difficult to implement	4.72	4.00	4	6.399
It is expensive to implement E-Commerce	4.22	4.00	4	3.452
E-Commerce was implemented by an external third party	3.87	4.00	4	.877
The company relies on an external third party for the maintenance of E-Commerce	3.89	4.00	4	.876
The company relies on the skills of an external third party to run some of its E-Commerce activities	4.21	4.00	4	4.398
The company outsources all of its E-Commerce activities	3.71	4.00	4	1.041
Improve information exchange with customers	4.21	4.00	5	.994
Increase customer loyalty and retention	4.03	4.00	4	1.104
Improve service to the customer	4.24	4.00	5	.927
Provide easier access to international markets	3.36	4.00	4	1.142
Expand business reach	4.06	4.00	5	1.068
Reduce costs of maintaining up-todate company information	3.91	4.00	4	1.149
Improve information exchange with suppliers	4.16	4.00	5	1.073
Reduce costs through web-based purchasing and procurement	3.88	4.00	5	1.232
Improve the competitive position of your company	4.18	4.00	5	1.008
Attract new investment to the company	3.80	4.00	5	1.277
Raising/improving company profile	4.40	4.00	5	.708
Increasing sales/inquiries	4.16	4.00	4	.569
Extending customer base	3.91	4.00	4	.348
Improving customer relationships	4.43	5.00	5	.668
Improving supplier relationships	4.39	4.00	5	.725
Speeding up processes	4.41	5.00	5	.677
Reducing costs e.g. transaction, marketing	4.37	4.00	5	.723
Keeping up to date with products, services and market news	4.40	4.00	5	.653
Keeping ahead of/abreast of competition	4.41	4.00	4	.610
Flexibility in terms of customer payment options	4.35	4.00	4	.643
Flexibility in terms of placing orders with suppliers	4.38	4.00	5	.693
Customer's convenience	4.40	4.00	5	.716
The company is not convinced of the financial and business benefits	3.62	4.00	4	1.008
The company has limited knowledge of the required technology	3.82	4.00	4	.903
E-Commerce use is too low among customers	3.55	4.00	4	1.000
E-Commerce use is too low among suppliers	3.50	4.00	4	1.004
Level of computerrisation is too low in the company	3.57	4.00	4	1.039
Cost of computers and network technologies is too high	3.86	4.00	4	.982
Telecomunications services are not dependable	3.68	4.00	4	1.012
Company has concerns about internet security	3.77	4.00	4	1.065
Company has concerns about legal issues, contracts and/or liability	3.77	4.00	4	.996
What is the approximate annual turnover of your company?	3.71	4.00	1	1.974
How long has your business been established for?	2.48	3.00	3	.675

ii. SPSS codes

Variables	SPSS codes
Your age	**1**= "25 or younger", **2= "**26 to 35", **3**= "Above 35"
Where is the business based?	**1**= "Durban", **2**= "Pietermaritzburg"
Your gender	**1**= "Female", **2**= "Male"
Your role in the company	**1**= "Owner and Manager", **2**= "Owner", **3**= "Manager"
The business is	**1**= "National and International", **2**= "international", **3**= "National", **4**= "Local"
How long has your business been established for?	**1**= "Less than 1 year", **2**= "From 1 to less than 4 years", **3**= "From 4 to less than 7 years", **4** = "7 years or more"
Which business sector best describes your company's primary business	**1**= "Construction",**2**="Manufacturing", **3**= "Catering/Accommodation",**4**="Wholesale",**5**="Retail", **6**="Finance",**7**= "Transport"
What is the approximate number of full-time employees in your company?	**1**= "Less than 10", **2**= "10 to 50", **3**= "51 to 100", **4**="101 to 200, **5**= "More than 200"
Who do you sell your products to?	**1**= "Individuals", **2**= "Businesses/organisations", **3**= "Individuals and businesses /organisations"
Are your products sold on the internet?	**1**= "Yes",**2**= "No"
Company allows customer credit card payment through the company's website	**1**= "Yes",**2**= "No"
Customers can place orders through the company's website	**1**= "Yes",**2**= "No"
Customer services are provided through the company's website	**1**= "Yes",**2**= "No"
The company places orders with suppliers over the internet	**1**= "Yes",**2**= "No"
When does your company expect to have a strategy for developing E-Commerce?	**1**= "Have it now", **2**="Within a year" , **3**="Within 3 years" , **4**= "In more than 3 years", **5**= "Never"
When does your company expect to have a computerised database of your company's customers	**1**= "Have it now", **2**="Within a year" , **3**="Within 3 years" , **4**= "In more than 3 years", **5**= "Never"
When does your company expect to have a computerised database	**1**= "Have it now", **2**="Within a year" , **3**="Within 3 years" , **4**= "In more than 3 years", **5**= "Never"

of your company's suppliers	
When does your company expect to have a computerised inventory of your company's products or services	**1**= "Have it now", **2**="Within a year" , **3**="Within 3 years" , **4**= "In more than 3 years", **5**= "Never"
When does your company expect to have an electronic E-mail?	**1**= "Have it now", **2**="Within a year" , **3**="Within 3 years" , **4**= "In more than 3 years", **5**= "Never"
When does your company expect to have access to the internet?	**1**= "Have it now", **2**="Within a year" , **3**="Within 3 years" , **4**= "In more than 3 years", **5**= "Never"
When does your company expect to have a website demonstrating your company's products or services?	**1**= "Have it now", **2**="Within a year" , **3**="Within 3 years" , **4**= "In more than 3 years", **5**= "Never"
When does your company expect to have customer payment by credit card through the company's website?	**1**= "Have it now", **2**="Within a year" , **3**="Within 3 years" , **4**= "In more than 3 years", **5**= "Never"
When does your company expect to receive customers' orders through the company's website?	**1**= "Have it now", **2**="Within a year" , **3**="Within 3 years" , **4**= "In more than 3 years", **5**= "Never"
When does your company expect to provide customer services through the company's website?	**1**= "Have it now", **2**="Within a year" , **3**="Within 3 years" , **4**= "In more than 3 years", **5**= "Never"
When does your company expect to place orders with suppliers over the internet?	**1**= "Have it now", **2**="Within a year" , **3**="Within 3 years" , **4**= "In more than 3 years", **5**= "Never"
Owner/manager support has influenced the decision to adopt E-commerce in your company	**1**= "Strongly Disagree", **2**= "Disagree", **3**= "Neutral ", **4**="Agree", **5**= "Strongly Agree", **6**= "Not applicable"
Presence of IT skills in the company has influenced the decision to adopt E-commerce	**1**= "Strongly Disagree", **2**= "Disagree", **3**= "Neutral ", **4**="Agree", **5**= "Strongly Agree", **6**= "Not applicable"
Owner/manager understanding of the benefits of E-Commerce has influenced the decision to adopt E-commerce in your company	**1**= "Strongly Disagree", **2**= "Disagree", **3**= "Neutral ", **4**="Agree", **5**= "Strongly Agree", **6**= "Not applicable"
External pressure from competitors has influenced the decision to adopt E-Commerce in your company	**1**= "Strongly Disagree", **2**= "Disagree", **3**= "Neutral ", **4**="Agree", **5**= "Strongly Agree", **6**= "Not applicable"
External pressure from industry has influenced the decision to adopt E-Commerce in your	**1**= "Strongly Disagree", **2**= "Disagree", **3**= "Neutral ", **4**="Agree", **5**= "Strongly Agree", **6**= "Not applicable"

company	
External pressure from government has influenced the decision to adopt E-Commerce in your company	**1**= “Strongly Disagree”, **2**= “Disagree”, **3**= “Neutral ”, **4**=“Agree”, **5**= “Strongly Agree”, **6**= “Not applicable”
External pressure from suppliers has influenced the decision to adopt E-Commerce in your company	**1**= “Strongly Disagree”, **2**= “Disagree”, **3**= “Neutral ”, **4**=“Agree”, **5**= “Strongly Agree”, **6**= “Not applicable”
External pressure from customers has influenced the decision to adopt E-Commerce in your company	**1**= “Strongly Disagree”, **2**= “Disagree”, **3**= “Neutral ”, **4**=“Agree”, **5**= “Strongly Agree”, **6**= “Not applicable”
Compatibility with company's business processes has influenced the decision to adopt E-Commerce in your company	**1**= “Strongly Disagree”, **2**= “Disagree”, **3**= “Neutral ”, **4**=“Agree”, **5**= “Strongly Agree”, **6**= “Not applicable”
Compatibility with existing company's technology infrastructure has influenced the decision to adopt E-Commerce in your company	**1**= “Strongly Disagree”, **2**= “Disagree”, **3**= “Neutral ”, **4**=“Agree”, **5**= “Strongly Agree”, **6**= “Not applicable”
Compatibility with existing company's organisational culture has influenced the decision to adopt E-Commerce in your company	**1**= “Strongly Disagree”, **2**= “Disagree”, **3**= “Neutral ”, **4**=“Agree”, **5**= “Strongly Agree”, **6**= “Not applicable”
Compatibility with company's values has influenced the decision to adopt E-Commerce in your company	**1**= “Strongly Disagree”, **2**= “Disagree”, **3**= “Neutral ”, **4**=“Agree”, **5**= “Strongly Agree”, **6**= “Not applicable”
Compatibility with company's preferred work practices has influenced the decision to adopt E-Commerce in your company	**1**= “Strongly Disagree”, **2**= “Disagree”, **3**= “Neutral ”, **4**=“Agree”, **5**= “Strongly Agree”, **6**= “Not applicable”
Availability of financial resources to adopt E-Commerce has influenced the decision to adopt E-Commerce in your company	**1**= “Strongly Disagree”, **2**= “Disagree”, **3**= “Neutral ”, **4**=“Agree”, **5**= “Strongly Agree”, **6**= “Not applicable”
Availability of technological resources to adopt E-Commerce has influenced the decision to	**1**= “Strongly Disagree”, **2**= “Disagree”, **3**= “Neutral ”, **4**=“Agree”, **5**= “Strongly Agree”, **6**= “Not applicable”

adopt E-Commerce in your company	
The size of the company has influenced the decision to adopt E-Commerce	**1**= "Strongly Disagree", **2**= "Disagree", **3**= "Neutral ", **4**="Agree", **5**= "Strongly Agree", **6**= "Not applicable"
The business type of the company has influenced the decision to adopt E-Commerce	**1**= "Strongly Disagree", **2**= "Disagree", **3**= "Neutral ", **4**="Agree", **5**= "Strongly Agree", **6**= "Not applicable"
Previous use of E-Commerce has influenced the decision to adopt E-Commerce	**1**= "Strongly Disagree", **2**= "Disagree", **3**= "Neutral ", **4**="Agree", **5**= "Strongly Agree", **6**= "Not applicable"
Top management is enthusiastic about the adoption of E-Commerce	**1**= "Strongly Disagree", **2**= "Disagree", **3**= "Neutral ", **4**="Agree", **5**= "Strongly Agree", **6**= "Not applicable"
E-Commerce technology enhances the job performance of the company's employees	**1**= "Strongly Disagree", **2**= "Disagree", **3**= "Neutral ", **4**="Agree", **5**= "Strongly Agree", **6**= "Not applicable"
E-Commerce enables the company's employees to accomplish specific tasks more quickly	**1**= "Strongly Disagree", **2**= "Disagree", **3**= "Neutral ", **4**="Agree", **5**= "Strongly Agree", **6**= "Not applicable"
E-Commerce is integrated into the company's business strategy	**1**= "Strongly Disagree", **2**= "Disagree", **3**= "Neutral ", **4**="Agree", **5**= "Strongly Agree", **6**= "Not applicable"
E-Commerce is integrated into business management long term objectives	**1**= "Strongly Disagree", **2**= "Disagree", **3**= "Neutral ", **4**="Agree", **5**= "Strongly Agree", **6**= "Not applicable"
Learning to operate E-Commerce is easy	**1**= "Strongly Disagree", **2**= "Disagree", **3**= "Neutral ", **4**="Agree", **5**= "Strongly Agree", **6**= "Not applicable"
E-Commerce is flexible to interact with	**1**= "Strongly Disagree", **2**= "Disagree", **3**= "Neutral ", **4**="Agree", **5**= "Strongly Agree", **6**= "Not applicable"
The interaction with E-Commerce is clear and understandable	**1**= "Strongly Disagree", **2**= "Disagree", **3**= "Neutral ", **4**="Agree", **5**= "Strongly Agree", **6**= "Not applicable"
It is easy to become skillful at using E-Commerce	**1**= "Strongly Disagree", **2**= "Disagree", **3**= "Neutral ", **4**="Agree", **5**= "Strongly Agree", **6**= "Not applicable"
E-Commerce is easy to use	**1**= "Strongly Disagree", **2**= "Disagree", **3**= "Neutral ", **4**="Agree", **5**= "Strongly Agree", **6**= "Not applicable"
E-Commerce requires basic computer skills	**1**= "Strongly Disagree", **2**= "Disagree", **3**= "Neutral ", **4**="Agree", **5**= "Strongly Agree", **6**= "Not applicable"
Expert skills are needed to use E-Commerce	**1**= "Strongly Disagree", **2**= "Disagree", **3**= "Neutral ", **4**="Agree", **5**= "Strongly Agree", **6**= "Not applicable"
E-Commerce is consistent with the company's technology	**1**= "Strongly Disagree", **2**= "Disagree", **3**= "Neutral ", **4**="Agree", **5**= "Strongly Agree", **6**= "Not applicable"

infrastructure	
E-Commerce is difficult to implement	**1**= "Strongly Disagree", **2**= "Disagree", **3**= "Neutral ", **4**="Agree", **5**= "Strongly Agree", **6**= "Not applicable"
	1= "Strongly Disagree", **2**= "Disagree", **3**= "Neutral ", **4**="Agree", **5**= "Strongly Agree", **6**= "Not applicable"
It is expensive to implement E-Commerce	**1**= "Strongly Disagree", **2**= "Disagree", **3**= "Neutral ", **4**="Agree", **5**= "Strongly Agree", **6**= "Not applicable"
	1= "Strongly Disagree", **2**= "Disagree", **3**= "Neutral ", **4**="Agree", **5**= "Strongly Agree", **6**= "Not applicable"
E-Commerce was implemented by an external third party	**1**= "Strongly Disagree", **2**= "Disagree", **3**= "Neutral ", **4**="Agree", **5**= "Strongly Agree", **6**= "Not applicable"
The company relies on an external third party for the maintenance of E-Commerce	**1**= "Strongly Disagree", **2**= "Disagree", **3**= "Neutral ", **4**="Agree", **5**= "Strongly Agree", **6**= "Not applicable"
The company relies on the skills of an external third party to run some of its E-Commerce activities	**1**= "Strongly Disagree", **2**= "Disagree", **3**= "Neutral ", **4**="Agree", **5**= "Strongly Agree", **6**= "Not applicable"
The company outsources all of its E-Commerce activities	**1**= "Strongly Disagree", **2**= "Disagree", **3**= "Neutral ", **4**="Agree", **5**= "Strongly Agree", **6**= "Not applicable"
Improve information exchange with customers	**1**= "Not at all important", **2**= "Somehow not important", **3**="Neutral", **4**= "Important", **5**= "Very important"
Increase customer loyalty and retention	**1**= "Not at all important", **2**= "Somehow not important", **3**="Neutral", **4**= "Important", **5**= "Very important"
Improve service to the customer	**1**= "Not at all important", **2**= "Somehow not important", **3**="Neutral", **4**= "Important", **5**= "Very important"
Provide easier access to international markets	**1**= "Not at all important", **2**= "Somehow not important", **3**="Neutral", **4**= "Important", **5**= "Very important"
Expand business reach	**1**= "Not at all important", **2**= "Somehow not important", **3**="Neutral", **4**= "Important", **5**= "Very important"
Reduce costs of maintaining up-to-date company information	**1**= "Not at all important", **2**= "Somehow not important", **3**="Neutral", **4**= "Important", **5**= "Very important"
Improve information exchange with suppliers	**1**= "Not at all important", **2**= "Somehow not important", **3**="Neutral", **4**= "Important", **5**= "Very important"
Reduce costs through web-based purchasing and procurement	**1**= "Not at all important", **2**= "Somehow not important", **3**="Neutral", **4**= "Important", **5**= "Very important"
Improve the competitive position of your company	**1**= "Not at all important", **2**= "Somehow not important", **3**="Neutral", **4**= "Important", **5**= "Very important"
Attract new investment to the company	**1**= "Not at all important", **2**= "Somehow not important", **3**="Neutral", **4**= "Important", **5**= "Very important"
Raising/improving company profile	**1**= "No benefits at all", **2**= "Somehow no benefits", **3**= "Neutral", **4**= "benefits", **5**= "Considerable benefits", **6**= "Not applicable"
Increasing sales/inquiries	**1**= "No benefits at all", **2**= "Somehow no benefits", **3**= "Neutral", **4**= "benefits", **5**= "Considerable benefits", **6**= "Not applicable"
Extending customer base	**1**= "No benefits at all", **2**= "Somehow no benefits", **3**= "Neutral", **4**= "benefits", **5**= "Considerable benefits", **6**= "Not applicable"

Improving customer relationships	**1**= "No benefits at all", **2**= "Somehow no benefits", **3**= "Neutral", **4**= "benefits", **5**= "Considerable benefits", **6**= "Not applicable"
Improving supplier relationships	**1**= "No benefits at all", **2**= "Somehow no benefits", **3**= "Neutral", **4**= "benefits", **5**= "Considerable benefits", **6**= "Not applicable"
Speeding up processes	**1**= "No benefits at all", **2**= "Somehow no benefits", **3**= "Neutral", **4**= "benefits", **5**= "Considerable benefits", **6**= "Not applicable"
Reducing costs e.g. transaction, marketing	**1**= "No benefits at all", **2**= "Somehow no benefits", **3**= "Neutral", **4**= "benefits", **5**= "Considerable benefits", **6**= "Not applicable"
Keeping up to date with products, services and market news	**1**= "No benefits at all", **2**= "Somehow no benefits", **3**= "Neutral", **4**= "benefits", **5**= "Considerable benefits", **6**= "Not applicable"
Keeping ahead of/abreast of competition	**1**= "No benefits at all", **2**= "Somehow no benefits", **3**= "Neutral", **4**= "benefits", **5**= "Considerable benefits", **6**= "Not applicable"
Flexibility in terms of customer payment options	**1**= "No benefits at all", **2**= "Somehow no benefits", **3**= "Neutral", **4**= "benefits", **5**= "Considerable benefits", **6**= "Not applicable"
Flexibility in terms of placing orders with suppliers	**1**= "No benefits at all", **2**= "Somehow no benefits", **3**= "Neutral", **4**= "benefits", **5**= "Considerable benefits", **6**= "Not applicable"
Customer's convenience	**1**= "No benefits at all", **2**= "Somehow no benefits", **3**= "Neutral", **4**= "benefits", **5**= "Considerable benefits", **6**= "Not applicable"
The company is not convinced of the financial and business benefits	**1**= "Not at all important", **2**= "Somehow not important", **3**="Neutral", **4**= "Important", **5**= "Very important"
The company has limited knowledge of the required technology	**1**= "Not at all important", **2**= "Somehow not important", **3**="Neutral", **4**= "Important", **5**= "Very important"
E-Commerce use is too low among customers	**1**= "Not at all important", **2**= "Somehow not important", **3**="Neutral", **4**= "Important", **5**= "Very important"
E-Commerce use is too low among suppliers	**1**= "Not at all important", **2**= "Somehow not important", **3**="Neutral", **4**= "Important", **5**= "Very important"
Level of computerisation is too low in the company	**1**= "Not at all important", **2**= "Somehow not important", **3**="Neutral", **4**= "Important", **5**= "Very important"
Cost of computers and network technologies is too high	**1**= "Not at all important", **2**= "Somehow not important", **3**="Neutral", **4**= "Important", **5**= "Very important"
Telecommunications services are not dependable	**1**= "Not at all important", **2**= "Somehow not important", **3**="Neutral", **4**= "Important", **5**= "Very important"
Company has concerns about internet security	**1**= "Not at all important", **2**= "Somehow not important", **3**="Neutral", **4**= "Important", **5**= "Very important"
Company has concerns about legal issues, contracts and/or liability	**1**= "Not at all important", **2**= "Somehow not important", **3**="Neutral", **4**= "Important", **5**= "Very important"
What is the approximate annual turnover of your company?	**1**= "Less than R 100,000", **2**= "R 100,000 to R 300,000", **3**= "R300,001 to R 500,000 ", **4**= "500,001 to R 1,000,000", **5**= R 1,000,001 to R 2,000,000, **6**="R 2,000,001 to R 3,000,000", **7**= "Above R 3,000,000"

iii. Kolmogorov and Shapiro tests results

Tests of Normality

	The company has adopted E-Commerce	Kolmogorov-Smirnov			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Your age	Yes	.268	74	.000	.783	74	.000
	No	.281	98	.000	.773	98	.000
Where is the business based?	Yes	.457	74	.000	.555	74	.000
	No	.398	98	.000	.618	98	.000
Your gender	Yes	.340	74	.000	.636	74	.000
	No	.445	98	.000	.573	98	.000
Your role in the company	Yes	.236	74	.000	.799	74	.000
	No	.299	98	.000	.759	98	.000
The business is	Yes	.308	74	.000	.768	74	.000
	No	.401	98	.000	.656	98	.000
How long has your business been established for?	Yes	.236	74	.000	.849	74	.000
	No	.222	98	.000	.843	98	.000
Which business sector best describes your company's primary business	Yes	.125	74	.006	.931	74	.001
	No	.320	98	.000	.821	98	.000
What is the approximate number of full-time employees in your company?	Yes	.263	74	.000	.866	74	.000
	No	.350	98	.000	.732	98	.000
Who do you sell your products to?	Yes	.408	74	.000	.630	74	.000
	No	.465	98	.000	.554	98	.000
Are your products sold on the internet?	Yes	.512	74	.000	.425	74	.000
Company allows customer credit card payment through the company's website	Yes	.507	74	.000	.444	74	.000
Customers can place orders through the company's website	Yes	.470	74	.000	.533	74	.000
Customer services are provided through the company's website	Yes	.507	74	.000	.444	74	.000
The company places orders with suppliers over the internet	Yes	.489	74	.000	.493	74	.000
When does your company	Yes	.522	74	.000	.327	74	.000

expect to have a strategy for developing E-Commerce?	No	.180	98	.000	.876	98	.000
When does your company expect to have a computerised database of your company's customers	Yes	.512	74	.000	.341	74	.000
	No	.220	98	.000	.864	98	.000
When does your company expect to have a computerised database of your company's suppliers	Yes	.494	74	.000	.455	74	.000
	No	.206	98	.000	.857	98	.000
When does your company expect to have a computerised inventory of your company's products or services	Yes	.508	74	.000	.378	74	.000
	No	.212	98	.000	.855	98	.000
When does your company expect to have an electronic E-mail?	Yes	.528	74	.000	.254	74	.000
	No	.300	98	.000	.756	98	.000
When does your company expect to have access to the internet?	Yes	.540	74	.000	.198	74	.000
	No	.218	98	.000	.836	98	.000
When does your company expect to have a website demonstrating your company's products or services?	Yes	.521	74	.000	.189	74	.000
	No	.194	98	.000	.868	98	.000
When does your company expect to have customer payment by credit card through the company's website?	Yes	.485	74	.000	.391	74	.000
	No	.245	98	.000	.811	98	.000
When does your company expect to receive customers' orders through the company's website?	Yes	.449	74	.000	.486	74	.000
	No	.237	98	.000	.811	98	.000
When does your company expect to provide customer services through the company's website?	Yes	.485	74	.000	.391	74	.000
	No	.239	98	.000	.812	98	.000
When does your company	Yes	.477	74	.000	.457	74	.000

expect to place orders with suppliers over the internet?	No	.261	98	.000	.814	98	.000
Owner/manager support has influenced the decision to adopt E-commerce in your company	Yes	.319	74	.000	.771	74	.000
Presence of IT skills in the company has influenced the decision to adopt E-commerce	Yes	.335	74	.000	.751	74	.000
Owner/manager understanding of the benefits of E-Commerce has influenced the decision to adopt E-commerce in your company	Yes	.432	74	.000	.166	74	.000
External pressure from competitors has influenced the decision to adopt E-Commerce in your company	Yes	.338	74	.000	.785	74	.000
External pressure from industry has influenced the decision to adopt E-Commerce in your company	Yes	.358	74	.000	.776	74	.000
External pressure from government has influenced the decision to adopt E-Commerce in your company	Yes	.345	74	.000	.798	74	.000
External pressure from suppliers has influenced the decision to adopt E-Commerce in your company	Yes	.318	74	.000	.806	74	.000
External pressure from customers has influenced the decision to adopt E-Commerce in your company	Yes	.301	74	.000	.817	74	.000

Compatibility with company's business processes has influenced the decision to adopt E-Commerce in your company	Yes	.329	74	.000	.794	74	.000
Compatibility with existing company's technology infrastructure has influenced the decision to adopt E-Commerce in your company	Yes	.296	74	.000	.819	74	.000
Compatibility with existing company's organisational culture has influenced the decision to adopt E-Commerce in your company	Yes	.349	74	.000	.745	74	.000
Compatibility with company's values has influenced the decision to adopt E-Commerce in your company	Yes	.361	74	.000	.711	74	.000
Compatibility with company's preferred work practices has influenced the decision to adopt E-Commerce in your company	Yes	.334	74	.000	.752	74	.000
Availability of financial resources to adopt E-Commerce has influenced the decision to adopt E-Commerce in your company	Yes	.394	74	.000	.686	74	.000
Availability of technological resources to adopt E-Commerce has influenced the decision to adopt E-Commerce in your company	Yes	.370	74	.000	.717	74	.000

The size of the company has influenced the decision to adopt E-Commerce	Yes	.237	74	.000	.849	74	.000
The business type of the company has influenced the decision to adopt E-Commerce	Yes	.245	74	.000	.809	74	.000
Previous use of E-Commerce has influenced the decision to adopt E-Commerce	Yes	.257	74	.000	.855	74	.000
Top management is enthusiastic about the adoption of E-Commerce	Yes	.365	74	.000	.699	74	.000
E-Commerce technology enhances the job performance of the company's employees	Yes	.353	74	.000	.732	74	.000
E-Commerce enables the company's employees to accomplish specific tasks more quickly	Yes	.338	74	.000	.743	74	.000
E-Commerce is integrated into the company's business strategy	Yes	.379	74	.000	.696	74	.000
E-Commerce is integrated into business management long term objectives	Yes	.329	74	.000	.760	74	.000
Learning to operate E-Commerce is easy	Yes	.246	74	.000	.836	74	.000
E-Commerce is flexible to interact with	Yes	.255	74	.000	.834	74	.000
The interaction with E-Commerce is clear and understandable	Yes	.249	74	.000	.804	74	.000
It is easy to become skillful at using E-Commerce	Yes	.349	74	.000	.741	74	.000
E-Commerce is easy to use	Yes	.357	74	.000	.722	74	.000
E-Commerce requires basic computer skills	Yes	.308	74	.000	.798	74	.000
Expert skills are needed to use E-Commerce	Yes	.334	74	.000	.813	74	.000

E-Commerce is consistent with the company's technology infrastructure	Yes	.343	74	.000	.743	74	.000
E-Commerce is difficult to implement	Yes	.459	74	.000	.162	74	.000
	No	.530	98	.000	.076	98	.000
It is expensive to implement E-Commerce	Yes	.269	74	.000	.829	74	.000
	No	.530	98	.000	.076	98	.000
E-Commerce was implemented by an external third party	Yes	.275	74	.000	.842	74	.000
The company relies on an external third party for the maintenance of E-Commerce	Yes	.281	74	.000	.841	74	.000
The company relies on the skills of an external third party to run some of its E-Commerce activities	Yes	.270	74	.000	.842	74	.000
The company outsources all of its E-Commerce activities	Yes	.239	74	.000	.864	74	.000
Improve information exchange with customers	Yes	.368	74	.000	.724	74	.000
	No	.330	98	.000	.718	98	.000
Increase customer loyalty and retention	Yes	.338	74	.000	.700	74	.000
	No	.290	98	.000	.727	98	.000
Improve service to the customer	Yes	.368	74	.000	.690	74	.000
	No	.308	98	.000	.710	98	.000
Provide easier access to international markets	Yes	.359	74	.000	.661	74	.000
	No	.292	98	.000	.738	98	.000
Expand business reach	Yes	.348	74	.000	.738	74	.000
	No	.334	98	.000	.707	98	.000
Reduce costs of maintaining up-todate company information	Yes	.316	74	.000	.772	74	.000
	No	.294	98	.000	.762	98	.000
Improve information exchange with suppliers	Yes	.286	74	.000	.775	74	.000
	No	.321	98	.000	.714	98	.000
Reduce costs through web-based purchasing and procurement	Yes	.306	74	.000	.775	74	.000
	No	.293	98	.000	.753	98	.000
Improve the competitive position of your company	Yes	.329	74	.000	.759	74	.000
	No	.305	98	.000	.722	98	.000

Attract new investment to the company	Yes	.290	74	.000	.795	74	.000
	No	.290	98	.000	.763	98	.000
Raising/improving company profile	Yes	.301	74	.000	.697	74	.000
	No	.537	98	.000	.160	98	.000
Increasing sales/inquiries	Yes	.329	74	.000	.704	74	.000
	No	.534	98	.000	.120	98	.000
Extending customer base	Yes	.308	74	.000	.734	74	.000
	No	.537	98	.000	.124	98	.000
Improving customer relationships	Yes	.294	74	.000	.755	74	.000
	No	.534	98	.000	.120	98	.000
Improving supplier relationships	Yes	.258	74	.000	.717	74	.000
	No	.537	98	.000	.124	98	.000
Speeding up processes	Yes	.285	74	.000	.766	74	.000
	No	.534	98	.000	.120	98	.000
Reducing costs e.g. transaction, marketing	Yes	.271	74	.000	.750	74	.000
	No	.531	98	.000	.147	98	.000
Keeping up to date with products, services and market news	Yes	.328	74	.000	.736	74	.000
	No	.538	98	.000	.166	98	.000
Keeping ahead of/abreast of competition	Yes	.307	74	.000	.749	74	.000
	No	.537	98	.000	.160	98	.000
Flexibility in terms of customer payment options	Yes	.308	74	.000	.759	74	.000
	No	.537	98	.000	.160	98	.000
Flexibility in terms of placing orders with suppliers	Yes	.271	74	.000	.731	74	.000
	No	.540	98	.000	.163	98	.000
Customer's convenience	Yes	.293	74	.000	.737	74	.000
	No	.537	98	.000	.198	98	.000
The company is not convinced of the financial and business benefits	Yes	.403	74	.000	.693	74	.000
	No	.272	98	.000	.868	98	.000
The company has limited knowledge of the required technology	Yes	.419	74	.000	.651	74	.000
	No	.228	98	.000	.853	98	.000
E-Commerce use is too low among customers	Yes	.382	74	.000	.712	74	.000
	No	.192	98	.000	.887	98	.000
E-Commerce use is too low among suppliers	Yes	.403	74	.000	.677	74	.000
	No	.193	98	.000	.899	98	.000
Level of computerrisation is too low in the company	Yes	.321	74	.000	.805	74	.000
	No	.192	98	.000	.891	98	.000
Cost of computers and	Yes	.249	74	.000	.833	74	.000

network technologies is too high	No	.195	98	.000	.856	98	.000
Telecomunications services are not dependable	Yes	.244	74	.000	.849	74	.000
	No	.200	98	.000	.878	98	.000
Company has concerns about internet security	Yes	.207	74	.000	.851	74	.000
	No	.205	98	.000	.855	98	.000
Company has concerns about legal issues, contracts and/or liability	Yes	.235	74	.000	.854	74	.000
	No	.235	98	.000	.870	98	.000
	Yes	.184	74	.000	.937	74	.001
	No	.175	98	.000	.885	98	.000

Appendix B: Cross tabulations

Cross tabulation between age, gender and role in the company

Your age * Your gender * Your role in the company Cross tabulation

Your role in the company				Your gender		Total
				Female	Male	
Owner and Manager	Your age	25 or younger	Count	5	6	11
			% within Your age	45.5%	54.5%	100.0%
		26 to 35	Count	3	24	27
			% within Your age	11.1%	88.9%	100.0%
		Above 35	Count	8	29	37
			% within Your age	21.6%	78.4%	100.0%
Owner	Your age	25 or younger	Count	10	13	23
			% within Your age	43.5%	56.5%	100.0%
		26 to 35	Count	19	36	55
			% within Your age	34.5%	65.5%	100.0%
		Above 35	Count	20	27	47
			% within Your age	42.6%	57.4%	100.0%
Manager	Your age	25 or younger	Count	15	19	34
			% within Your age	44.1%	55.9%	100.0%
		26 to 35	Count	21	34	55
			% within Your age	38.2%	61.8%	100.0%
		Above 35	Count	14	42	56
			% within Your age	25.0%	75.0%	100.0%
Total	Your age	25 or younger	Count	30	38	68
			% within Your age	44.1%	55.9%	100.0%

	26 to 35	Count	43	94	137
		% within Your age	31.4%	68.6%	100.0%
	Above 35	Count	42	98	140
		% within Your age	30.0%	70.0%	100.0%

Cross tabulation between e-commerce adoption and age of the business

How long has your business been established for? * The company has adopted E-Commerce Cross tabulation

			The company has adopted E-Commerce		
			Yes	No	Total
How long has your business been established for?	Less than 1 year	Count	5	32	37
		Expected Count	15.4	21.6	37.0
		%	13.5%	86.5%	100.0%
	From 1 to less than 4 years	Count	41	74	115
		Expected Count	47.9	67.1	115.0
		%	35.7%	64.3%	100.0%
	4 years and more	Count	104	104	208
		Expected Count	86.7	121.3	208.0
		%	50.0%	50.0%	100.0%

Cross tabulation between e-commerce adoption and extent of business coverage

The business is * The company has adopted E-Commerce Cross tabulation

			The company has adopted E-Commerce		
			Yes	No	Total
The business is	National and international	Count	11	2	13
		Expected Count	5.4	7.6	13.0
		%	84.6%	15.4%	100.0%
	International	Count	11	6	17
		Expected Count	7.1	9.9	17.0
		%	64.7%	35.3%	100.0%
	National	Count	83	47	130
		Expected Count	54.3	75.7	130.0

		%	63.8%	36.2%	100.0%
	Local	Count	45	154	199
		Expected Count	83.1	115.9	199.0
		%	22.6%	77.4%	100.0%

Cross tabulation between business sector and number of full-time employees

Which business sector best describes your company's primary business * What is the approximate number of full-time employees in your company? Cross tabulation

			What is the approximate number of full-time employees in your company?			
			Less than 10	10 to 50	More than 50	Total
Which business sector best describes your company's primary business	Construction	Count	0	5	14	19
		%	.0%	5.1%	12.7%	5.4%
	Manufacturing	Count	2	10	14	26
		%	1.4%	10.2%	12.7%	7.3%
	Catering/accommodation	Count	8	13	13	34
		%	5.5%	13.3%	11.8%	9.6%
	Wholesale	Count	15	20	19	54
		%	10.3%	20.4%	17.3%	15.3%
	Retail	Count	102	30	16	148
		%	69.9%	30.6%	14.5%	41.8%
	Finance	Count	6	10	20	36
		%	4.1%	10.2%	18.2%	10.2%
	Transport	Count	13	10	14	37
		%	8.9%	10.2%	12.7%	10.5%

Cross tabulation between E-commerce adoption and extent of business coverage

The business is * The company has adopted E-Commerce Cross tabulation

			The company has adopted E-Commerce		
			Yes	No	Total
The business is	National and international	Count	11	2	13
		%	7.3%	1.0%	3.6%
	International	Count	11	6	17
		%	7.3%	2.9%	4.7%
	National	Count	83	47	130
		%	55.3%	22.5%	36.2%
	Local	Count	45	154	199
		%	30.0%	73.7%	55.4%

Cross tabulation between customer credit card payment through the company's website and concerns about internet security

Company has concerns about internet security * Company allows customer credit card payment through the company's website * Where is the business based? Cross tabulation

				Company allows customer credit card payment through the company's website		
Where is the business based?				Yes	No	Total
Durban	Company has concerns about internet security	Not at all important	Count	0	10	10
			%	.0%	6.9%	5.9%
		Somehow not important	Count	3	12	15
			%	12.0%	8.3%	8.9%
		Neutral	Count	5	51	56
			%	20.0%	35.4%	33.1%
		Important	Count	10	41	51
			%	40.0%	28.5%	30.2%
		Very important	Count	7	30	37
			%	28.0%	20.8%	21.9%
Pietermaritzburg	Company has concerns about internet security	Not at all important	Count	0	5	5
			%	.0%	7.8%	3.4%
		Somehow not important	Count	0	3	3
			%	.0%	4.7%	2.0%

	Neutral	Count	18	6	24
		%	21.4%	9.4%	16.2%
	Important	Count	46	19	65
		%	54.8%	29.7%	43.9%
	Very important	Count	20	31	51
		%	23.8%	48.4%	34.5%

Cross tabulation between customer credit card payment and extent of business coverage

The business is * Company allows customer credit card payment through the company's website * Where is the business based? Cross tabulation

Where is the business based?				Company allows customer credit card payment through the company's website		Total
				Yes	No	
Durban	The business is	National and international	Count	2	1	3
			%	7.7%	.7%	1.7%
		International	Count	3	8	11
			%	11.5%	5.2%	6.1%
		National	Count	15	34	49
			%	57.7%	22.2%	27.4%
		Local	Count	6	110	116
			%	23.1%	71.9%	64.8%
Pietermaritzburg	The business is	National and international	Count	7	3	10
			%	7.4%	3.5%	5.6%
		International	Count	5	1	6
			%	5.3%	1.2%	3.3%
		National	Count	56	25	81
			%	59.6%	29.1%	45.0%
		Local	Count	26	57	83
			%	27.7%	66.3%	46.1%

Cross tabulation between customer credit card payment through the company's website and concerns about internet security

Company has concerns about internet security * Company allows customer credit card payment through the company's website * Where is the business based? Cross tabulation

Where is the business based?				Company allows customer credit card payment through the company's website		Total
				Yes	No	
Durban	Company has concerns about internet security	Not at all important	Count	0	10	10
			%	.0%	6.9%	5.9%
		Somehow not important	Count	3	12	15
			%	12.0%	8.3%	8.9%
		Neutral	Count	5	51	56
			%	20.0%	35.4%	33.1%
		Important	Count	10	41	51
			%	40.0%	28.5%	30.2%
		Very important	Count	7	30	37
			%	28.0%	20.8%	21.9%
Pietermaritzburg	Company has concerns about internet security	Not at all important	Count	0	5	5
			%	.0%	7.8%	3.4%
		Somehow not important	Count	0	3	3
			%	.0%	4.7%	2.0%
		Neutral	Count	18	6	24
			%	21.4%	9.4%	16.2%
		Important	Count	46	19	65
			%	54.8%	29.7%	43.9%
		Very important	Count	20	31	51
			%	23.8%	48.4%	34.5%

Cross tabulation between access to international markets and customer credit card payment

Provide easier access to international markets * Company allows customer credit card payment through the company's website * Where is the business based? Cross tabulation

Where is the business based?				Company allows customer credit card payment through the company's website		
				Yes	No	Total
Durban	Provide easier access to international markets	Not at all important	Count	0	32	32
			%	.0%	22.9%	19.5%
		Somehow not important	Count	2	16	18
			%	8.3%	11.4%	11.0%
		Neutral	Count	2	26	28
			%	8.3%	18.6%	17.1%
		Important	Count	10	18	28
			%	41.7%	12.9%	17.1%
		Very important	Count	10	48	58
			%	41.7%	34.3%	35.4%
Pietermaritzburg	Provide easier access to international markets	Not at all important	Count	1	6	7
			%	1.2%	9.2%	4.7%
		Neutral	Count	1	4	5
			%	1.2%	6.2%	3.3%
		Important	Count	62	22	84
			%	72.9%	33.8%	56.0%
		Very important	Count	21	33	54
			%	24.7%	50.8%	36.0%

Cross tabulation between customer online payment by credit card through company's website and business expansion.

Expand business reach * Company allows customer credit card payment through the company's website * Where is the business based? Cross tabulation

Where is the business based?				Company allows customer credit card payment through the company's website		Total
				Yes	No	
Durban	Expand business reach	Not at all important	Count	0	12	12
			%	.0%	8.6%	7.3%
		Somehow not important	Count	1	15	16
			%	4.2%	10.7%	9.8%
		Neutral	Count	4	24	28
			%	16.7%	17.1%	17.1%
		Important	Count	11	25	36
			%	45.8%	17.9%	22.0%
		Very important	Count	8	64	72
			%	33.3%	45.7%	43.9%
Pietermaritzburg	Expand business reach	Not at all important	Count	0	2	2
			%	.0%	3.1%	1.3%
		Neutral	Count	5	5	10
			%	5.8%	7.7%	6.6%
		Important	Count	57	23	80
			%	66.3%	35.4%	53.0%
		Very important	Count	24	35	59
			%	27.9%	53.8%	39.1%

Cross tabulation between customers placing orders through the company's website and extent of business coverage

The business is * Customers can place orders through the company's website * Where is the business based? Cross tabulation

Where is the business based?				Customers can place orders through the company's website		Total
				Yes	No	
Durban	The business is	National and international	Count	3	0	3
			%	11.5%	.0%	1.7%
		International	Count	2	9	11
			%	7.7%	5.9%	6.1%
		National	Count	13	36	49
			%	50.0%	23.5%	27.4%
		Local	Count	8	108	116
			%	30.8%	70.6%	64.8%
Pietermaritzburg	The business is	National and international	Count	8	2	10
			%	9.4%	2.1%	5.6%
		International	Count	5	1	6
			%	5.9%	1.1%	3.3%
		National	Count	49	32	81
			%	57.6%	33.7%	45.0%
		Local	Count	23	60	83
			%	27.1%	63.2%	46.1%

Cross tabulation between placing orders through the company's website and credit card payment through the company's website

Company allows customer credit card payment through the company's website * Customers can place orders through the company's website * Where is the business based? Cross tabulation

Where is the business based?				Customers can place orders through the company's website: Yes	Customers can place orders through the company's website: No	Total
Durban	Company allows customer credit card payment through the company's website	Yes	Count	19	7	26
			%	73.1%	4.5%	14.4%
		No	Count	7	147	154
			%	26.9%	95.5%	85.6%
	Total		Count	26	154	180
			%	100.0%	100.0%	100.0%
Pietermaritzburg	Company allows customer credit card payment through the company's website	Yes	Count	83	11	94
			%	97.6%	11.6%	52.2%
		No	Count	2	84	86
			%	2.4%	88.4%	47.8%

Cross tabulation between customers' placement of orders and increase customer loyalty and retention

			Customers can place orders through the company's website: Yes	Customers can place orders through the company's website: No	Total
Increase customer loyalty and retention	Not at all important	Count	0	19	19
		%	0.0%	8.8%	6.0%
	Somehow not important	Count	2	13	15
		%	2.0%	6.0%	4.7%
	Neutral	Count	1	27	28
		%	1.0%	12.6%	8.9%
	Important	Count	66	63	129
		%	65.3%	29.3%	40.8%
	Very important	Count	32	93	125

Cross tabulation between customers placement of orders and improve competitive position of the company

			Customers can place orders through the company's website		Total
			Yes	No	
Improve the competitive position of your company	Not at all important	Count	0	13	13
		%	0.0%	6.1%	4.1%
	Somehow not important	Count	0	7	7
		%	0.0%	3.3%	2.2%
	Neutral	Count	6	31	37
		%	5.9%	14.5%	11.7%
	Important	Count	60	50	110
		%	59.4%	23.4%	34.9%
	Very important	Count	35	113	148
		%	34.7%	52.8%	47.0%

Cross tabulation between customer services provided through the company's website and extent of business coverage

The business is * Customer services are provided through the company's website * Where is the business based? Cross tabulation

Where is the business based?				Customer services are provided through the company's website		Total
				Yes	No	
Durban	The business is	National and international	Count	3	0	3
			%	9.1%	.0%	1.7%
		International	Count	4	7	11
			%	12.1%	4.8%	6.1%
		National	Count	16	33	49
			%	48.5%	22.6%	27.4%
		Local	Count	10	106	116
			%	30.3%	72.6%	64.8%
Pietermaritzburg	The business is	National and international	Count	8	2	10
			%	9.0%	2.2%	5.6%
		International	Count	6	0	6

		%	6.7%	.0%	3.3%
	National	Count	52	29	81
		%	58.4%	31.9%	45.0%
	Local	Count	23	60	83
		%	25.8%	65.9%	46.1%

Improve service to the customer * Customer services are provided through the company's website Cross tabulation[a]

			Customer services are provided through the company's website		Total
			Yes	No	
Improve service to the customer	Not at all important	Count	0	4	4
		Expected Count	2.1	1.9	4.0
		%	0.0%	5.6%	2.7%
	Neutral	Count	2	3	5
		Expected Count	2.6	2.4	5.0
		%	2.5%	4.2%	3.3%
	Important	Count	57	27	84
		Expected Count	44.2	39.8	84.0
		%	72.2%	38.0%	56.0%
	Very important	Count	20	37	57
		Expected Count	30.0	27.0	57.0
		%	25.3%	52.1%	38.0%

a. Where is the business based? = Pietermaritzburg

The business is * The company places orders with suppliers over the internet Cross tabulation[a]

			The company places orders with suppliers over the internet		Total
			Yes	No	
The business is	National and international	Count	1	2	3
		Expected Count	.5	2.5	3.0
		%	3.3%	1.3%	1.7%
	International	Count	3	8	11
		Expected Count	1.8	9.2	11.0
		%	10.0%	5.4%	6.1%
	National	Count	18	31	49
		Expected Count	8.2	40.8	49.0
		%	60.0%	20.8%	27.4%
	Local	Count	8	108	116
		Expected Count	19.4	96.6	116.0
		%	26.7%	72.5%	64.8%
		Count	30	149	179
		Expected Count	30.0	149.0	179.0

a. Where is the business based? = Durban

The business is * The company places orders with suppliers over the internet Cross tabulation[a]

			The company places orders with suppliers over the internet		Total
			Yes	No	
The business is	National and international	Count	8	2	10
		Expected Count	4.8	5.2	10.0
		%	9.2%	2.2%	5.6%
	International	Count	6	0	6
		Expected Count	2.9	3.1	6.0
		%	6.9%	0.0%	3.3%
	National	Count	49	32	81
		Expected Count	39.2	41.9	81.0
		%	56.3%	34.4%	45.0%
	Local	Count	24	59	83
		Expected Count	40.1	42.9	83.0
		%	27.6%	63.4%	46.1%

a. Where is the business based? = Pietermaritzburg

Company places orders with suppliers* improve information exchange with suppliers: Durban

			The company places orders with suppliers over the internet		Total
			Yes	No	
Improve information exchange with suppliers	Not at all important	Count	0	11	11
		Expected Count	1.8	9.2	11.0
		%	0.0%	8.0%	6.7%
	Somehow not important	Count	0	3	3
		Expected Count	.5	2.5	3.0
		%	0.0%	2.2%	1.8%
	Neutral	Count	2	17	19
		Expected Count	3.1	15.9	19.0
		%	7.4%	12.4%	11.6%
	Important	Count	9	26	35
		Expected Count	5.8	29.2	35.0
		%	33.3%	19.0%	21.3%
	Very important	Count	16	80	96
		Expected Count	15.8	80.2	96.0
		%	59.3%	58.4%	58.5%

a. Where is the business based? = Durban

Company places orders with suppliers* improve information exchange with suppliers: Pietermaritzburg

			The company places orders with suppliers over the internet		Total
			Yes	No	
Reduce costs through web-based purchasing and procurement	Not at all important	Count	1	5	6
		Expected Count	3.1	2.9	6.0
		%	1.3%	6.9%	4.0%
	Somehow not important	Count	0	4	4
		Expected Count	2.1	1.9	4.0
		%	0.0%	5.6%	2.6%
	Neutral	Count	3	6	9
		Expected Count	4.7	4.3	9.0
		%	3.8%	8.3%	6.0%
	Important	Count	51	25	76
		Expected Count	39.8	36.2	76.0
		%	64.6%	34.7%	50.3%
	Very important	Count	24	32	56
		Expected Count	29.3	26.7	56.0
		%	30.4%	44.4%	37.1%
Total		Count	79	72	151
		Expected Count	79.0	72.0	151.0
		%	100.0%	100.0%	100.0%

a. Where is the business based? = Pietermaritzburg

Company places orders with suppliers* Improve information exchange with suppliers: Durban

			The company places orders with suppliers over the internet		Total
			Yes	No	
Improve information exchange with suppliers	Not at all important	Count	0	11	11
		Expected Count	1.8	9.2	11.0
		%	0.0%	8.0%	6.7%
	Somehow not important	Count	0	3	3
		Expected Count	.5	2.5	3.0
		%	0.0%	2.2%	1.8%
	Neutral	Count	2	17	19

		Expected Count	3.1	15.9	19.0
		%	7.4%	12.4%	11.6%
		Count	9	26	35
	Important	Expected Count	5.8	29.2	35.0
		%	33.3%	19.0%	21.3%
		Count	16	80	96
	Very important	Expected Count	15.8	80.2	96.0
		%	59.3%	58.4%	58.5%

a. Where is the business based? = Durban

Company places orders with suppliers* Improve information exchange with suppliers: Pietermaritzburg

			The company places orders with suppliers over the internet		Total
			Yes	No	
		Count	0	5	5
	Not at all important	Expected Count	2.6	2.4	5.0
		%	0.0%	6.9%	3.3%
		Count	1	5	6
	Somehow not important	Expected Count	3.1	2.9	6.0
		%	1.3%	6.9%	4.0%
Improve information exchange with suppliers		Count	3	15	18
	Neutral	Expected Count	9.4	8.6	18.0
		%	3.8%	20.8%	11.9%
		Count	51	15	66
	Important	Expected Count	34.5	31.5	66.0
		%	64.6%	20.8%	43.7%
		Count	24	32	56
	Very important	Expected Count	29.3	26.7	56.0
		%	30.4%	44.4%	37.1%

a. Where is the business based? = Pietermaritzburg

Appendix C: Chi Square Test Results

Chi-Square Test: customer credit card payment*business location

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	57.800[a]	1	.000	.000	.000	
Continuity Correction[b]	56.113	1	.000			
Likelihood Ratio	60.451	1	.000	.000	.000	
Fisher's Exact Test				.000	.000	
Linear-by-Linear Association	57.639[c]	1	.000	.000	.000	.000
N of Valid Cases	360					

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 60.00.

b. Computed only for a 2x2 table

c. The standardized statistic is -7.592.

Chi-Square Test: Customers placing orders through the company's website*business location

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	45.340[a]	1	.000	.000	.000	
Continuity Correction[b]	43.816	1	.000			
Likelihood Ratio	47.148	1	.000	.000	.000	
Fisher's Exact Test				.000	.000	
Linear-by-Linear Association	45.214[c]	1	.000	.000	.000	.000
N of Valid Cases	360					

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 55.50.

b. Computed only for a 2x2 table

c. The standardized statistic is -6.724.

Chi-Square Tests: Providing customer services through the company's website*business location

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	38.881[a]	1	.000	.000	.000	
Continuity Correction[b]	37.505	1	.000			
Likelihood Ratio	39.994	1	.000	.000	.000	
Fisher's Exact Test				.000	.000	
Linear-by-Linear Association	38.773[c]	1	.000	.000	.000	.000
N of Valid Cases	360					

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 61.00.

b. Computed only for a 2x2 table

c. The standardized statistic is -6.227.

Chi-Square Test: Placing orders with suppliers over the internet*business location

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	41.140[a]	1	.000	.000	.000	
Continuity Correction[b]	39.709	1	.000			
Likelihood Ratio	42.483	1	.000	.000	.000	
Fisher's Exact Test				.000	.000	
Linear-by-Linear Association	41.025[c]	1	.000	.000	.000	.000
N of Valid Cases	360					

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 58.50.

b. Computed only for a 2x2 table

c. The standardized statistic is -6.405.

Chi-Square Test: E-commerce adoption*extent of business coverage

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	69.556[a]	3	.000
Likelihood Ratio	71.830	3	.000
Linear-by-Linear Association	57.911	1	.000
N of Valid Cases	359		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 5.43.

Chi-Square: E-commerce adoption*number of employees

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	125.952[a]	3	.000
Likelihood Ratio	140.618	3	.000
Linear-by-Linear Association	123.581	1	.000
N of Valid Cases	356		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 12.64.

Chi-Square Test: E-commerce adoption*annual turnover

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	95.220a	6	.000
Likelihood Ratio	104.201	6	.000
Linear-by-Linear Association	71.484	1	.000
N of Valid Cases	312		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 14.31.

Chi-Square Test: Customer payment by credit card* extent of business coverage: Durban

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	26.396b	3	.000	.000		
Likelihood Ratio	24.049	3	.000	.000		
Fisher's Exact Test	24.992			.000		
Linear-by-Linear Association	22.489c	1	.000	.000	.000	.000
N of Valid Cases	179					

a. Where is the business based? = Durban

b. 3 cells (37.5%) have expected count less than 5. The minimum expected count is .44.

c. The standardized statistic is 4.742.

Chi-Square Test: Customer payment by credit card*extent of business coverage: Pietermaritzburg

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	27.408b	3	.000	.000		
Likelihood Ratio	28.237	3	.000	.000		
Fisher's Exact Test	27.416			.000		
Linear-by-Linear Association	18.620c	1	.000	.000	.000	.000
N of Valid Cases	180					

a. Where is the business based? = Pietermaritzburg

b. 3 cells (37.5%) have expected count less than 5. The minimum expected count is 2.87.

c. The standardized statistic is 4.315.

Chi-Square Tests[a] Customer payment by credit* expand business reach: Durban

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	10.980[b]	4	.027	.025		
Likelihood Ratio	11.554	4	.021	.028		
Fisher's Exact Test	9.066			.043		
Linear-by-Linear Association	.900[c]	1	.343	.349	.197	.046
N of Valid Cases	164					

a. Where is the business based? = Durban

b. 3 cells (30.0%) have expected count less than 5. The minimum expected count is 1.76.

c. The standardized statistic is -.949.

Chi-Square Tests[a] Customer payment by credit card*expand business reach: Pietermaritzburg

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	15.888[b]	3	.001	.000		
Likelihood Ratio	16.825	3	.001	.001		
Fisher's Exact Test	15.588			.001		
Linear-by-Linear Association	1.634[c]	1	.201	.247	.123	.042
N of Valid Cases	151					

a. Where is the business based? = Pietermaritzburg

b. 3 cells (37.5%) have expected count less than 5. The minimum expected count is .86.

c. The standardized statistic is 1.278.

Chi-Square Tests[a] Customer payment by credit card*provide easier access to international markets: Durban

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	10.901[b]	2	.004	.004		
Likelihood Ratio	12.061	2	.002	.003		
Fisher's Exact Test	10.773			.004		
Linear-by-Linear Association	9.100[c]	1	.003	.002	.001	.000
N of Valid Cases	164					

a. Where is the business based? = Durban

b. 1 cells (16.7%) have expected count less than 5. The minimum expected count is 4.10.

c. The standardized statistic is -3.017.

Chi-Square Tests[a] Customer payment by credit card*provide easier access to international markets: Pietermaritzburg

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	11.386[b]	2	.003	.001		
Likelihood Ratio	13.666	2	.001	.001		
Fisher's Exact Test	11.156			.001		
Linear-by-Linear Association	10.559[c]	1	.001	.001	.001	.000
N of Valid Cases	150					

a. Where is the business based? = Pietermaritzburg

b. 4 cells (66.7%) have expected count less than 5. The minimum expected count is 2.17.

c. The standardized statistic is -3.249.

Chi-Square Tests[a] Customer payment by credit card*concerns about internet security: Durban

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	5.024[b]	4	.285	.282		
Likelihood Ratio	6.570	4	.160	.199		
Fisher's Exact Test	4.848			.281		
Linear-by-Linear Association	2.261[c]	1	.133	.143	.078	.026
N of Valid Cases	169					

a. Where is the business based? = Durban

b. 2 cells (20.0%) have expected count less than 5. The minimum expected count is 1.48.

c. The standardized statistic is -1.504.

Chi-Square Tests[a] Customer payment by credit card*concerns about internet security: Pietermaritzburg

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	25.348[b]	4	.000	.000		
Likelihood Ratio	28.612	4	.000	.000		
Fisher's Exact Test	24.615			.000		
Linear-by-Linear Association	.061[c]	1	.805	.862	.439	.068
N of Valid Cases	148					

a. Where is the business based? = Pietermaritzburg

b. 4 cells (40.0%) have expected count less than 5. The minimum expected count is 1.30.

c. The standardized statistic is .246.

Chi-Square Tests[a] Customers placing orders* Customer payment by credit card: Durban

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	84.538[b]	1	.000	.000	.000	
Continuity Correction[c]	79.084	1	.000			
Likelihood Ratio	61.421	1	.000	.000	.000	
Fisher's Exact Test				.000	.000	
Linear-by-Linear Association	84.068[d]	1	.000	.000	.000	.000
N of Valid Cases	180					

a. Where is the business based? = Durban

b. 1 cells (25.0%) have expected count less than 5. The minimum expected count is 3.76.

c. Computed only for a 2x2 table

d. The standardized statistic is 9.169.

Chi-Square Tests: Customers placing orders* Customer payment by credit card: Pietermaritzburg

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	133.191[b]	1	.000	.000	.000	
Continuity Correction[c]	129.763	1	.000			
Likelihood Ratio	162.121	1	.000	.000	.000	
Fisher's Exact Test				.000	.000	
Linear-by-Linear Association	132.451[d]	1	.000	.000	.000	.000
N of Valid Cases	180					

a. Where is the business based? = Pietermaritzburg

b. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 40.61.

c. Computed only for a 2x2 table

d. The standardized statistic is 11.509.

Chi-Square Test: customers' orders*increase customer loyalty and retention

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	45.894[a]	4	.000	.000		
Likelihood Ratio	54.622	4	.000	.000		
Fisher's Exact Test	49.151			.000		
Linear-by-Linear Association	6.770[b]	1	.009	.010	.004	.001
N of Valid Cases	316					

a. 1 cells (10.0%) have expected count less than 5. The minimum expected count is 4.79.

b. The standardized statistic is -2.602.

Chi-Square Test: customers' orders* improve company's competitive position

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	44.040[a]	4	.000	.000		
Likelihood Ratio	48.936	4	.000	.000		
Fisher's Exact Test	43.304			.000		
Linear-by-Linear Association	1.551[b]	1	.213	.232	.117	.023
N of Valid Cases	315					

a. 3 cells (30.0%) have expected count less than 5. The minimum expected count is 2.24.

b. The standardized statistic is -1.245.

Chi-Square Testsa :Customers orders*Extent of business coverage: Durban

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	29.642[b]	3	.000	.000		
Likelihood Ratio	26.643	3	.000	.000		
Fisher's Exact Test	25.839			.000		
Linear-by-Linear Association	26.149[c]	1	.000	.000	.000	.000
N of Valid Cases	179					

a. Where is the business based? = Durban

b. 3 cells (37.5%) have expected count less than 5. The minimum expected count is .55.

c. The standardized statistic is 5.114.

Chi-Square Tests a : Customers orders*Extent of business coverage: Pietermaritzburg

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	32.607[b]	3	.000	.000		
Likelihood Ratio	35.861	3	.000	.000		
Fisher's Exact Test	32.965			.000		
Linear-by-Linear Association	26.496[c]	1	.000	.000	.000	.000
N of Valid Cases	180					

a. Where is the business based? = Pietermaritzburg

b. 3 cells (37.5%) have expected count less than 5. The minimum expected count is 2.97.

c. The standardized statistic is 5.147.

Chi-Square Tests[a] : Customer services* improve service to the customer: Pietermaritzburg

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	19.614[b]	3	.000	.000		
Likelihood Ratio	21.422	3	.000	.000		
Fisher's Exact Test	19.444			.000		
Linear-by-Linear Association	.429[c]	1	.512	.529	.295	.069
N of Valid Cases	150					

a. Where is the business based? = Pietermaritzburg

b. 4 cells (50.0%) have expected count less than 5. The minimum expected count is 1.89.

c. The standardized statistic is .655.

Chi-Square Tests[a] : Customers orders* extent of business coverage: Durban

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	23.565[b]	3	.000	.000		
Likelihood Ratio	22.467	3	.000	.000		
Fisher's Exact Test	23.296			.000		
Linear-by-Linear Association	15.631[c]	1	.000	.000	.000	.000
N of Valid Cases	179					

a. Where is the business based? = Durban

b. 3 cells (37.5%) have expected count less than 5. The minimum expected count is .50.

c. The standardized statistic is 3.954.

Chi-Square Tests[a] : Customer orders* extent of business coverage: Pietermaritzburg

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	27.758[b]	3	.000	.000		
Likelihood Ratio	30.798	3	.000	.000		
Fisher's Exact Test	27.970			.000		
Linear-by-Linear Association	23.430[c]	1	.000	.000	.000	.000
N of Valid Cases	180					

a. Where is the business based? = Pietermaritzburg

b. 3 cells (37.5%) have expected count less than 5. The minimum expected count is 2.90.

c. The standardized statistic is 4.840.

Chi-Square Tests[a] : Company places orders with suppliers* improve information exchange with suppliers: Durban

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	5.427[b]	4	.246	.246		
Likelihood Ratio	7.508	4	.111	.131		
Fisher's Exact Test	4.372			.313		
Linear-by-Linear Association	1.995[c]	1	.158	.172	.088	.029
N of Valid Cases	164					

a. Where is the business based? = Durban

b. 4 cells (40.0%) have expected count less than 5. The minimum expected count is .49.

c. The standardized statistic is -1.413.

Chi-Square Tests[a] :Company places orders with suppliers* improve information exchange with suppliers: Pietermaritzburg

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	17.417[b]	4	.002	.001		
Likelihood Ratio	19.375	4	.001	.001		
Fisher's Exact Test	16.943			.001		
Linear-by-Linear Association	1.483[c]	1	.223	.228	.130	.033
N of Valid Cases	151					

a. Where is the business based? = Pietermaritzburg

b. 6 cells (60.0%) have expected count less than 5. The minimum expected count is 1.91.

c. The standardized statistic is -1.218.

Chi-Square Tests[a] : Chi-Square tests: Company places orders with suppliers*Reduce costs through web-based purchasing and Procurement: Durban

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	7.263[b]	4	.123	.120		
Likelihood Ratio	10.760	4	.029	.038		
Fisher's Exact Test	8.235			.070		
Linear-by-Linear Association	4.076[c]	1	.044	.044	.023	.008
N of Valid Cases	164					

a. Where is the business based? = Durban

b. 2 cells (20.0%) have expected count less than 5. The minimum expected count is 1.81.

c. The standardized statistic is -2.019.

Chi-Square tests: Company places orders with suppliers*Reduce costs through web-based purchasing and Procurement: Pietermaritzburg

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	17.417[b]	4	.002	.001		
Likelihood Ratio	19.375	4	.001	.001		
Fisher's Exact Test	16.943			.001		
Linear-by-Linear Association	1.483[c]	1	.223	.228	.130	.033
N of Valid Cases	151					

a. Where is the business based? = Pietermaritzburg

b. 6 cells (60.0%) have expected count less than 5. The minimum expected count is 1.91.

c. The standardized statistic is -1.218.

Appendix D: Informed Consent Document

University of KwaZulu-Natal
Faculty of Management Studies, School of Information Systems & Technology, Pietermaritzburg

Informed Consent Document

I, Patrick Ndayizigamiye, am currently registered for studies leading to the M. Com Degree. One of the requirements to be met for the awarding of the degree is that I should undertake an approved research project leading to the submission of a dissertation. The approved topic which I have chosen is:

"Adoption of E-Commerce by Small and Medium Businesses in Pietermaritzburg and Durban."

Please note that this investigation is being conducted in my personal capacity. Should you need to contact me regarding any aspect of this research, you can do so either by e-mail on patrickndayizigamiye@gmail.com or telephonically on 0332605087 or 0727050950

My academic supervisor is Professor Brian McArthur, based in the School of Information Systems &Technology on the Pietermaritzburg campus of the University of KwaZulu-Natal. He can be contacted by e-mail at Mcarthurb@ukzn.ac.za or telephonically at 033 260 5605.

Information gathered in this study will include data retrieved from the questionnaire that I request you to answer. Please note that only summary data will be included in the report and that your name will not be included. Your anonymity and confidentiality is of utmost importance and will be maintained throughout the study.

Your participation in completing the questionnaire is completely voluntary and you are under no obligation to complete the questionnaire. You also have the right to withdraw at any time during the study.

I appreciate the time and effort it will take you to participate in this study. I would highly appreciate your participation, as it would help me to complete this research project.

Patrick Ndayizigamiye

Please complete the section below:

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.

The company name may / may not (please indicate which is applicable) be used in the research report.

Signature of Participant…….……

Date……..……..

Appendix E: Questionnaire

For the purpose of this survey, Electronic Commerce (or E-Commerce) is defined as the use of computers to conduct business with other businesses (B2B E-Commerce) or with customers (B2C E-Commerce) over the internet.

SECTION A: GENERAL INFORMATION

1. Your age:

☐ 25 or younger ☐ 26 to 35 ☐ above 35

2. Your gender:

☐ Male ☐ Female

3. Your role in the company:

☐ Owner and Manager

☐ Owner

☐ Manager

4. The business is:

☐ National and International

☐ International

☐ National

☐ Local

5. How long has your business been established for?

☐ Less than 1 year

☐ From 1 to less than 4 years

☐ From 4 to less than 7 years

☐ 7 years or more

6. Which business sector best describes your company's primary business?

- ☐ Construction
- ☐ Manufacturing
- ☐ Catering/Accommodation
- ☐ Wholesale
- ☐ Retail
- ☐ Finance
- ☐ Transport
- ☐ Other (please specify): _____

7. What is the approximate number of full-time employees in your company?

- ☐ Less than 10
- ☐ 10 to 50
- ☐ 51 to 100
- ☐ 101 to 200
- ☐ More than 200

8. Who do you sell your products to? (Please tick all that apply)

- ☐ 8.1. Individuals
- ☐ 8.2. Businesses/ organisations
- ☐ 8.3. Individuals and businesses/organisations
- ☐ Other (please specify): _____

9. Are your products/services sold on the internet?

☐ Yes ☐ No

SECTION B: INFORMATION ABOUT E-COMMERCE ADOPTION

10. Which area/aspect of E-Commerce is currently used by your company (please tick wherever applicable)?

☐ 10.1. Customer payment by credit card through the company's website

☐ 10.2. Customer orders received through the company's website.

☐ 10.3. Customer services provided through the company's website

☐ 10.4. Placing orders with suppliers over the Internet

☐ 10.5. Other (please specify): _____

☐ 10.6. None – E-Commerce is currently not used at all

11. When does your company expect to have the following E-Commerce capabilities? Please rate on a scale from 1 to 5, where
1 represents "**have it now**"
2 represents "**within a year**"
3 represents "**within 3 years**"
4 represents "i**n more than 3 years**"
5 represents "**never**"

	1	2	3	4	5
11.1. A company strategy for developing E-Commerce					
11.2. A computerised database of your company's customers					
11.3. A computerised database of your company's suppliers					
11.4. A computerised inventory of your company's products or services					
11.5 .Company electronic mail (E-mail)					
11.6. Company access to the Internet					
11.7. A website demonstrating your company's products or services					
11.8.Customer payment by credit card through the company's website					
11.9.Receiving customers' orders through the company's website					

	1	2	3	4	5
11.10. Providing customer services through the company's website					
11.11.Placing orders with suppliers over the internet					
11.12.Other (Please specify)					

If you have **NOT** adopted E-Commerce tick the option "have not adopted E-Commerce" and proceed to question 14

Have not adopted E-Commerce ☐

12. The following determinants (factors) have influenced the decision to adopt E-Commerce in your company

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
12.1.Owner/ manager support					
12.2.Presence of IT skills in the company					
12.3.Owner/manager understanding of the benefits of E-Commerce					
12.4.External pressure from competitors					
12.5.External pressure from industry					
12.6.External pressure from government					
12.7.External pressure from suppliers					
12.8.External pressure from customers					
12.9.Compatibility with company's business processes					

12.10.Compatibility with existing company's technology infrastructure					
12.11.Compatibility with existing company's organisational culture					
12.12.Compatibility with company's values					
12.13.Compatibility with company's preferred work practices					
12.14.Availability of financial resources to adopt E-Commerce					
12.15.Availability of technological resources to adopt E-Commerce					
12.16.Size of the company					
12.17.Business type of the company					
12.18.Previous use of E-Commerce					
12.19.Other (Please Specify)					

If you have **NOT** adopted E-Commerce tick the option "have not adopted E-Commerce" and proceed to question 14

Have not adopted E-Commerce ☐

13. With regards to E-Commerce adoption in your company, indicate your level of agreement/disagreement with the following statements?

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
13.1.Top management is enthusiastic about the adoption of E-Commerce					
13.2.E-Commerce technology enhances the job performance of the company's employees					
13.3.E-Commerce enables the company's employees to accomplish specific tasks more quickly					
13.4.E-Commerce is integrated into the company's business strategy					
13.5.E-Commerce is integrated into business management long term objectives					
13.6.Learning to operate E-Commerce is easy					
13.7.Electronic Commerce is flexible to interact with					
13.8.The interaction with E-Commerce is clear and understandable					
13.9.It is easy to become skilful at using E-Commerce					
13.10.E-Commerce is easy to use					

13.11.E-Commerce requires basic computer skills					
13.12.Expert skills are needed to use E-Commerce					
13.13.E-Commerce is consistent with the company's technology infrastructure					
13.14.E-Commerce is difficult to implement					
13.15.It is expensive to implement E-Commerce					
13.16.E-Commerce was implemented by an external third party					
13.17.The company relies on an external third party for the maintenance of E-Commerce					
13.18.The company relies on skills of an external third party to run some of its E-Commerce activities					
13.19.The company outsources all of its E-Commerce activities					

SECTION C: INFORMATION ABOUT PERCEPTION OF ELECTRONIC COMMERCE

14. Based on your current and anticipated business requirements, rate on a scale of **1** (not at all important) to **5** (very important) the importance of the following potential benefits of E-Commerce for your company

	Importance rating
14.1.Improve information exchange with customers	
14.2.Increase customer loyalty and retention	
14.3.Improve service to the customer	
14.4.Provide easier access to international Markets	
14.5.Expand business reach	
14.6.Reduce costs of maintaining up-to-date company information	
14.7.Improve information exchange with suppliers	
14.8.Reduce costs through web-based purchasing and procurement	
14.9.Improve the competitive position of your company	

14.10.Attract new investment to the company	

If you have **NOT** adopted E-Commerce tick the option "have not adopted E-Commerce" and proceed to question 16.

Have not adopted E-Commerce ☐

15. Rate on a scale of **1** (**no benefit)** to **5** (**considerable benefit**), the extent that your business has benefited as a result of adopting E-Commerce for each of the following aspects.

	Benefit rating
15.1.Raising/improving company profile	
15.2.Increasing sales / enquiries	
15.3.Extending customer base	
15.4.Improving customer relationships	
15.5.Improving supplier relationships	
15.6.Speeding up process e.g. transactions, recruitment, marketing etc	
15.7.Reducing costs e.g. transaction, marketing	
15.8.Keeping up to date with products, services and market news	
15.9.Keeping ahead of / abreast of competition	
15.10.Flexibility in terms of customer payment options	

15.11.Flexibility in terms of placing orders with suppliers	
15.12.Customer's convenience	
15.13.Other (please specify)	

16. How important are the following limitations to the use of E-Commerce by your company?

	Not at all important	Somehow not important	Neutral	Important	Very important
16.1.Company is not convinced of the financial and business benefits					
16.2.Company has limited knowledge of the required technology					
16.3.E-Commerce use is too low among customers					
16.4.E-Commerce use is too low among suppliers					
16.5.Level of computerisation is too low in the company					
16.6.Cost of computers and network technologies is too high					
16.7.Telecommunications services are not dependable					
16.8.Company has concerns about internet security					
16.9.Company has concerns about legal issues, contracts and liability					

17. What is the approximate annual turnover of your company?

- ☐ Less than R 100,000
- ☐ R 100,001 to R 300,000
- ☐ R 300,001 to R 500,000
- ☐ R 500,001 to R 1,000,000
- ☐ R 1,000,001 to R 2,000,000
- ☐ R 2,000,001 to R 3,000,000
- ☐ Above R 3,000,000

THANK YOU FOR YOUR PARTICIPATION

Appendix F: Concept Matrix

Theme: E-commerce adoption by SMMEs in Durban and Pietermaritzburg

	UTAUT	DOI	Internet adoption in South Africa	ICT adoption	E-commerce adoption	B2B e-commerce	B2C e-commerce	E-commerce adoption by Smmes	E-commerce capabilities	Determinants of e-commerce adoption	Inhibitors of e-commerce adoption
Venkatesh, Morris,Davis and Davis (2003)	✓										
Riemenschneider, Harrison and Mykytyn (2003)	✓							✓			
Rogers (2003)		✓									
WorldWideWorx (2010)			✓								
Goldstuck, 2004			✓								
Muller (2008)			✓								
Horrigan (2005)			✓								
BrandSouthAfrica (2011)			✓								
BrandSouthAfrica (2012)			✓								
Goldstuck (2009)			✓								
Levy, Powell and Yetton (2001)				✓							
Dyerson, Harindranath and Barnes (2009)				✓				✓			
Levy, Powell, and Worrall (2005)				✓							
Pavic, Koh, Simpson and Padmore, 2007				✓							
Eriksson and Hultman, 2005				✓							
Bharadwaj and Soni (2007)				✓							
EBusinessWatch, 2004				✓							
Southern and Tilley (2000)				✓							

	UTAUT	DOI	Internet adoption in South Africa	ICT adoption	E-commerce adoption	B2B e-commerce	B2C e-commerce	E-commerce adoption by SMMEs	E-commerce capabilities	Determinants of e-commerce adoption	Inhibitors of e-commerce adoption
Naylor and Williams (1994)				✓							
Cragg and King (1993)				✓							
Raymond and Pare (1992)				✓							
Doherty and King (1998)				✓							
Swartz and Boaden (1997)				✓							
Hashim (2009)					✓			✓			
Wigand (1997)					✓						
Zwass (1996)					✓						
Poon and Swatman (1999)					✓						
Scupola (2003)					✓						
Turban, King., Liang and Turban (2010)					✓	✓	✓	✓	✓		
OECD (2004)						✓					
Gebauer and Shaw (2002)						✓					
Daniel, Wilson, and Myers (2002)						✓		✓			
Lefebvre et al. (2005)						✓					
WorldWideWorx (2011)							✓				
Goldstuck (2012)							✓		✓		
Drew (2003)								✓			
Daniel and Wilson (2002)								✓			
Kendal, Tung, Chua and Tan, 2001)								✓			

	UTAUT	DOI	Internet adoption in South Africa	ICT adoption	E-commerce adoption	B2B e-commerce	B2C e-commerce	E-commerce adoption by Smmes	E-commerce capabilities	Determinants of e-commerce adoption	Inhibitors of e-commerce adoption
Tan, Tyler, and Manica (2007)								✓			
Fathian, Akhavan and Hoorali (2008)								✓			
Molla and Licker (2005)								✓			
Saffu, Walker and Hinson, 2008								✓			
Parker and Castleman (2007)								✓			
Grandon and Pearson (2004)								✓	✓		
Cyberatlas (2001)								✓			
Pratt (2002)								✓			
Anadarajan,Igbaria and Anakwe(2002)								✓			
Al-Qirim (2007)								✓			
MOED (2000)								✓			
Cannon and Homburg (2001)								✓			
EMarketer, 2005								✓			
Chong, 2006								✓			
NOIE (2000)								✓			
Sensis (2003)								✓			
Fisher, Craig and Bentley (2007)								✓			
Pritchard (2006)								✓			
Brown, Lockett and Schubert (2005)								✓			

	UTAUT	DOI	Internet adoption in South Africa	ICT adoption	E-commerce adoption	B2B e-commerce	B2C e-commerce	E-commerce adoption by Smmes	E-commerce capabilities	Determinants of e-commerce adoption	Inhibitors of e-commerce adoption
Kapurubandara and Lawson, 2008								✓			
UNCTAD (2001)								✓			
Kotelnikov (2007)								✓			
Datta (2010)								✓			
Ghobakhloo, Aranda and Amado (2011)								✓			
Ayo, Adewoye and Oni, 2011								✓			
Olatokun and Kebonye (2010)								✓			
Cloete et al. (2002)									✓		✓
Courtney and Fintz (2001)									✓		
Akkeren and Cavaye (1999)									✓		
Tagliavani, Ravarini and Antonelli (2001)									✓		
Leong, Stanners and Huang (1998)									✓		
Kowtha and Choon (2001)									✓		
Liu (2010)									✓		
Qirim (2006:5)										✓	
Kirby and Turner (1993)										✓	
Beatty (1998)										✓	
Chwelos, Benbasat and Dexter (2001)										✓	
Ratnasingam (2002)										✓	
Caldeira and Ward (2003)										✓	

	UTAUT	DOI	Internet adoption in South Africa	ICT adoption	E-commerce adoption	B2B e-commerce	B2C e-commerce	E-commerce adoption by Smmes	E-commerce capabilities	Determinants of e-commerce adoption	Inhibitors of e-commerce adoption
Mcfarlan (2009)										✓	
Applegate, Austin and Mcfarlan (2009)										✓	
Beatty, Shim and Jones (2001)										✓	
Dharmayanti, Coffey and Trigunarsyah (2011)										✓	
Cameron and Quinn, 1999										✓	
Seyal, Awais, Shamail and Abbas (2004)										✓	
Beatty et al. (2001)										✓	
Gibbs et al. (2003)										✓	
Teo and Ranganathan (2004)										✓	
Van Beveren and Thomson (2002)										✓	
MacGregor and Vrazalic (2005)										✓	
Al Qirim (2005)										✓	
Hong and Zhu (2006)										✓	
Chatterjee, Grewal and Sambamurthy (2002)										✓	
Grandon and Pearson (2004b)										✓	

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Appendix G: Ethical Clearance Approval Letter

UNIVERSITY OF KWAZULU-NATAL
INYUVESI YAKWAZULU-NATALI

15 August 2012

Mr Patrick Ndayizigamiye 206510150
School of Management, IT & Governance

Dear Mr Ndayizigamiye

Protocol reference number: HSS/1093/011M
New project title: Adoption of e-commerce by Small, Medium and Micro Enterprises in Pietermaritzburg and Durban

Approval and change of dissertation title

I wish to confirm that ethical clearance has been granted full approval for the above mentioned project:

Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach/Methods must be reviewed and approved through an amendment /modification prior to its implementation. In case you have further queries, please quote the above reference number. Please note: Research data should be securely stored in the school/department for a period of 5 years

Best wishes for the successful completion of your research protocol.

Yours faithfully

.....
Professor Steven Collings (Chair)

cc Supervisor Professor Brian McArthur
cc Academic leader Professor KK Govender
cc School Admin. Ms Deborah Cunynghame

Professor S Collings (Chair)
Humanities & Social Sc Research Ethics Committee
Westville Campus, Govan Mbheki Building
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