



UNIVERSITEIT VAN PRETORIA  
UNIVERSITY OF PRETORIA  
YUNIBESITHI YA PRETORIA

**MBA 2006/7**

# **Benefits and barriers emerging market SME's face when adopting e-commerce**

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**A research report submitted to the Gordon Institute of Business  
Science, University of Pretoria, in partial fulfilment of the  
requirements for the degree of Master of Business Administration**

**14 November 2007**

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**Research Project  
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## **ABSTRACT**

The study aims to research the possible benefits that SME's can attain as well as any barriers that they face in an emerging market economy when adopting e-commerce.

E-commerce has been growing globally at an astounding rate and even more so in the emerging markets, albeit from a low base. The expectation is that with the looming FIFA World Cup during 2010 in South Africa, more reliance will be put on the adoption of e-commerce's functionality by Small and Medium Enterprises (SME's), both in the Business-to-business (B2B) and Business-to-Customers (B2C) sectors.

The research instrument utilised in this quantitative research takes the format of a survey which will explore some of the factors affecting the SME's.

The study aims to prove that certain barriers, or perceived barriers, actually does exist specifically in an emerging market like South Africa, and that when they are overcome, there definitely are benefits for the SME's that have taken the decision to adopt e-commerce.

It also interrogates the effect that the owners view on technology has on the decision to adopt e-commerce and once the internet has been acquired, how successful the SME leverage of the internet functionalities.



## **DECLARATION**

I declare that this research project is my own work. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration at the Gordon Institute of Business Science, University of Pretoria. It has not been submitted before for any degree or examination in any other university.

.....

Date: .....

**Hendrik J C Kruger**



## **ACKNOWLEDGEMENTS**

I want to dedicate this dissertation firstly to my wife Annie and my two lovely children, Konrad and Suné. They are the ones that were mostly affected by my studies.

Secondly, I want to acknowledge my employer, FNB, and all the people in the organisation that supported me in my studies, thank you.

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## **LIST OF ABBREVIATIONS**

### **List of benefit abbreviations:**

CS – Cost Savings

Prod – Productivity

IS – Increased Sales

IME – International Market Exposure

PROF – Profitability

NB – New Business

CA – Competitive Advantage

NME – National Market Exposure

### **List of barrier abbreviations:**

SUK – Start-up knowledge

BPP – Business Partner Pressure (not on-line)

SA – Staff Abuse

CR – Connectivity Reliability

SC – Set-up Costs

OC – Ongoing Costs

SEC – Security

SL – Staff Literacy

### **List of data field abbreviations:**

IO – Interview conducted with owner of business

IM – Interview conducted with manager of business

PRO – Province business is located in

NOE – Number of employees in business

NOO – Number of outlets

TIO – Time that the business has been in operation

OS – The ownership structure e.g. Close Corporation, partnership etc.

TO – Annual turnover of business

I4B – The business is using the internet for business

TIC – Type of the internet connection

TIA - Time that business has had an the internet connection

BAR – Total barrier score

BEN – Total benefit score

IOC – the internet is only suitable for communications

ISB – the internet is suitable to conduct business

IIF – the internet is the future of conducting business

OVT – Owners view on technology

TOI – Type of interview e.g. e-mail or telephone interview

## **CHAPTER 1: INTRODUCTION TO THE RESEARCH PROBLEM**

### 1.1. DESCRIPTION OF THE PROBLEM AND BACKGROUND

“The emergence of electronic commerce over the past decade has radically transformed the economic landscape. For developing countries, the digital revolution offers unprecedented opportunities for economic growth and development, as entrepreneurs from Bangalore to Guadalajara to Dakar will testify.” These are the words of Annan (2001), then Secretary-General of the United Nations and it will form the basis of this research study.

E-commerce has been growing globally at an astounding rate and even more so in the emerging markets, albeit from a low base. The expectation is that with the looming FIFA World Cup during 2010 in South Africa, more reliance will be put on the adoption of e-commerce functionality by SME’s, both in the B2B and B2C environment. A study into the adoption of e-commerce by SME’s in Turkey, Kula and Tatoglu (2003) found that “SME’s are of the opinion that the internet will become more attractive in the future in terms of enhancing company image and being an important tool of doing business electronically.”

It is therefore critical that SME’s in the emerging markets identify and understand the current barriers to entry in adopting e-commerce functionality, to enable them to stay relevant and competitive. In comparison to the developed markets, the emerging market adoption of e-commerce is believed to be lagging behind for various reasons. This research will aim to identify the

most relevant factors preventing South African SME's to maximise the full potential e-commerce offers.

Conversely, the research also aims to identify the benefits already achieved by the early (earlier) adopters and investigates the current level of usage by these SME's. These benefits could serve as motivational factors for those lagging behind in the technology, as well as identifying possible opportunities for entrepreneurs, who would be eager to facilitate the transition.

To a certain extent, the research will emulate a similar study done by Walczuch, van Braven and Lundgren (2000) on small firms in the Netherlands. The study indicated that 'technology laggards do not realise all the benefits that e-commerce adoption can offer, while the SME's that have taken the leap claim that one of their major benefits is increased sales, which obviously has major positive implications for the business.

Cloete (2003) concluded after similar research in South Africa that there is however some correlation between the studies done in the early 2000's in South Africa with those done earlier in the international market in respect of both barriers to entry and benefits achieved.

The research will investigate whether these barriers and benefits are still relevant or whether the SME's have in fact moved on and that there are new factors influencing the adoption of the internet by SME's in the emerging markets.

## 1.2. PURPOSE OF THE STUDY

For the purposes of this study, e-commerce will be used in the broader sense of the word. IT will include all functionalities offered by the internet available to the SME's. The functionalities could include basic e-mail functionality through to full fledged interfaces with customers and suppliers.

The purpose of the study is to determine the barriers that SME's face in an emerging market when adopting e-commerce. These should be different from the barriers that their counterparts in the developed world have to deal with. It goes further and then exploits the benefits that the SME's enjoy after they have made the change to adopt e-commerce.

The study will test the results against results from similar studies done in developing as well as developed countries. It will draw parallels with these studies and highlight any conflicting data. Through the analysis of these results, the study aims to be able to give a situational analysis of the development stage of SME's in South Africa.

### 1.2.1. BARRIERS TO ENTRY FOR SME'S

The study interrogates the way that SME's perceive e-commerce and will then produce a list of barriers to adopting the technology in an effort to focus corporate and government's attention to these factors inhibiting the expansion of the SME's into the local as well as the global economy. Regardless whether these barriers are real or perceived by the SME's it does affect the way that business is done in an emerging market.

Barriers can take on various forms and the study will include, but will not be restricted to, the following areas:

- Access to technology
- Computer literacy
- Costs
- System security
- Access to e-commerce for business partner(s).

The secondary aim of the study is to establish a link between these barriers and specific demographic and financial structural features. In addition, it will also highlight any correlation between the owners' technological outlook and the aforementioned barriers. Previous research has shown that the views of the owners have a major influence on whether the business does adopt e-commerce and, if it does, how much the success depends upon it.

#### 1.2.2. BENEFITS ACHIEVED BY SME'S

The study will also establish the main benefits that have been achieved by SME's that have made the transition by adopting e-commerce. These benefits need to be explored and then used by entrepreneurs and the corporate world to market their own services to the SME's that have not, as yet, adopted e-commerce. It can also be used by government organisations to integrate their services to those of the SME's, which will have benefits for both stakeholders. This will all lead to increased usage of the electronic infrastructures and, by way of economies of scale, will lead to the services becoming more economical to use.

The benefits that this study will address, but will not be restricted to are:

- Increased market reach, local and international
- Increased turnover
- Increased productivity
- Cost benefits/increased profitability
- New business opportunities
- Relative advantage over competitors.

These benefits will be analysed to establish any correlation to the demographic information obtained, as with the barriers. It will also be analysed in conjunction with the technological outlook of the owner, to establish whether the views of the owner influence the benefits that were achieved, not dissimilar to how the owner influences the success of the business in the entrepreneurial environment.

### 1.2.3. TECHNOLOGY ADOPTION

In an effort to understand the SME's usage of technology, efforts are made to learn more about the usage of the internet by those businesses that have access to the technology.

The understanding of the adoption process and usage patterns is important to the overall research. It spreads wider than just the e-commerce field and includes the usage of the internet on a larger scale. The study will investigate if there is any correlation between the way that the internet is utilised and the benefits that the business is able to extract from it.



The study further interrogates the technological outlook of the owner(s) in an effort to find any correlation between how they view technology and whether that has any bearing on the barriers or benefits achieved.

## CHAPTER 2: LITERATURE REVIEW

### 2.1. EMERGING MARKETS

Most of the previous research has been done in so-called first world countries; Canada, United States of America, Europe, and Australasia. There is, however, valuable research being conducted in emerging markets as well e.g. Turkey, Kula and Tatoglu (2003), which is more applicable to South Africa than the research in developed countries. Cloete (2003) has conducted a study to establish the level of e-commerce adoption achieved by SME's in South Africa. The study also looked into the benefits and barriers of e-commerce. However, the findings of his research indicate that many of the issues identified in other countries' research are both pertinent and valid for the South African environment. Unfortunately, Cloete does not draw any parallels as to the extent to which these factors influence the adoption of e-commerce. The Turkish SME's are of the opinion that the internet will become more attractive in the future, in terms of enhancing company image and being an important tool for doing business electronically, which indicates that the developing countries are lagging behind their counterparts in the developed countries.

Payne (2002) states that SME's in developing countries should not be left behind, as many are already demonstrating their entrepreneurial strength by grasping opportunities offered by e-commerce.

As previously stated, the proposed research is based upon a previous study done in the Netherlands by Walczuch, van Braven and Lundgren (2000). Their research deals mainly with the barriers to entry as well as, to a lesser extent, the level of usage by existing users. They conclude that during the reporting time (2000), the SME's in the Netherlands were, "well on their way to use the internet to reach new markets." A comparison seven years later with the South African SME's could turn out to be very interesting, as the SMEs in the emerging markets can take note of the lessons learnt by them.

## 2.2. BARRIERS

### 2.2.1. DEVELOPMENT AND GROWTH OF E-COMMERCE

Over the years, researchers have conducted extensive research into the barriers that exist preventing SME's from adopting e-commerce. They have found that there are many different barriers, both real and perceived, that exist for the SME. A study conducted by Dowler and Lawrence-Slater (1998) in Australia highlighted "technology phobia", "resistance to change" and "no perceived benefit" as real barriers. In the short space of time since that study, these barriers have given way to more relevant factors. Deschoolmeester, Braet and Lootens (2002) reported that of the limited barriers they have studied, the most influential was a lack of a formal e-business strategy while "the lack of internet technical know how" is also a concern with SME's. The study was conducted in 1999 and 2001 and both the barriers mentioned above were rated a bigger concern in 2001 than in 1999.

### 2.2.2. GOVERNMENT'S ROLE IN E-COMMERCE GROWTH

What role does government play in the adoption of e-commerce by SMEs? Are they an enabler of e-commerce adoption or do they form part of the barriers? In a study of Swedish SME's, MacGregor and Vrazalic (2005) found that despite the initiatives launched by government, there are two major categories of barriers for SME's; "the difficulty of implementation" and the "unsuitability of e-commerce to their businesses". Beckinsale and Levy (2004) reported again that neither government policies nor competitor pressure have any influence on the adoption of e-commerce, but that customer pressure is central to the adoption. If governments are unable to be the enabling vehicle, other structures should be put in place to accommodate the transition.

### 2.2.3. PERCEIVED BARRIERS IN ADOPTING E-COMMERCE

Rashid and Al-Qirim (2001) took the argument further and concluded that there is not one specific factor influencing the adoption of e-commerce, but that it is a combination of the multiple factors, which are categorised as follows: technological, environmental, organisational and individual factors. The adoption is, therefore, more complex and not a decision that is taken in isolation.

Adoption of e-commerce is also a process, rather than a once off event. Gray (2003) categorised SME's into six stages of adoption: Uninvolved, Threshold, Beginner, Intermediate, Advanced and Innovative, and listed different barriers

for each stage. It varies from “low ICT contact” and “an anti-tech lifestyle” for the uninvolved stage through to “keeping up with the pace of change in technology” and “market demands” for the advanced and innovative stages. Chrysostome and Rosson (2004) found that internet cost savings are hard to achieve as the cost benefits for SME’s normally are derived from advertising and promotions. However, to realise these benefits, SME’s need to develop and maintain websites, which are costly. Furthermore, Walczuch *et al.* (2000) found that Dutch SME’s that used the internet for their business transactions did not experience lower costs or greater efficiency. SME’s are, therefore, reluctant to implement an e-commerce plan unless they know that they can achieve financial or other benefits from it.

A survey done for the Commission of the European Communities (2002) found that “legal uncertainty” and “uncertainty to make payments” are the two largest factors behind SME’s not utilising the internet for making purchases, whilst “sales channel conflict” and “goods unsuitable for e-commerce sales” are quoted as being the biggest barriers for the sale of goods via the internet.

The barriers to adopting e-commerce are complex, yet critical, components of the business cycle and must be clearly understood by the SME. These components vary from one economic region to another, and are influenced by various internal and external factors. The study will extract the most relevant barriers to adopting e-commerce for SME’s in emerging markets and report on those than can be used for further studies or business opportunities.

### 2.3. BENEFITS

The benefits that SME's either realise (or ought to realise) when they adopt e-commerce, have been researched quite extensively. One of the first reports on benefits achieved (Poon and Swatman, 1999) refers to the fact that SME's find e-mail and document transfer useful. E-commerce has progressed and authors generally now agree that there is some level of benefit, but that it is not achieved automatically. Saulnier and Rosson (2004) researched 15 Canadian SME's in Nova Scotia province and came to that exact conclusion. They are also of the opinion that, in general terms, expressions made about the importance of e-business have not been fully matched by actions taken by the SME's. Importantly, they found no correlation between the company size, age, market focus, or customers served, and the behaviour of the SME's, but a strong relationship was found between behaviour and the criticality of e-business to the company.

#### 2.3.1. FINANCIAL BENEFITS

The specific benefits that the SME's can expect (or realise) can be categorised in two main categories: financial and strategic. This study mainly focuses on the financial benefits that SME's derive from the adoption of e-commerce. Cohen and Kallirroi (2006) researched what the drivers were for Greek SME's to invest in e-commerce and what benefits were achieved. They established that Greek SME's were late to implement e-commerce in comparison to their European counterparts, as most implemented e-commerce only in the four years leading

up to the research. Their most important conclusion is that cost reduction was not considered the main driving force to the introduction of e-commerce but rather that the Greek SME's saw gaining qualitative and customer orientated benefits (more strategic of nature) as the main objectives and, therefore, benefit that can be generated from e-commerce. Nevertheless, they found that Greek SME's are fully aware of the whole range of benefits as the internet is used for communication purposes, business improvements, service amelioration, and on-line transactions.

Chrysostome and Rosson's (2004) findings support the fact that it is difficult to achieve financial benefits. They developed a framework of eight propositions that depict the illusions and promises of internationalisation by SME's. They express the view that, as with the invention of the printing press in 1450, not all of the expectations of the new technology are realised. Some of the expectations are only illusions while others are real promises from which SME's can benefit. The promises can be seen as benefits that the SME's in emerging markets can achieve while the illusions are benefits that is difficult to achieve or totally unattainable.

- Illusions:
  - Market penetration (international market still difficult)
  - Global competition (intensify)
  - Costs ( hard to achieve)
  - Legal issues (foreign trade)

- Promises:
  - Pace of market entry
  - Multiple entries (penetrate many international markets)
  - Entry mode (choice of mode to minimise risk)
  - Interfirm networks (low cost involved)

### 2.3.2. SURVIVAL OR OPPORTUNITY

Is e-commerce the great equalizer between SME's and large companies? Can SME's now compete head to head with their larger counterparts? These were the research topics of a study conducted by Lomerson, McGrath, and Schwager (2004). Whilst still in the early stages of the data gathering, they produced a report that highlighted two specific findings:

- E-Commerce is changing the dynamics of how business is conducted
- SME's are not immune to the impact of e-business.

They further concluded that SME's were fully aware of the importance of e-commerce to the organisation's survival and that they were already extracting some benefit from it.

Supporting the popular trend that e-commerce is a requirement for survival for SME's, Payne (2002) addresses the issue of e-commerce readiness of businesses in developing countries. He highlights nine factors that indicate e-commerce readiness, which are of importance to the SME. Four of these have a direct impact on the benefits that a SME can expect to achieve. Framed as questions, these are:

- What benefits might the SME achieve?
- How does the SME determine if it can use e-commerce to improve business?
- How can the SME figure out whether the benefits outweigh the costs?
- How can the SME monitor the results to know it is achieving the benefits it expects?

These factors emphasise the fact that it is critical for the SME's to understand the benefits that can be achieved, and to ensure that they implement e-commerce in a meaningful manner, as opposed to adopting it merely as a fashion trend.

Research has been done into both developed and developing countries to establish what benefits are generated from e-commerce. A study in Australia conducted by Van Akkeren and Harker (2003), researched the needs, uses, and adoption of technology for and by SME's, to determine the need for new mobile technologies (MDT). The research targeted businesses that are classified as having fully adopted e-commerce and therefore have relevance to this study, as it covers benefits that were already achieved. Van Akkeren and Harker (2003) established that businesses have made an important psychological jump and are now viewing the internet as a marketing tool rather than a technological tool. The gathered data indicated that, "research or informational search" and "communicate/e-mail" accounted for 63% of the main reasons why businesses connect to the internet. They went on further and categorised the needs of the

SME's (in order of importance) as communication, closely followed by e-commerce and security.

It seems that researchers agree that e-commerce has developed to a stage where the basic functionalities have become a commodity and as such a critical part of doing business in the post dot com period. It has become a matter of survival for SME's to adopt e-commerce to stay relevant and competitive.

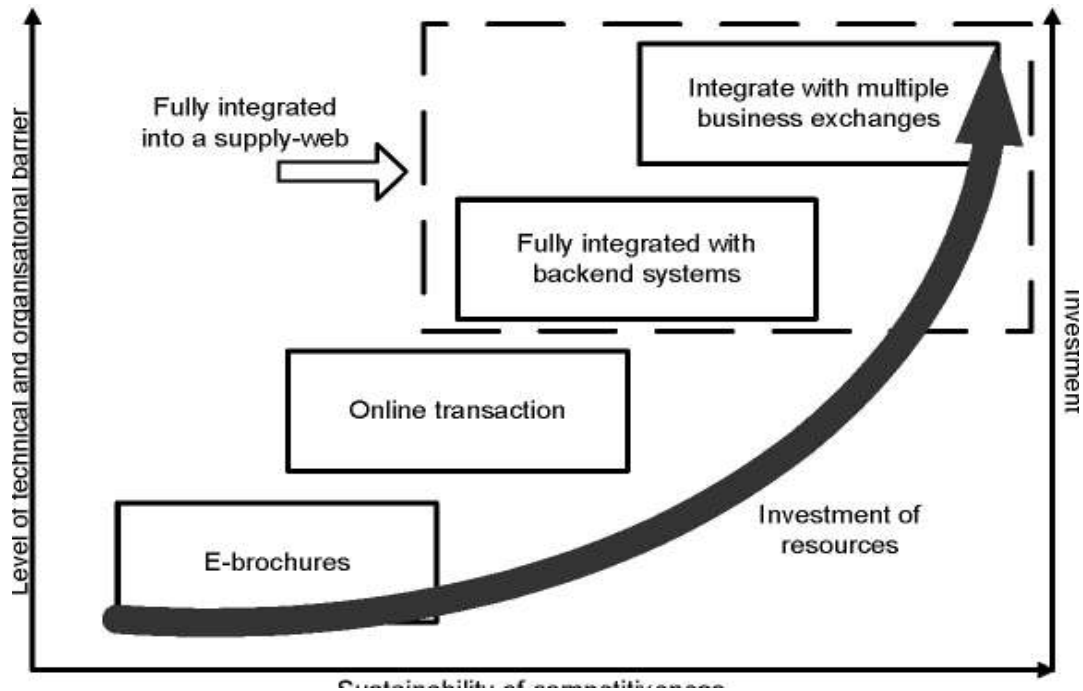
### 2.3.3. BENEFITS FOR SME'S

The question now arises whether SME's that have successfully implemented e-commerce, have benefited from it. Researching this topic, Poon (2002) states that there have been various degrees of success and that there are three reasons why it is now more beneficial to use e-commerce than before. These are:

- The cost of adopting (hardware and software) e-commerce has come down
- Lessons have been learnt and it is now easier to implement e-commerce
- There are more resources and programs available.

However, did everybody benefit? The findings indicate that even taking into consideration the more conducive environment, mixed successes are recorded and that of those that have achieved benefits, some are only short term or marginal of nature. To achieve real and sustainable benefits, the SME's, ideally, should be plotted at the top right quadrant of the diagram below.

**Figure 1**

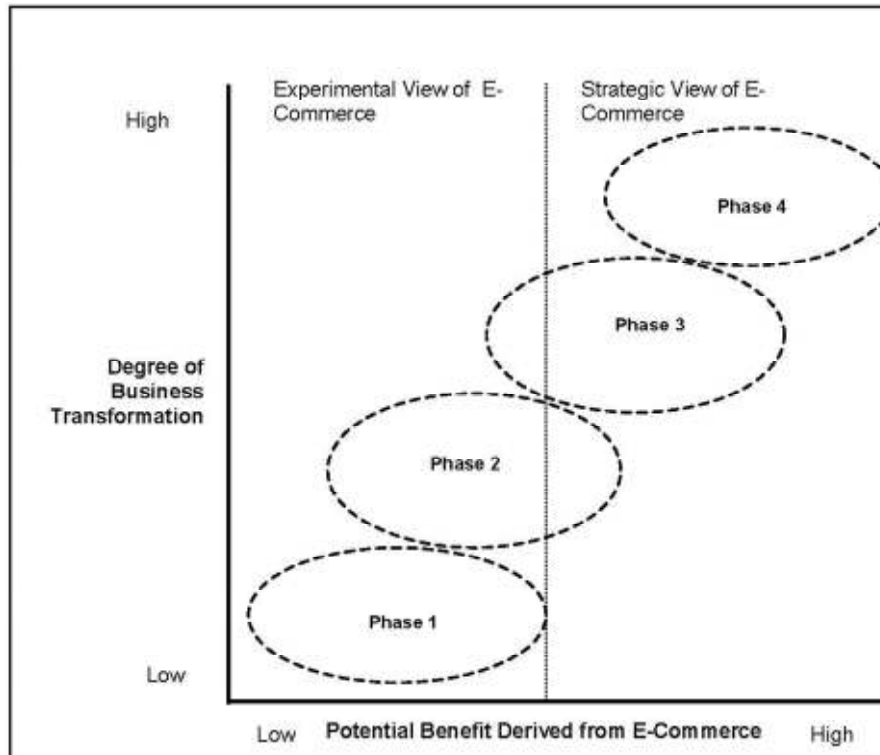


Poon also supports the previous authors in that he warns about adopting e-commerce without fully understanding what benefits it will add to the business. Notwithstanding that, the SME's should take advantage of the lower cost and availability of technology. He concludes by suggesting that the e-commerce strategy should be business driven to achieve maximum benefit.

The findings of a study conducted by Chau (2003) into e-commerce utilisation by 34 Australian SME's, support those of Poon's, in that it concluded that various levels of benefits are achieved. Chau (2003) produced a model (Figure 2 below) that indicates that the potential benefit derived from e-commerce depends on the degree of business transformation that the SME is willing to undertake. He classifies the SME's in four phases of e-commerce adoption; the

first two are experimental, while phases 3 and 4 have a strategic view of e-commerce.

**Figure 2**



Many of the SME's commence with the experimental view of e-commerce to establish whether there are real benefits to them. There are however few benefits in a low degree of adoption and unless e-commerce becomes part of business strategy, they would not be able to extract maxim benefits for the business.

#### 2.3.4. BENEFITS FOR SOUTH AFRICAN SME'S

The question can now be asked if SME's in South Africa have benefited from e-commerce adoption. Goldstuck, the principal researcher for one of the leading SME research companies in South Africa, SME Survey, commented on the findings of the 2006 results. He claimed that the rating of "the importance of access to IT infrastructure" has declined from the previous year. He is of the opinion that IT has become a commodity, and it is no longer seen as a competitive advantage for South African SME's. In the same commentary, he also states that the SME's are increasingly more satisfied with the availability of information and communication technology.

One further study done in South Africa by Lubbe (2004), investigated the correlation between three aspects of IT investment, one of which is in particular interest to this study: the correlation between

- Profitability and
- e-commerce strategic management integration with organisational strategic management.

Lubbe established a 0.54 positive correlation between these variables and concluded that there are financial benefits for organisations that incorporate an e-commerce strategy into their organisational plans.

Therefore, researchers agree that benefits can be achieved by SME's when they adopt e-commerce, but these are not automatic and, unless adoption is a clear

business strategy, supporting business processes, both financial and non-financial benefits will not be achieved.

#### 2.4. ADOPTION OF E-COMMERCE

Various studies have been conducted to explore the level of utilisation of the internet for business purposes by SMEs. The studies mainly focus on three fields; the level of adoption, stages of adoption and factors influencing the adoption of e-commerce.

##### 2.4.1. LEVEL OF ADOPTION

Allan, Annear, Beck and van Beveren (2003) are of the opinion that SME's in Australia lag behind their counterparts in the rest of the developed world. They concluded that there are major opportunities at the high end of e-commerce adoption, specifically as far as security is concerned. This is in line with the findings of Gray (2003), who shows evidence that there are disparities in adoption rates between the different European Community member states. It is, therefore, apparent that countries throughout the world are at different stages of adoption and that the rate of adoption is influenced by local conditions.

Stansfield and Grant (2003) refer to the e-awareness of SME's and that most of the UK based SME's have taken the initial step towards utilisation of e-commerce but have no inclination to leap forward. They suggest that there is still much work needed to achieve the desired results.

#### 2.4.2. STAGES OF ADOPTION

The second factor of adoption deals with is the stages or phases of adoption. Cater-Steel and Grist (2004) describe the steps that should be taken to further adopt the internet; although they are also of the opinion that e-commerce will only be adopted as the need arises for integration into the supply chain, and not just for the sake of having e-commerce.

Jeffcoate, Chappell and Feindt (2002) also investigated the subject matter, and produced a best practice model for adoption of e-commerce. They identified 11 critical success factors that are important during the different phases of the adoption process. The important fact is that e-commerce adoption is a process which is normally segmented into various phases and is definitely not a once off event. In a similar vein refer Levenburg, Schwarz and Dandridge (2002) to technologies that are easier to adopt, and Levy and Powell (2003) refer to the adoption ladder. Levy and Powell (2003) also subscribe to the stages model and are of the opinion that most SME's only see value at the bottom rung of the ladder.

There seems too be agreement that e-commerce is a process and that it is implemented in stages. The stages normally are adopted beginning with the lower end functionalities building up to the more complex components of e-commerce.

#### 2.4.3. FACTORS INFLUENCING ADOPTION OF E-COMMERCE

Simpson and Docherty (2004) researched the reasons why SME's move from traditional commerce to e-commerce. They have identified various factors that affect the decision but classify it as "mainly money." An interesting and unexpected factor influencing the decision was the pressure from family (particular children) and friends to adopt e-commerce. Rashid and Al-Qirim (2001) propose a framework that depicts the factors influencing ecommerce adoption. The factors are broadly categorised as technological, environmental, organisational, and individual. Top managers who perceive e-commerce as adding strategic value to the firm have a positive attitude towards its adoption, as per Grandon and Pearson (2003), while McCole and Ramsey (2005) researched the differentiation between adopters and non-adopters of e-commerce. The research found significant differences between these groups. Adopters tend to be more proactive and e-aware in identifying opportunities. However, there is no difference in terms of the ability to adopt.

When the above factors are analysed, it seems that the one factor that stands out above the rest is the businesses attitude towards e-commerce. SME's that make a successful transition to e-commerce have a positive view of technology and they use technology to give them leverage over the resources needed to establish proper value added service to their customers.

## **CHAPTER 3: HYPOTHESES**

The research and data collected supports three hypotheses. The hypotheses will test the impact of the adoption of e-commerce by SME's by analysing the benefits and barriers to entry as well as the owner's view of technology.

The data will be analysed against various null hypothesis statements. Null hypotheses statements are used as nothing can ever prove to be absolutely true; however, it can be proven to be false.

### 3.1. HYPOTHESIS 1

The null hypothesis ( $H_0$ ) states that there are no barriers (BAR) to entry for SME's in adopting e-commerce for business purposes. The alternative hypothesis ( $H_A$ ) states that barriers to entry do exist for SME's in emerging markets when adopting e-commerce.

### 3.2. HYPOTHESIS 2

The null hypothesis ( $H_0$ ) states that the adoption of e-commerce for business purposes has no benefit (BEN) for the SME's. The alternative hypothesis ( $H_A$ ) states that the adoption of e-commerce has some benefit for the emerging market SME's.

### 3.3. HYPOTHESIS 3

The null hypothesis ( $H_0$ ) states that the technology outlook of the owner and business has no impact on the adoption of e-commerce. The alternative

hypothesis ( $H_A$ ) states that the adoption of e-commerce by a SME's depends on the owner's and business's view on technology.

Various calculus methodologies will be utilised in the analysis and where applicable, significant testing will be at the 5% error level using the two-tailed t-tests.

## **CHAPTER 4: RESEARCH METHODOLOGY**

### 4.1. METHODOLOGY

The methodology applied was the use of quantitative study methods to determine the barriers and benefits for SME's in an emerging market. Quantitative researchers should be objective and are the main authority on the subject. The research is, therefore, conducted in a well organised fashion and respondents are measured in a top-down manner, not dissimilar to the methodology followed in this specific research.

The research instrument selected, in this descriptive type of research method, was a survey. The data was obtained using various collection strategies, e.g. telephonic interviews, and an e-mailed questionnaire as these were found to be the most appropriate method for the study.

### 4.2. DEFENCE OF METHODS

Quantitative research methodology is based on the premise that there have been previous studies performed in this field that, therefore, eliminate the need for exploratory studies. The barriers to and benefits of e-commerce adoption have been researched quite extensively, as is evident in Chapter 2.

The methodology can be further categorised as a descriptive, rather than causal, study as it is "research designed to describe characteristics of a population or a phenomenon," as per the definition by Zikmund (2003).

As observation was not a practical solution for this research project, it was logical to utilise a sample survey as the instrument of data collection. Zikmund

(2003) lists the following advantages of surveys, which were in line with the objectives of this specific research project:

- Speed – the results are obtained quickly
- Relatively inexpensive (barring the telephone call costs)
- Efficient
- Accurate.

The survey was used to obtain primary data from the respondents. There were two techniques used. The first set of data was achieved via telephone interviews. This method was successful barring two typical weaknesses: the limitation of call duration and the lack of co-operation from the respondents.

The second set of data was obtained by means of a self-administered questionnaire which was e-mailed to possible respondents. Although it was a relatively inexpensive exercise, it was time consuming obtaining the e-mail addresses. The other advantages and disadvantages of self-administered questionnaires (Zikmund 2003) were also applicable during this process.

#### 4.3. UNIT OF ANALYSIS/POPULATION/SAMPLING

The unit of analysis that was selected for the research was SME's as determined by the following criteria:

- A SME as specified by the South African National Small Business Act 102 of 1996 and the amendment of the act, namely the National Small Business Amendment Act [No. 26 of 2003]
- that was trading at the time of the data collection

- that was listed on the Braby's website
- that had their offices within the natural borders of South Africa.

Two sets of contact data was obtained as explained above.

The first set of contact data was obtained from a list of SME's that was made available to the researcher. It contained about 8,000 SME's with the following contact/demographic information:

- Company name
- Location (province and town)
- Type of business
- Telephone and/or fax number

The files were separated by province. The files that were used for the telephone interviews were mostly from the KwaZulu Natal (KZN) province with the sub categories being South Coast, Petermaritzburg, Pinetown and North Coast. The population totals are encapsulated in table 1 blow showing the totals for close corporations and private companies separate.

**Table 1**

	South Coast	P'maritzburg	Pinetown	North Coast	Total
<b>Close Corporation</b>	60	33	279	395	767
<b>Private Company</b>	33	20	186	304	543
<b>TOTAL</b>	93	53	465	699	1,310

The second set was obtained by accessing the Braby's website ([www.brabys.co.za](http://www.brabys.co.za)) where thousands of SME's are registered. This became necessary as the telephonic interviews did not deliver the expected results. The contact details and, importantly, the e-mail addresses of the SME's were

available and extracted from the website. The following sectors are listed on the Braby's website and most of these were covered in the data extraction:

- Accommodation
- Business Services
- Communication
- Eating out
- Education
- Entertainment
- Finance and Insurance
- Government
- Health and Social
- Information Technology
- Property
- Transport

The population size is not easily determinable, as the site does not feature any such information.

The study will be, by no means, represent all SME's in South Africa but the number of convenience samples can be viewed as significant and, therefore, certain conclusions can be derived from it.

#### 4.4. PROCEDURE/DATA COLLECTION/INSTRUMENT

##### 4.4.1. PROCEDURE/DATA COLLECTION - TELEPHONE INTERVIEWS

One temporary member of staff and one supervisor was made available for the telephone interviews and collected the data. The length of the interview was pre-tested on three colleagues who were also involved in family businesses. It was found that an interview took about 5 to 6 minutes and it was, therefore, reasonable to expect about four completed surveys per hour. The people who conducted the interviews had five working days (8 hours per day) and the expectation was that a total of 320 surveys were possible (working on the principle of 8 hours/day x 5 days x 2 people x 4 surveys/hour). Unfortunately, three unforeseen factors had a major influence on the success rate of the telephone interviews and, as a result, a very low success rate was achieved.

The first was the data integrity. It was found that the contact rate was only between 20% and 30% due to dated data from the website. The second factor was the question in the survey referring to turnover. This linked in to the third factor, namely that SME's were very suspicious about the telephone calls. This can be subscribed to the latest fraudulent trend of identity theft. The question related to the turnover caused many interviews to be terminated at an early stage. The data related to these incomplete interviews was disregarded for analysis purposes.

#### 4.4.2. PROCEDURE/DATA COLLECTION - E-MAIL

Data was also collected by distributing the research instrument via e-mail to the SME's whose e-mail addresses were obtained from the Braby's website. The SME's were requested to complete the instrument and return it via e-mail. 971 e-mails were sent out on 9 September 2007 to the prospective respondents. The data integrity turned out to be a concern as some of the data was dated. Of the total number of questionnaires that were sent out, 201 were returned as 'undelivered' and another 188 had invalid e-mail addresses, a success rate of 59.9%. By 11 September 2007 only 53 replies (9.1%) were received, where after it was decided to send out follow-up e-mails to all the SME's with valid e-mail addresses that did not reply. 400 E-mails were sent out reminding the respondents that they have not replied and a strong appeal was made to the SME's to assist in the study. It resulted in another 12 (3%) replies.

Only 61 of the total 65 responses were usable in the data analysis and were adopted into the sample model. The final response rate (11.2%) was less than

what Zikmund (2003) suggested should be achieved by a poorly designed mail questionnaire. However, he did not have any empirical data on e-mail specific administered surveys, so the result were deemed as satisfactory, taking into account that none of the following techniques was used to improve the rate:

- it was not possible to personalize the e-mail
- the e-mail was addressed in general terms to the business
- no incentives were offered for replies
- it was also not possible to pre-contact the respondents.

The two data gathering techniques produced 92 (telephone interviews) and 61 (e-mails) respondents respectively. The final workable total of data samples was therefore 153.

Similar studies yielded samples sizes between 150 and 250 as per the examples below:

- 151 (Kula and Tatoglu, 2003)
- 237 (Walczuch *et al.*, 2000).

The total of 153 was felt to be sufficient to be utilised in a study of this nature.

#### 4.4.3. THE INSTRUMENT

The instrument was initially developed in Microsoft Excel for telephone interviews with rating blocks to be ticked manually. It was supposed to be printed off and given to the interviewers to complete. The completed forms would then be gathered later and captured into Microsoft Excel. It turned out that the interviewers all had access to Microsoft Excel and could capture the

data directly in a spreadsheet. The instrument had to be converted to cater for this to ensure accuracy and consistency. Drop-down menus were utilised for closed questions while the fields on the open questions were left in free format. The instrument that was used is attached (Appendix A). The fields highlighted in yellow were open-ended questions while the unmarked fields were all administered by means of drop-down menus. The same instrument was then later on used for the e-mail research as well.

It contained mainly closed questions with a few open-ended questions that were in line with the recommendations by Zikmund (2003). A combination of interval (e.g. turnover, section 1, question 9), ordinal (e.g. benefits, section 3) and nominal (e.g. web usage, section 2, question 1) scales were used.

The instrument contained six sections that covered the research field.

#### 4.4.3.1. SECTION 1 – BUSINESS INFORMATION

Section 1 had ten research questions pertaining to the general business information as well as some demographic information. Six of the questions had drop down menus.

#### 4.4.3.2. SECTION 2 – THE INTERNET UTILISATION

Section 2 dealt with the internet utilisation by the SME. It contained eleven questions with only two being free format.

#### 4.4.3.3. SECTION 3 - BENEFITS

Section 3 only had to be completed if the SME had adopted e-commerce already. They were requested to rate nine pre-determined benefits that were

achieved, on a scale ranging from no benefit to major benefit achieved. The last question was open-ended and they were asked to list any other benefit that was achieved, other than the ones listed.

#### 4.4.3.4. SECTION 4 - BARRIERS

Section 4 only had to be completed if the SME had not adopted e-commerce. They were requested to rate eight pre-determined perceived benefits, on a scale ranging from no barrier to major barrier. The last question was open-ended and they were asked to list any other barrier that was perceived, other than the ones listed. There were also two questions relating to future prospects of e-commerce utilisation.

#### 4.4.3.5. SECTION 5 – OWNERS VIEW OF TECHNOLOGY

Section 5 had four research questions pertaining to the way that the owner of the business viewed technology. The questions were in a true or false format and, once again, were designed to utilise a drop down menu for accuracy.

#### 4.4.3.6. SECTION 6 – INTERVIEWER'S DATA

Section 6 contained only two free-formatted cells, where the name of the interviewer and the date of the interview had to be captured.

The instrument was pre-tested by conducting three personal interviews with SME's in the Gauteng area. The results of the three interviews led to some minor adjustments to the instrument and a confirmation of the length of the interview. It confirmed the earlier views that the interview would take five to six

minutes to complete. The results of the pre-tests were obviously not included in the final data.

#### 4.5. LIMITATIONS

##### 4.5.1. LIMITATIONS – TELEPHONE INTERVIEWS

- The file that was obtained listed the SME's by province. The file that was utilised in the research contained only businesses located in the KwaZulu Natal province. This obviously limited the research as it is geographically skewed.
- Although the people who conducted the interviews had the requirements explained to them, they saw this as part of their job and were not emotionally involved. With a bit more perseverance and business knowledge, the success rate would have been higher and the sample more meaningful.

##### 4.5.2. LIMITATIONS – E-MAIL

- The most obvious limitation is that SME's that were not listed on Braby's website, were not part of the sample survey population and could highlight a sampling error by skewing the results towards a pro-technology view.
- While the SME's listed on the Braby's website were spread geographically, the telephonic interviews were limited to the KwaZulu Natal region of South Africa.

#### 4.5.3. LIMITATIONS – GENERAL

- Although all efforts were made to speak to the owner and/or manager of the business (or the email was directed towards the person running the operation), it was not possible in all cases. Some of the data was supplied by junior staff, who might not have a complete insight into the business.
- In the case where the interviewee was the owner, the results for section 5 (technology outlook of the owner) could be skewed. This could also be the case if the interviewee was a young technology expert and has a biased opinion towards the owner of the business.

Despite the limitations stated above, the researcher is of the opinion that the data can be used for the purpose it was intended.

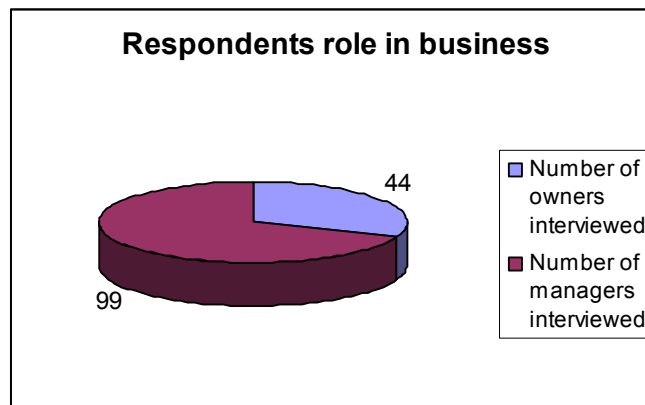
## CHAPTER 5: RESULTS

The results obtained through the data collection as described in Chapter 4, will be represented in graphical and table formats in this chapter. It will assume the same order as the questionnaire (Appendix A). Some of the questions will be grouped together for ease of reference.

### 5.1. RESPONDENT DEMOGRAPHICS AND RELATED INFORMATION

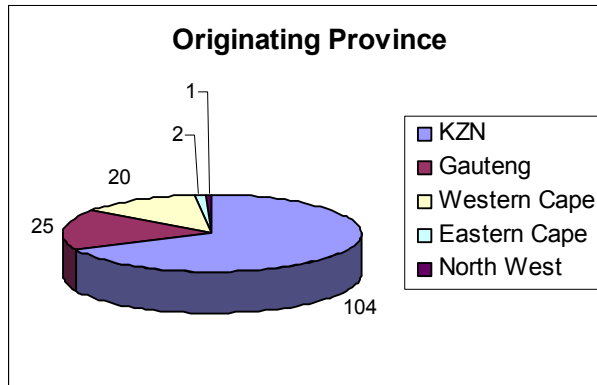
The first three questions in this section recorded the businesses name, the name of the interviewee, and the interviewee's position in the business. The following statistics represent the number of owners and managers that were interviewed. The statistics were included in both sections where the owner was also the manager, or vice versa.

Figure 3



The following question attempted to establish the geographical distribution of the respondents. The result is shown as a pie graph indicating actual units.

Figure 4



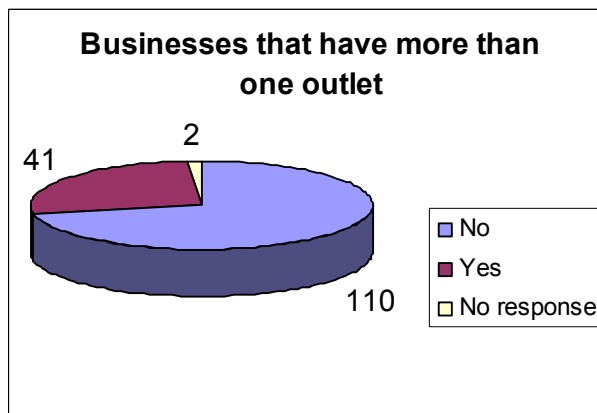
An analysis of the number of employees was done and the results are depicted in table 2 below.

Table 2

No of Employees	
Average	24.01
Mean	12.0
Mode	5
Min	1
Max	400

The questionnaire also included a question regarding the national spread of the responding businesses. Figure 5 reflects the actual number of businesses.

Figure 5



The question regarding the length of time that the businesses have been in operation was categorised and managed by means of a drop-down menu in the questionnaire. The first graph indicates the actual responses per category and the second a summation of the same data expressed as a percentage.

Figure 6

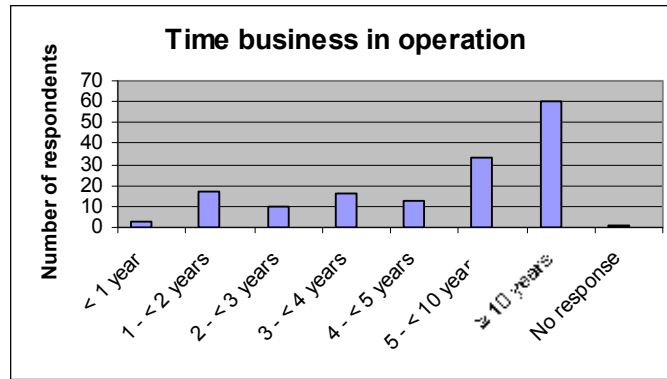
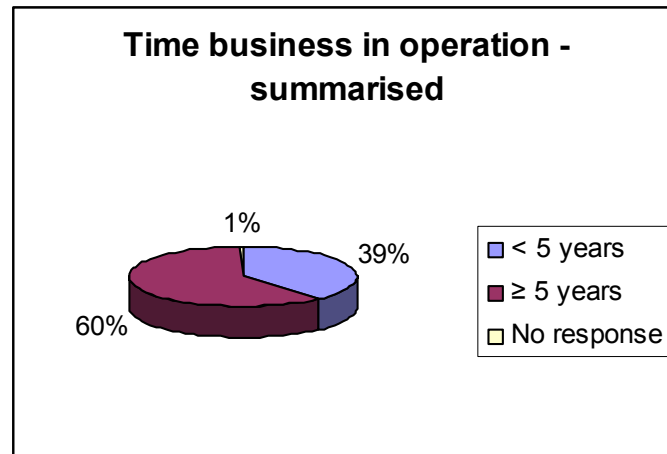
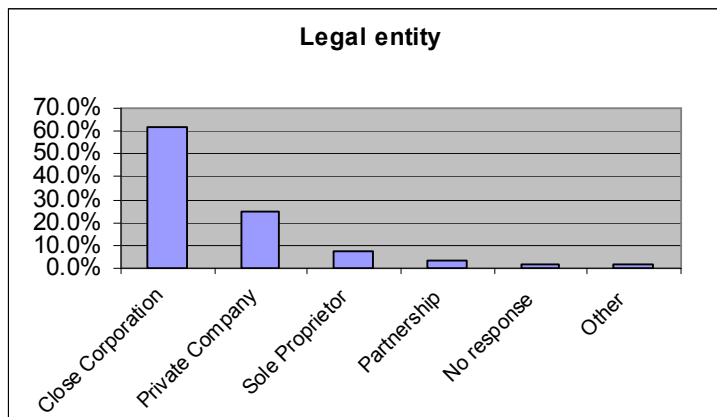


Figure 7



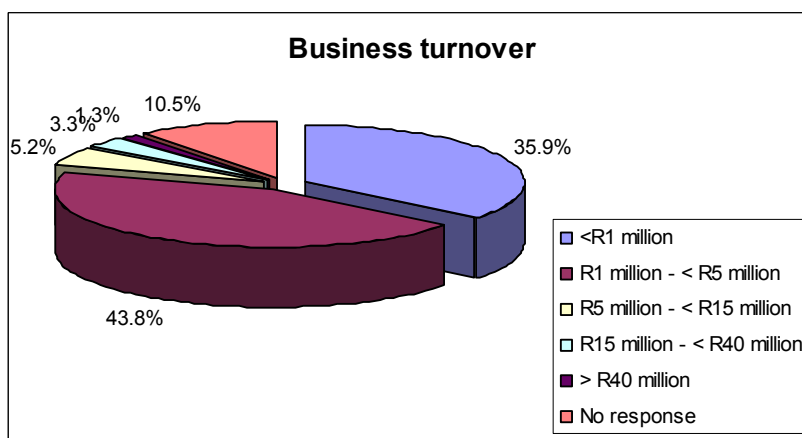
In an effort to have an understanding of the legal entities of the data sample, a question regarding the legal standing of the SME's was included. Below is a bar graph drawing a comparison, using percentage as the measuring unit, between the various respondents.

Figure 8



The categorisation of the turnover of the businesses was done in accordance to the Act 26 of 2003: National Small Business Amendment Act of 2003. The resultant details are displayed graphically below as a percentage of the total respondent sample.

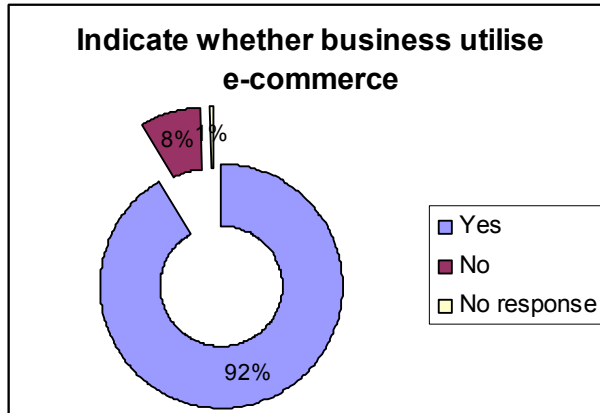
Figure 9



The final question in this section covered the area of e-commerce utilisation.

The graph below shows the responses using a doughnut graph.

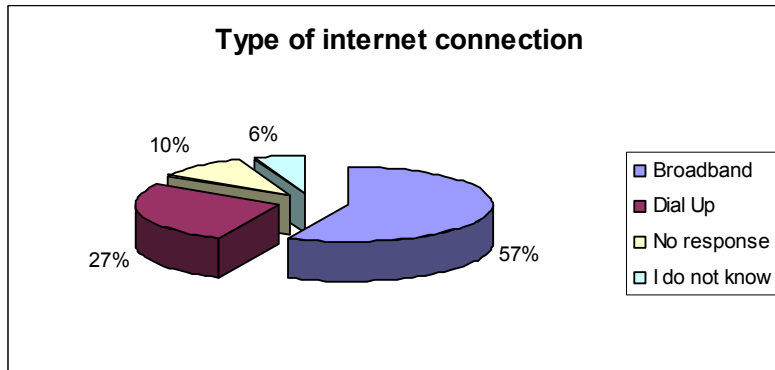
Figure 10



5.2. CURRENT INTERNET USAGE BY THE SME'S

The answers related to the type of the internet connection were managed by means of a drop down menu. The results mainly reflect the breakdown between broadband and dial-up access.

Figure 11



The question regarding the length of time that the businesses have had access to the internet was categorised and managed by means of a drop-down menu in the questionnaire. The first graph indicates the percentage responses per category and the second a summation of the same data also expressed as a percentage.

Figure 12

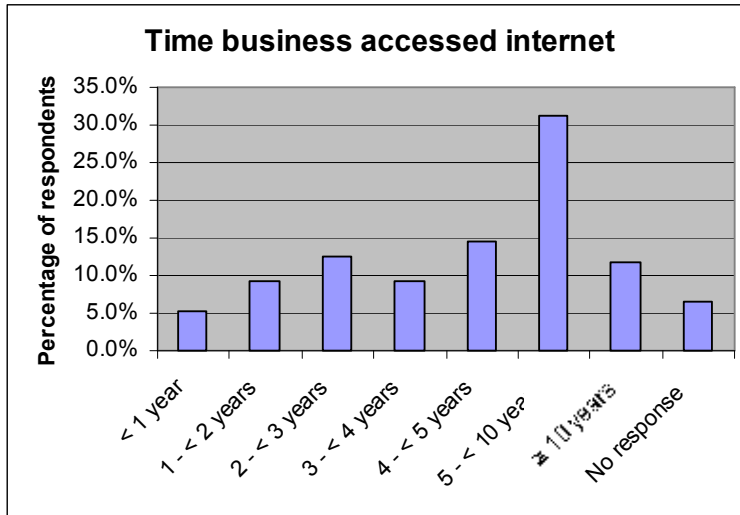
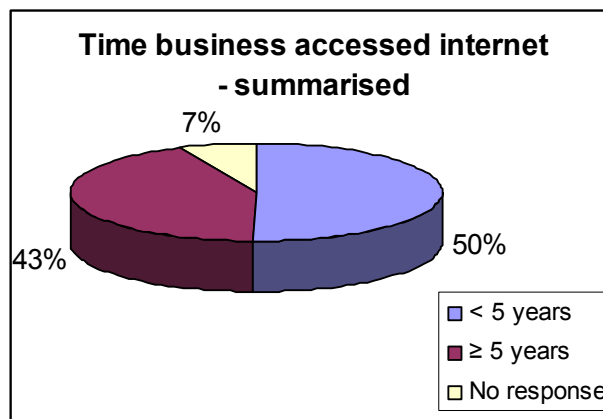


Figure 13



Respondents were requested to list all the usages of the internet by the businesses. There were a total of 143 responses and the graph below indicates the percentage of utilisation of the specific functionality.

Figure 14

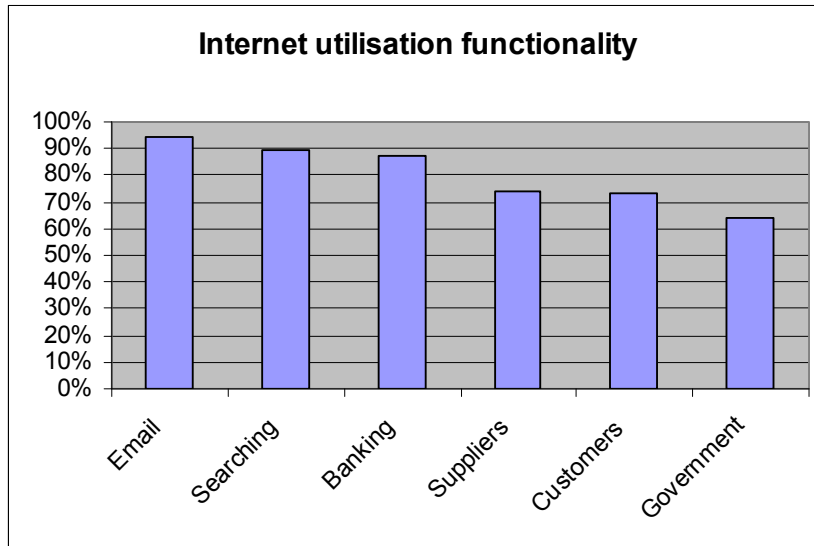


Table 3 below is a summation of the open-ended question related to any additional functionalities of the internet that the business would engage in. The table reflects the number of respondents in each subcategory while 30 responses in total were received.

Table 3

ADDITIONAL FUNCTIONALITIES FOR INTERNET												
FUNCTIONALITY	Remote Access	Research	Entertainment	Marketing & Advertising	Transacting	Correspondence	VOIP	Banking	Convenience	Forums	Intranet	Monitoring
NUMBER OF RESPONSES	6	6	3	3	3	2	2	1	1	1	1	1

### 5.3. BENEFITS

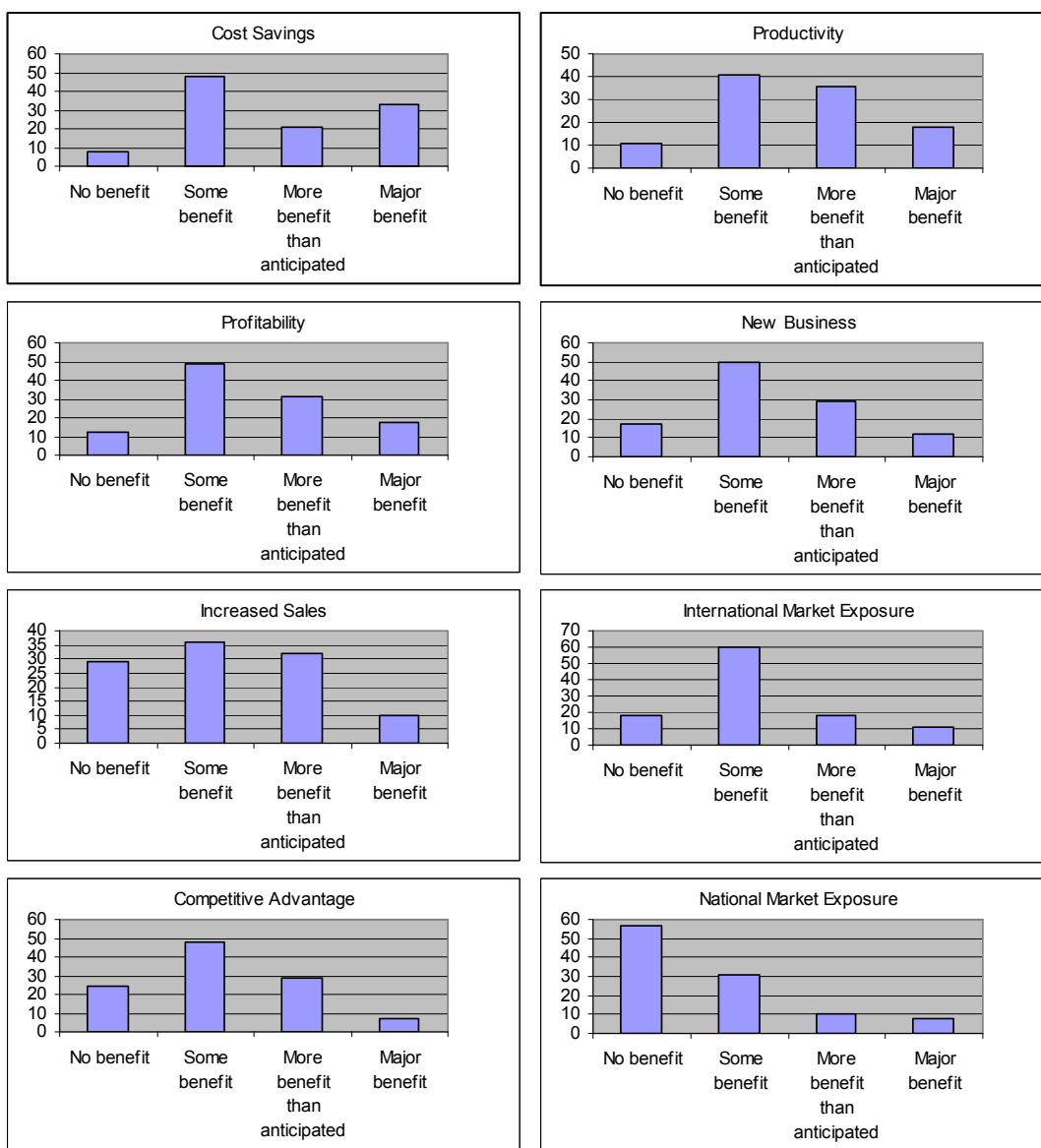
One of the main aims of the research is to establish whether SME's that have adopted e-commerce, have achieved benefit and to what extent. This section of the results aims to give an in-depth, detailed compilation of data in order to support the analysis in Chapter 6.

Eight questions, each relating to a different possible benefit were posed to the interviewees. They had to rate the benefit on the following scale:

- No benefit achieved
- Some benefit achieved
- More benefit than anticipated achieved
- Major benefit achieved.

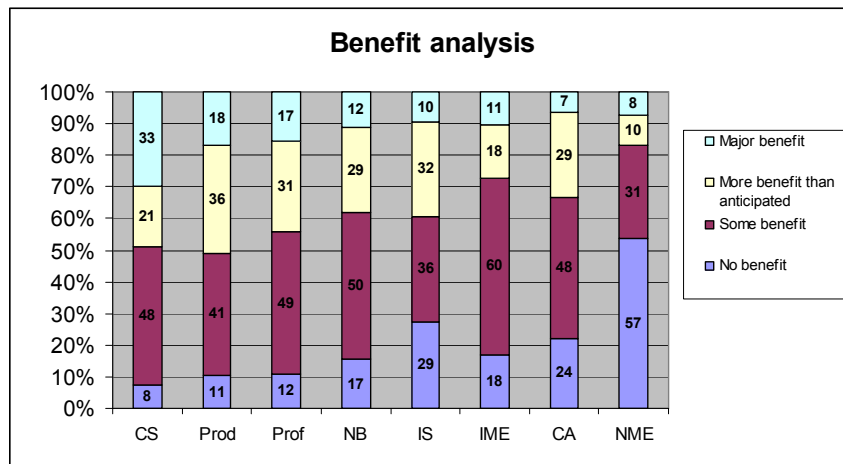
Below is the graphical display of the results of these questions.

Figure 15



A summary of the above data is captured in a 100% stacked column graph below. It compares the percentage each value contributes to a total across the benefit categories. The actual numbers are also included. The abbreviated benefit codes are explained in the List of Abbreviations at the start of this thesis.

Figure 16

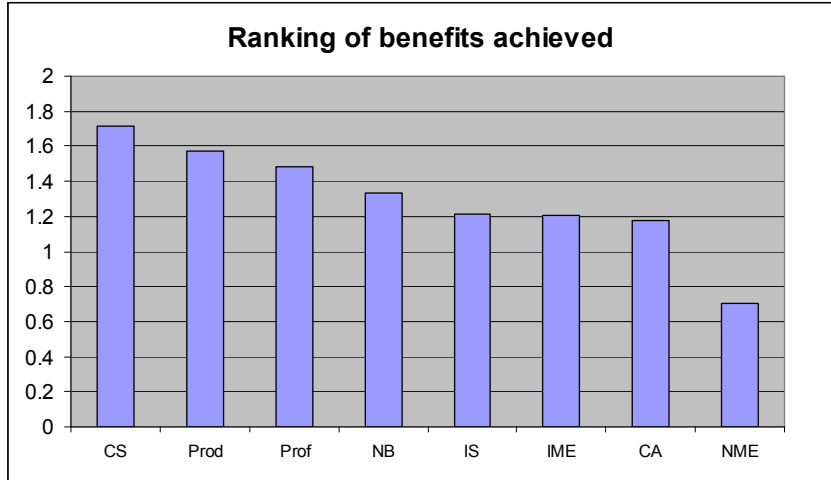


The following bar graph ranks the different benefits against each other. The ranking was achieved by allocating a numerical value to the specific response according to the following scale:

- No benefit achieved = 0
- Some benefit achieved = 1
- More benefit than anticipated achieved = 2
- Major benefit achieved = 3.

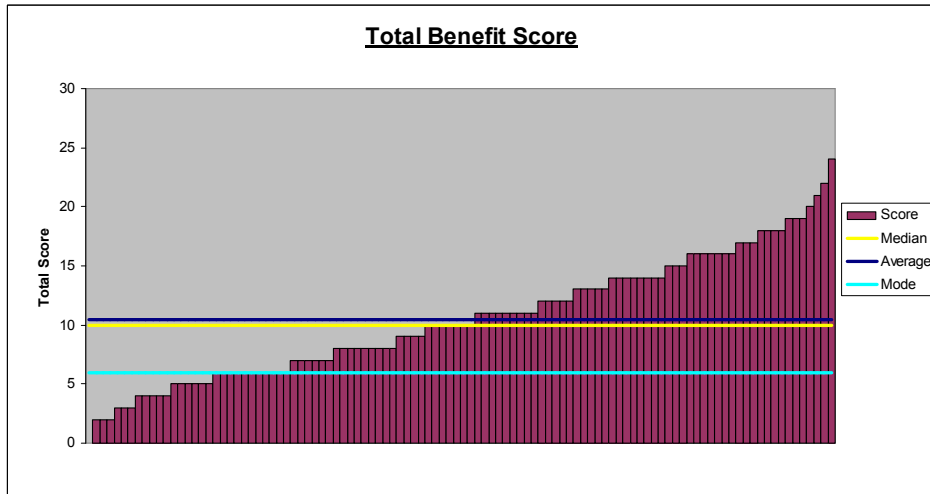
The average numerical value for each benefit was determined and shown in the graph below.

Figure 17



The same scoring methodology was applied to determine the bar graph below. The graph visually represents the total data sample from the benefit section of the data collection instrument. The sum of all eight categories was calculated to determine a total benefit score. Included in the graph are the average, median, and mode scores, which were calculated separately.

Figure 18



The eight pre-determined benefits were derived from the literature reviews. The last question in the category was open-ended and aimed to determine whether there was any other benefit achieved over and above the eight previously mentioned. The results were grouped together and table 4 below reflects the summation of these benefits.

Table 4

OTHER BENEFITS ACHIEVED					
RESPONSE	Efficiency	Convenience	Impr Comms	Security	Marketing
TOTAL	9	3	3	1	1

#### 5.4. BARRIERS

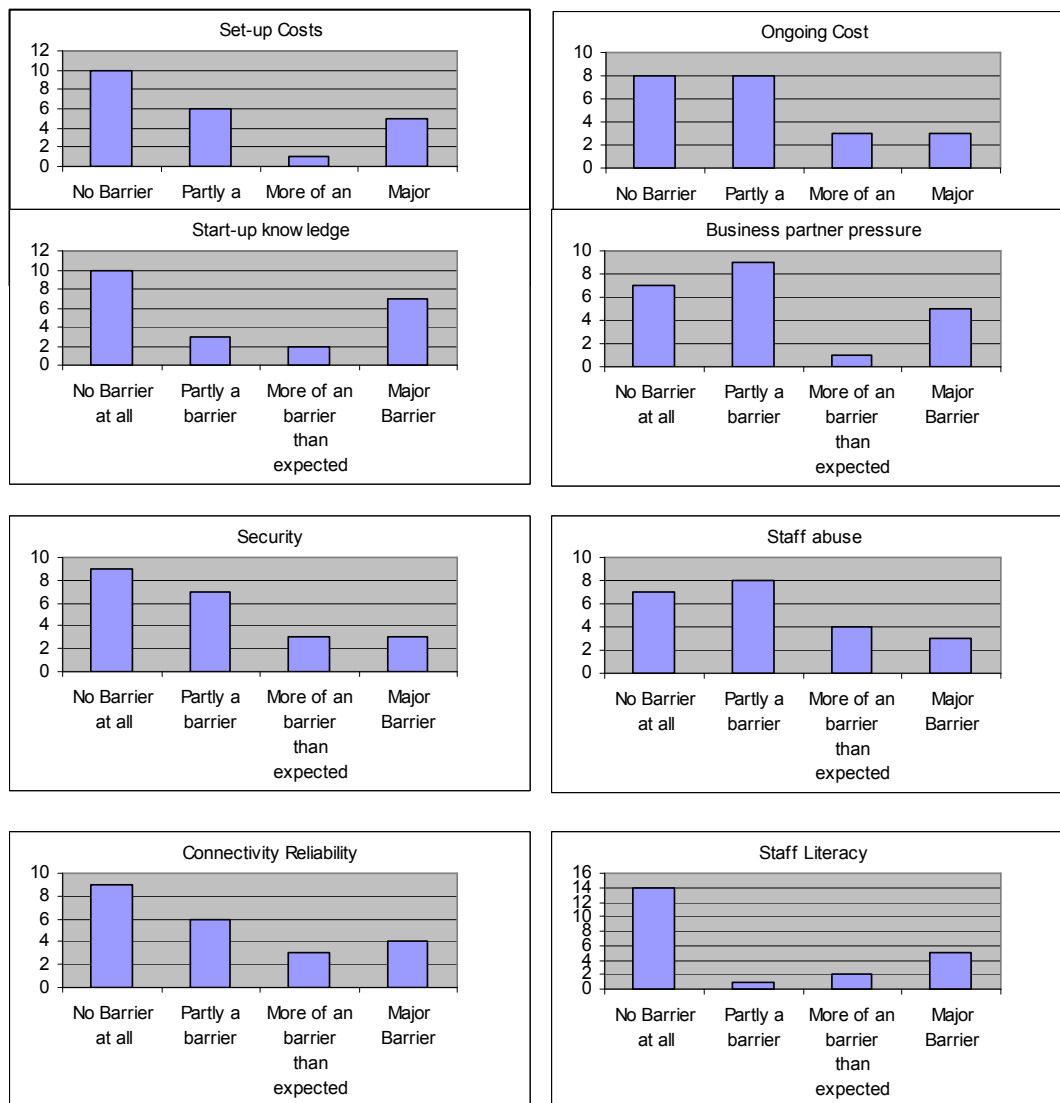
The second main objective of the research is to establish whether SME's that have not adopted e-commerce perceive that any barriers exist in the process and then, subsequently, to determine to what extent the barrier is perceived to be an obstacle. This section of the results aims to give an in-depth, detailed compilation of data in order to support further analysis in Chapter 6.

Eight questions, each relating to a different perceived barrier were posed to the interviewees. They had to rate the benefit on the following scale:

- No barrier at all
- Partly a barrier
- More of a barrier than anticipated
- Major barrier.

Figure 19 below displays the results of these questions graphically.

Figure 19



A summary of the data above is captured in a 100% stacked column graph below (Figure 20). It compares the percentage each value contributes to a total across the perceived barrier categories. The actual numbers are also included. The abbreviated benefit codes are explained in the List of Abbreviations at the start of this thesis.

Figure 20

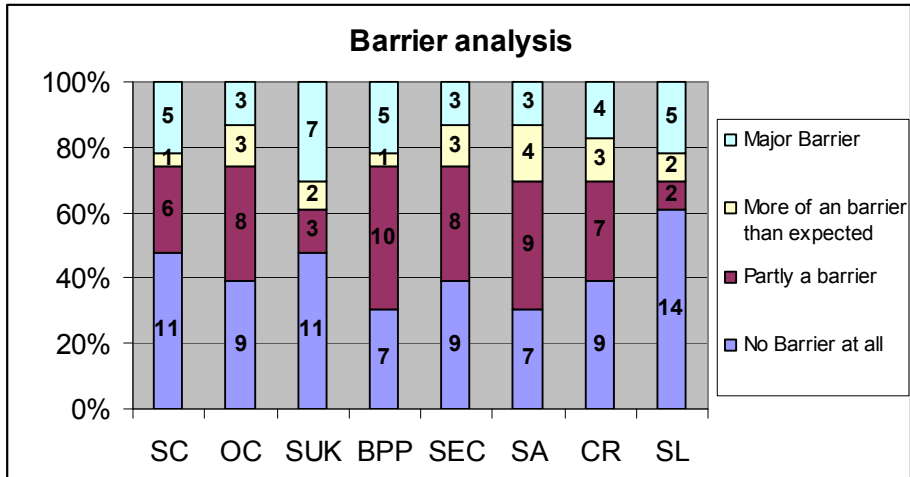


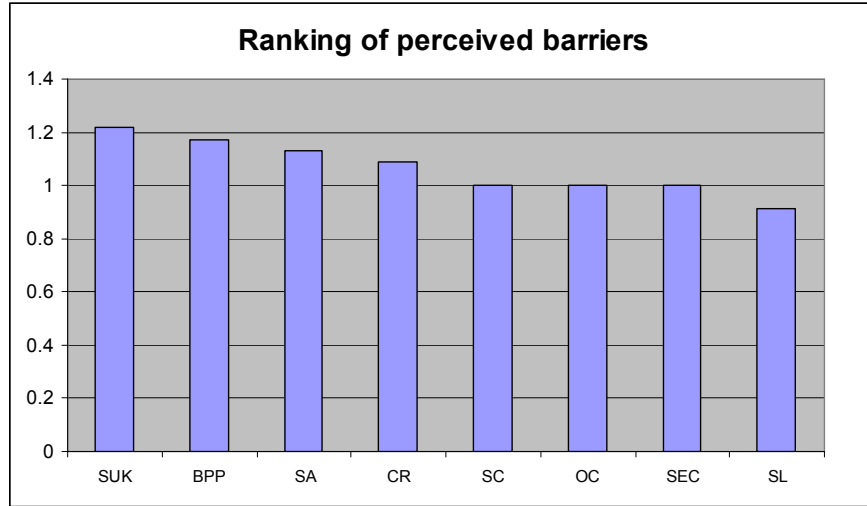
Figure 21 is a bar graph which ranks the different barriers against each other.

The ranking was achieved by allocating a numerical value to the specific response according to the following scale:

- No barrier at all = 0
- Partly a barrier = 1
- More of a barrier than anticipated = 2
- Major barrier = 3.

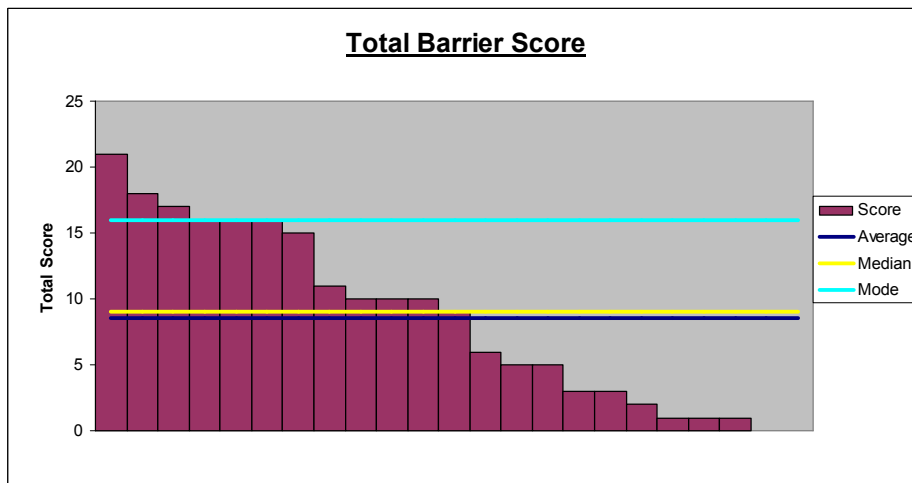
The average numerical value was determined and was used to produce the graph below.

Figure 21



The same scoring methodology was applied to determine the bar graph below (Figure 22). The graph visually projects the total data sample from the barrier section of the data collection instrument. The sum of all eight categories was calculated to determine a total barrier score. Included in the graph are the average, median, and mode scores, which were calculated separately.

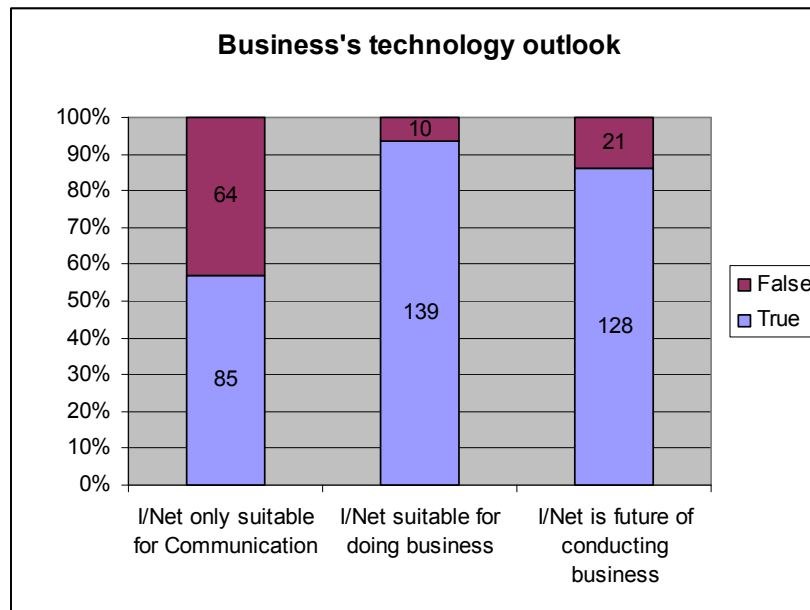
Figure 22



### 5.5. TECHNOLOGY OUTLOOK

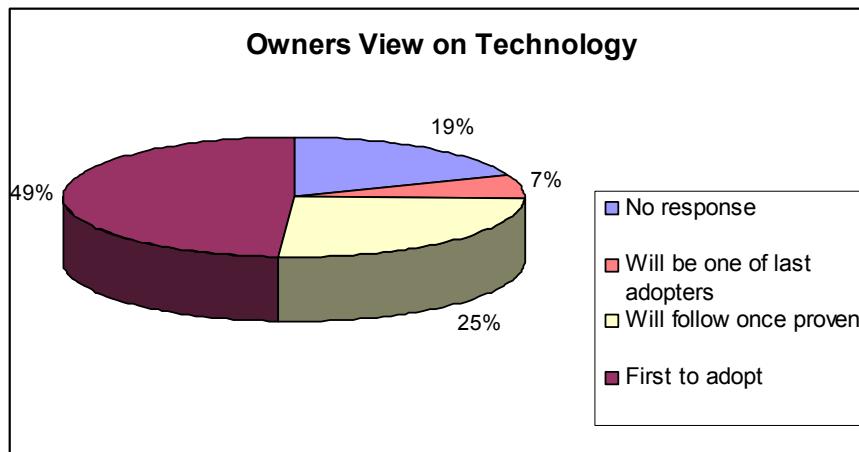
In an effort to get a better understanding of one of the more profound factors influencing the adoption of e-commerce by business, an analysis was made of both the business and the owner's views on technology. Three questions were posed to the interviewees, each of which required a true or false answer.

Figure 23



To establish the owners view on technology, respondents were prompted to select an option, which best describes their viewpoint, from a list of three. The resulting data is displayed in a figure 24 (a pie graph) below using percentages.

Figure 24



### 5.6. CORRELATION MATRIX

To establish whether any relationships exist between the elements of data collected, a correlation matrix was constructed. The total scores from the benefit and barrier sections were used in performing the correlation calculus.

Table 5

CORRELATION MATRIX																			
	CODE	IO	IM	PRO	NOE	NOO	TIO	OS	TO	I4B	TIC	TIA	BAR	BEN	IOC	ISB	IIF	OVT	TOI
DEMOGRAPHIC INFO	IO	1																	
	IM	0.447	1																
	PRO	0.110	0.2633	1															
	NOE	-0.254	-0.287	-0.099	1														
	NOO	-0.137	-0.182	0.064	0.264	1													
	TIO	0.000	-0.077	0.139	0.214	0.236	1												
	OS	-0.028	-0.129	-0.227	-0.067	-0.053	-0.122	1											
TO	-0.244	0.062	0.159	0.230	0.402	0.218	-0.029	1											
I/NET USAGE	I4B	0.030	0.101	0.170	0.093	0.173	0.394	-0.136	0.129	1									
	TIC	-0.020	-0.074	0.094	0.011	0.236	0.150	-0.081	0.032	0.060	1								
	TIA	0.171	0.035	0.195	0.119	0.128	0.660	-0.229	0.131	0.201	0.225	1							
BENEFIT	BAR	-0.357	-0.218	-0.457	-0.060	-0.132	-0.249	0.273	-0.336	-0.598	-0.868	-0.575	1						
	BEN	-0.282	-0.185	-0.129	0.210	0.268	0.014	0.135	0.150	0.201	0.151	0.088	-0.610	1					
TECHNOLOGY OUTLOOK	IOC	-0.224	-0.220	-0.347	0.183	-0.083	0.025	0.122	-0.171	-0.091	-0.200	-0.163	0.004	0.165	1				
	ISB	0.043	0.008	0.130	0.081	0.106	0.239	-0.017	0.124	0.357	0.134	0.060	-0.545	-0.125	0.040	1			
	IIF	-0.046	-0.148	-0.059	0.098	0.149	0.041	0.133	-0.043	0.254	0.059	0.025	-0.387	0.131	0.155	0.524	1		
	OVT	0.021	-0.046	0.195	0.133	0.241	0.477	-0.197	0.028	0.394	0.307	0.395	-0.718	0.346	-0.119	0.167	0.167	1	
	TOI	-0.367	-0.440	-0.637	0.223	0.047	-0.149	0.307	-0.216	-0.240	-0.162	-0.357	0.512	0.266	0.656	-0.259	0.145	-0.259	1

#### LEGEND

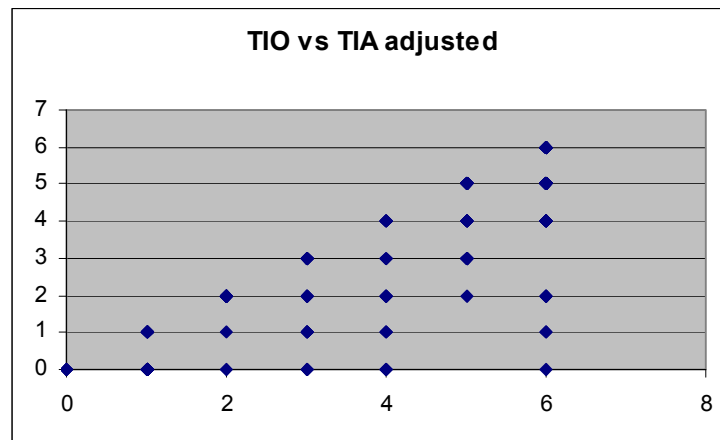
Correlation > 0.5
Correlation > 0.375 and ≤ 0.5
Correlation < -0.5
Correlation < -0.375 and ≥ -0.5

The field codes are abbreviations for the data fields. A full list of these codes with their meaning can be found in the List of Abbreviations at the start of this thesis.

The correlation was also calculated between the following two fields:

TIO - Time that the business has been in operation and TIA adj. - Time that business has had internet connection adjusted in order for the time of the internet connectivity does not exceed the TIO period. A scatter diagram was produced depicting the relationship between these components.

Figure 25

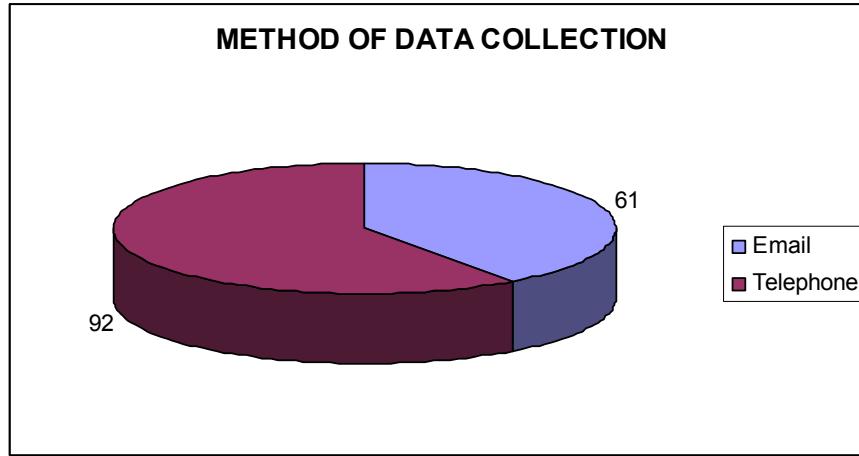


#### 5.7. GENERAL

The data extracted from the instrument also contains general information, which does not fit into one of the categories above. The data is, therefore, depicted in this section.

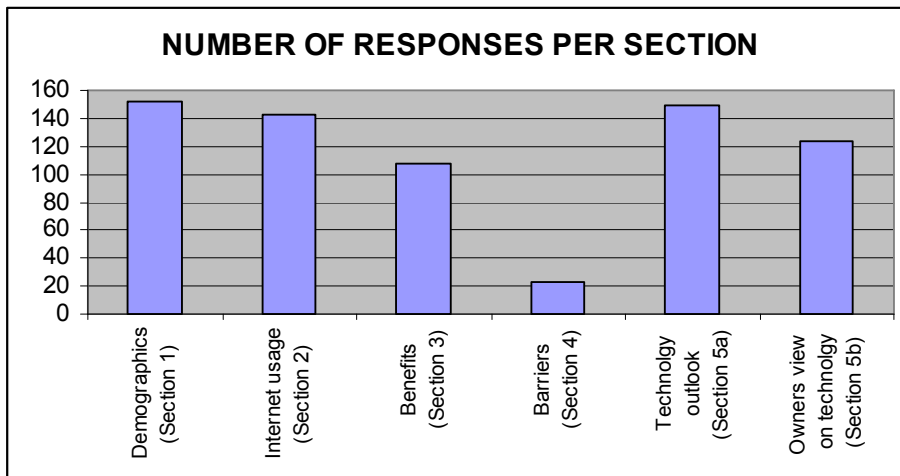
As explained in previous chapters, there were two techniques used for data collection. The graph below (Figure 26) indicates the actual numbers of telephonic interviews as well as e-mail respondents.

Figure 26



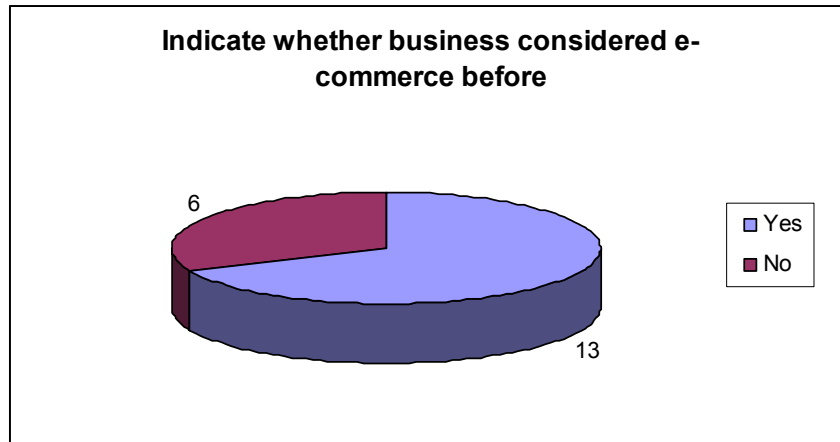
The instrument contained six sections. The bar chart below represents the actual number of responses per section. Section 5 had two distinctly different subsections and the graph reflects these sections separately. Section 6 only contained the name of the interviewee and date of the interview so it has been excluded from the graph.

Figure 27



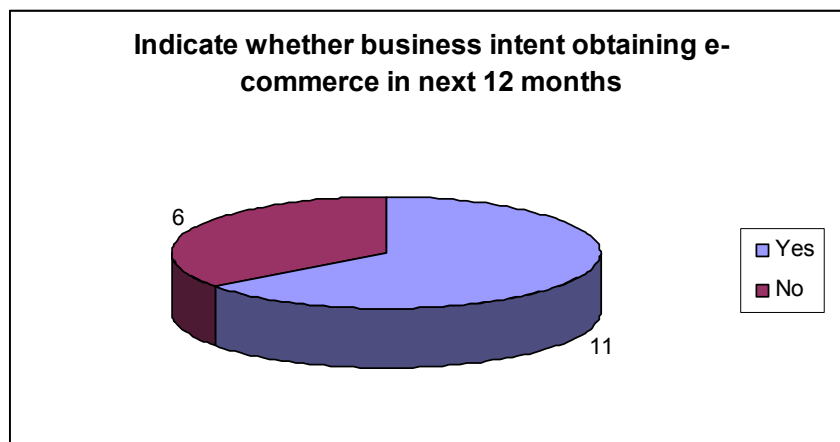
The businesses that have not yet adopted e-commerce were questioned about whether they had considered e-commerce before. The responses are captured in figure 28 below. The values are actual number of responses.

Figure 28



The businesses were then questioned about whether they will consider obtaining e-commerce during the next 12 months. The numbers again represent the actual numbers of respondents.

Figure 29



## CHAPTER 6: DISCUSSION OF THE RESULTS

### 6.1. BARRIERS

Since the results of the survey were heavily biased towards adopters of e-commerce this has had a strong influence on the results of the section on barriers. Although there were only 23 respondents who completed the section related to barriers, it was felt that there was still valuable information included which could be used in any analysis. However, it does mean that further in-depth research would be necessary to confirm the high-level findings.

#### 6.1.1. DEVELOPMENT AND GROWTH OF E-COMMERCE

The development and growth of the utilisation of e-commerce by SME's in South Africa has followed the worldwide trend by showing phenomenal growth. Although the study was biased towards users of the internet (1/3 of the respondents used e-mail), a staggering 91% of the total respondents responded positively to the question whether they utilise the internet for business purposes. Taking the argument one step further, 12 of the 16 respondents who are not currently making use of e-commerce, indicated that they will obtain the internet in the following 12 months.

The statistics above support the underlying principle that SME's do believe that there are benefits in adopting e-commerce. However, the same six respondents indicated that they have not considered adopting e-commerce before, possibly showing a certain level of ignorance or, at worst, a technophobia towards e-commerce.

Another encouraging statistic coming out of the research indicates that there is twice the number of broadband users than dial-up. This figure would probably not be worthy of note in a first world country but, in the context of South Africa, where high connection fees and infrastructure constraints exist, this is relatively high. It strengthens the fact that the SME's in South Africa are definitely moving with the international trends of phenomenal growth in this area.

#### 6.1.2. GOVERNMENT'S ROLE IN E-COMMERCE GROWTH

It is clear from the literature that governments are not doing enough to promote the adoption of e-commerce, especially by SME's. In the case of South Africa, there have been certain initiatives to assist business to lower the cost of doing business. Unfortunately, as stated above, the cost of the internet access is still much higher than in developed countries and is even high when compared to other developing countries.

When analysing the current usage of the SME's, one of the components explored was the usage for governmental transactions. The examples given to the respondents of typical government transactions were:

- Unemployment fund payments
- Completion of South African Revenue Services forms.

When the responses are analysed and compared to the other uses of e-commerce, governmental transactions had the lowest rating at only 64% utilisation. When this is compared to e-mail usage (the most used component and the easiest to adopt), which has a 94% utilisation rate, it is clear that there

is still major work required to achieve similar levels. However, the figure is not materially different to those for interfacing transactions with customers and suppliers (73% and 74% respectively). This shows that government is not lagging far behind the private sector and that the majority of SME's utilising e-commerce are also using it to transact with the South African government. The highest ranked barrier in the total barrier score was 'start-up knowledge', with 30% of the respondents rating it as a major barrier. This would indicate that there is still some level of education required. The debate could be whether it is the private or the public sector's duty to fill the gap. Nevertheless, government has a roll to play in the education process, and something as basic as this could easily be included in the secondary school curriculum.

#### 6.1.3. PERCEIVED BARRIERS IN ADOPTING E-COMMERCE

In an effort to answer the question whether barriers to their adoption of e-commerce do exist for South African SME's, the total barrier score can be consulted. Only two of the 23 respondents had a score of zero, which indicates that they were of the opinion that none of the barriers listed was a barrier to them. However, the rest of the respondents (91%) indicated that at least one barrier was applicable to them. Therefore, it can be concluded that there are barriers to the adoption of e-commerce for SME's.

A further interesting point is the range of the total barrier score. It ranges from zero to 21 and has an average of 8.5, which is about a third of the maximum score of 24. That would indicate that the level of the barriers is perceived to be between relatively low and moderate.

The barriers are ranked against each other in Figure 21. The scores were calculated by using the average of the totals allocated to the specific level. It is interesting that the range of the averages is very narrow. It varies between 0.91 (Staff literacy) and 1.22 (Start-up knowledge). No one barrier is significantly different than the others which could lead to the conclusion that the barriers are seen as barriers in general and not something specific that would prevent the SME to adopt e-commerce.

Figure 21, in conjunction with the individual barrier graphs (Figure 19) are referred to in the following section where an analysis of each individual barrier is done. The order of the barriers is determined by the average score and is in high to low order.

#### 6.1.3.1. START-UP KNOWLEDGE (SUK)

SUK was ranked the highest of all the barriers (when using the average barrier score) with an average of 1.22. Along with Staff Literacy, it is the most varied barrier in the sense that 11 respondents rated it as being no barrier and 7 rated it as a major barrier; which means that 83% of the responses are in these categories. It seems that SUK is, therefore, the great divider as most rating appeared at the opposite sides of the scale. The SME's that do not have the know-how to start with e-commerce, see it as the major obstacle whilst the ones that do have the knowledge to get the process started, see it as no barrier at all.

#### 6.1.3.2. BUSINESS PARTNERS PRESSURE (NOT BEING ON-LINE) (BPP)

BPP was second highest ranked barrier with an average score of 1.18. This barrier is a short-term concern since, as more customers and suppliers adopt e-commerce, the pressure on the SME's to join the e-commerce space will intensify. In analysing the internet usage by the adopters, it is noticed that interaction with the suppliers and customers is only ranked 4<sup>th</sup> and 5<sup>th</sup> respectively. The most used functionality in the internet is e-mail (94%) followed by searching (90%) and banking (87%). Therefore, it can be reasoned that although the SME's feel some pressure from the supply chain not utilising e-commerce, there are definitely other benefits that can be achieved from e-commerce for them. However, real or perceived, BPP is currently rated as one of the highest ranked barriers and, as such, must be of concern.

#### 6.1.3.3. STAFF ABUSE (SA)

The SA average score was 1.13. Since this is one of the top three scores, it seems that SME's are concerned about staff abusing the internet facility. When the spread of the ratings was analysed, SA was indicated to be the most evenly spaced of all the barriers, showing a general concern towards staff abuse. It could be linked to the staff literacy (SL). SL was ranked the lowest of all the barriers and it seems that SME's are concerned that they employ knowledgeable staff who know how to abuse the internet while the owners do not know how to start-up e-commerce. SA is the only barrier in the top 4 that does not have a short to medium term solution. This, more than any other barrier, is probably a real concern for the SME.

#### 6.1.3.4. CONNECTIVITY RELIABILITY (CR)

CR seems still to be of a barrier for some SME's as it achieved a score of 1.09 on the scoring model. However, only 30% of the respondents rated both SA and CR as a major concern or, at best, are more of a concern than anticipated. It therefore seems that these factors are not seen as top of mind barriers for the SME's. The reliability of the internet connectivity, whether a real or a perceived barrier, will improve with the increased roll-out and usage of broadband in South Africa.

#### 6.1.3.5. OTHER BARRIERS

The other barriers were very much on a par with each other and achieved the following scores:

- Start-up costs – 1.00
- Ongoing costs – 1.00
- Security – 1.00
- Staff literacy - 0.91

The important conclusion from this section is that there are barriers, perceived or otherwise, that do exist in the minds of the SME's. When the top four barriers are analysed, it can be seen that three of them (SUK, BPP and CA) are short-term barriers and that they will soon disappear. With this in mind, it can be concluded that the exponential growth that is synonymous with e-commerce roll-out will still continue in South Africa in the foreseeable future.

Included in the barrier section of the research instrument was an open-ended question asking about any other barriers other than those mentioned. Only one

comment was received which was not meaningful. This is in contrast to the benefits section, which attracted 17 replies. This supports the theory that these barriers do only exist in the mind of the owner and could be overcome if the mindset of the people within the business changes.

#### 6.1.4. CORRELATION MATRIX - BARRIERS

The essence in analysing the relationships between the demographical data of the survey and the barriers for South African SME's, is captured in the correlation matrix.

The correlation matrix shows negative correlations with the following demographic and the internet usage data; PRO: -0.457, I4B: -0.598, TIC: -0.822, TIA: -0.544 and BEN: -0.520. These results were to be expected taking into account that mainly non-users of e-commerce completed the barriers section.

However, an interesting finding was the relationship between the perceived barriers and the technology outlook of the business and the owner. Strong negative correlations were found between the total barrier score and the following data:

- the internet is suitable for business (ISB): -0.541
- the owner's view of technology (OVT): -0.741

The data suggests that SME's with high barrier scores also believe that the internet is not suitable for business and the owner has a negative view of technology. When the argument is turned around, it can be concluded that

owners who have a negative view of technology, also believe that there are high levels of barriers to adopting e-commerce.

#### 6.1.5. HYPOTHESIS 1

The empirical evidence above is conclusive as to whether the null hypothesis (H<sub>0</sub>) should be rejected. There is no doubt that there are barriers for SME's in emerging markets to adopt e-commerce. There are two factors that need further research:

- whether the barriers are real or perceived and
- whether they are short, medium or long term barrier.

### 6.2. BENEFITS

#### 6.2.1. FINANCIAL BENEFITS

The literature highlighted the fact that financial benefit is not always the main objective for SME's to adopt e-commerce. However, it also brought out the fact that those SME's that did adopt e-commerce, more often than not, did manage financial benefit. The ranking of the benefits graph (Figure 17) indicates the top three benefits as follows (with their scores in brackets):

- Cost savings (1.72)
- Productivity (1.58)
- Profitability (1.49)

All three benefits have a direct impact on the financial performance of the business. There seems to be an overwhelmingly coherent feeling that achieving

financial benefit is possible and achievable when adopting e-commerce, even in an emerging market.

Supporting statistics can be extracted from table 5. The most common benefit listed is efficiency, named more times (9) than all the other benefits together. Efficiency also has a direct impact on the bottom line of the business.

This seems to be in contrast to the findings of Cohen and Kallirroi (2006), who found that cost reduction was not the major driving force in adopting e-commerce. Financial benefit is definitely at the front of the mind of the South African SME's when they adopt e-commerce.

#### 6.2.2. SURVIVAL OR OPPORTUNITY

As previously stated, the study is biased towards SME's that have adopted e-commerce. 91% of the SME's questioned have adopted e-commerce for their businesses and 43.4% have had it for longer than five years.

When this is added to that the fact that the usage of e-mail, research and banking is around 90% by these SME's, it seems that e-commerce has become a commodity, a necessary business tool. When this point is linked to the financial benefits above, it shows that adopting e-commerce has become a matter of survival for emerging market SME's. It does not mean that they have to compete internationally or to even ensure that they have a local footprint. As a matter of fact, it does not have anything to do with the supply chain. It has all to do with cost of doing business, as simple as that. In a low cost, low margin environment, it is important that South African SME's look at improving

their cost to revenue ratio and with the evidence above, what better way than to adopt or increase the usage of e-commerce.

### 6.2.3. BENEFITS FOR SME'S

In analysing whether SME's have achieved any benefits, the total benefit score graph (Figure 18) is used in the analysis. The graph ranks all 108 respondents by adding their scores for the various responses to the benefits that they have achieved.

The most obvious finding from the data is that it has a very wide range. It covers all the possibilities, from zero to a maximum score of 24, which shows that the benefits experienced by SME's and derived from adopting e-commerce, differ vastly from one another and between SME's. The graph has an average of 10.4, median of 10 and mode of 6. The fact that the average (the arithmetic mean) and the median (the middle number) are close together indicates a normal distribution. The one factor that skews the statistics is the mode (most frequent number).

The next set of data used in the analysis, is the ranking of benefits graph (Figure 17). It ranks all the benefits according to the average score achieved. The range for the benefits is much wider than the range for the barriers. Here it ranges from National Market Penetration (0.71) to Cost Savings (1.72), which supports the proposition above that the benefits that SME's achieve are more complex than the barriers that exist. The individual benefits are analysed below using their ranking score from high to low.

#### 6.2.3.1. COST SAVINGS (CS)

The average score for this specific benefit (that SME's believe they have achieved cost savings), is 1.72. This is the highest score and scores higher than the middle point of the possible range, which is 1.5 (maximum average score is 3). Only 7.4% of the respondents indicated that they received no cost savings benefit while 30.5% reported major benefits. This finding is consistent with the results of the rest of the study, which indicate that the financial benefits are ranked highly in the benefits rankings. In order to have a better understanding on how this is achieved, the internet usage data (Figure 14) should be analysed. It is found that there are high usages of e-mail, banking, and governmental transactions which all have a direct impact (lower banking costs) or indirect impact (time and transport costs saved to visit government institutions) on the cost structure of the business.

#### 6.2.3.2. PRODUCTIVITY (PROD)

The second highest rated benefit, PROD (1.58), can also be linked to the utilisation of the internet (Figure 14). The impact that e-mail, internet searches, and internet banking have on the SME's is well documented. Leveraging of these functionalities, the owner allows his staff more time to be involved in value-adding functions. Only eleven respondents reported no productivity improvement after adopting e-commerce.

#### 6.2.3.3. PROFATIBILITY (PROF)

PROF achieved an average total benefit score of 1.49. Profitability has two major components, cost, and revenue. Costs have been reported as the main

benefit and it has been discussed in previous section. Revenue is mostly driven by sales (new business and increased sales from existing business), and was listed as separate benefits. It achieved scores of 1.33 (new business) and 1.21 (increased sales). It is therefore no surprise that profitability is rated in the top three benefits achieved as both costs and revenue has been positively impacted by the adoption of e-commerce. The most frequent response was 'some benefit' with a fair amount of responses rating it higher.

#### 6.2.3.4. OTHER BENEFITS

As reported above, all the other benefits achieved, all directly affect the profitability of the business and as a consequence, also the top three benefits. The only exceptions being the national and international market reach. Quite significantly, national market reach only achieved a score of 0.71, which is substantially lower than the score for the international market reach which was 1.20. From the data available, there is no logical explanation for this phenomenon and further research will need to be conducted to get a deeper understanding of the influencing factors on these benefits.

Table 5 lists all the other benefits included a variety of benefits not offered in the standard questions. The most significant of these is efficiency. It was mentioned nine times, which is more than total of all the other benefits together. However, efficiency could also be linked to the top three benefits which all affect the business's bottom line.

#### 6.2.3.5. CORELATION MATRIX - BENEFITS

The correlation matrix captures the essence of the analysis into what relationships exist between the demographical data and the benefits gained by South African SME's in adopting e-commerce. Surprisingly, there is no one demographic or other behavioural data field that has a clear correlation with the total barrier score field. The only conclusion that can be made is that any SME's, regardless of demographic or behavioural pattern, can achieve benefits from utilising e-commerce.

#### 6.2.4. HYPOTHESIS 2

The empirical evidence above is conclusive whether the null hypothesis ( $H_0$ ) should be rejected. There is no doubt that there are benefits that do exist for SME's in emerging market when adopting e-commerce. The questions remain whether some SME's can afford not to adopt e-commerce. Will they survive? This will form part of future research.

### 6.3. ADOPTION OF E-COMMERCE

#### 6.3.1. LEVEL OF ADOPTION

It is clear that a large percentage of respondents use the internet and e-commerce. 91% of the respondents answered positively to the question. Nearly half of them (43.2%) have had internet access for longer than five years. The signs are encouraging and it seems that the emerging market SME's are realising the benefits that the adoption of e-commerce could have for them. As discussed in the barriers section, it seems the current barriers to adopt e-

commerce are mostly short to medium term of nature. These barriers should disappear and expectations are that the adoption rate will keep escalating in the foreseeable future.

#### 6.3.2. STAGES OF ADOPTION

With every technology (although e-commerce is not new, it is still developing), the easiest functions are adopted first (Levenburg, Schwarz and Dandridge, 2002). Functions that are more complex follow later, until finally, there is a fully integrated system.

The utilisation graph (Figure 14) exactly supports this process, which indicates that the emerging market SME's follow the same stages of adoption that were identified through the analysis of their counterparts in developed countries. E-mail rates as the most adopted function which is also the least expensive and easiest to adopt. This is followed by searching the internet, banking, customer and supplier interfaces and lastly government interfaces. These progressively get more complex as dependencies on external parties grow.

#### 6.3.3. FACTORS INFLUENCING ADOPTION OF E-COMMERCE

The theory suggests that two major factors influence the adoption decisions:

- The financial benefits that could be achieved
- The owners view on technology.

The study supports these findings. The benefits that were achieved were mainly financial in nature and, as concluded above, it will definitely influence the SME's decision whether to adopt e-commerce. The negative correlation between the

owner's view on technology and the perceived barrier score, as well as a weak positive correlation between the owner's view on technology and the benefit score, indicates that the view of the owner on technology, plays a major part in the decision to adopt e-commerce or not.

Cloete (2003) found that the benefits and barriers that were identified in international studies are also pertinent to South Africa. However, the following research groups found that SME's did not achieve financial gain by adopting e-commerce and financial gain was not their main objective for engaging into the process:

- Chrysostome and Rosson (2004)
- Cohen and Kallirroi (2006)
- Walczuch, van Braven and Lundgren (2000).

It is interesting to note that the research was done over an extended period of time and the latest was only one years ago. Their findings are in stark contrast with Simpson and Docherty (2004) who agree with Cloete (and the results of this study) that the main benefits for SME's are cost savings and the increase in productivity, profitability, and efficiency.

#### 6.3.4. HYPOTHESIS 3

The empirical evidence above does not leave any room for debate whether the null hypothesis ( $H_0$ ) should be rejected. There is no doubt that the owner's view on technology definitely has an impact on the decision on the adoption of e-commerce by an emerging market SME.

#### 6.4. CORRELATION MATRIX

Apart from the references above to the correlation matrix, some other findings were also discovered. The following positive correlations were noted:

- That the type of interview (TOI) and the internet are only suitable for communications (IOC) revealed a positive correlation of 0.656. As was previously stated, the type of interview was biased towards SME's that have adopted e-commerce and it is then only logical that the views on whether the internet is only suitable for communications, will also be influenced by the type of interview.
- That the internet is the future of doing business (IIF) and the internet is suitable for doing business (ISB) revealed a positive correlation of 0.524. Both these factors indicate the view of the business on technology and should have a strong correlation. It is interesting that respondents had strongly indicated (IIF – 87% and ISB – 93%) that they believe that the internet is the way to do business now as well as into the future.
- Time in operation (TIO) and time business has had internet access (TIA) revealed a positive correlation of 0.660. From the strong correlation it seems that business acquire e-commerce early in their life cycle and then extend to usage as the business grows.

## **CHAPTER 7: CONCLUSION**

### 7.1. KEY RESEARCH OBJECTIVES

The research was undertaken to investigate the benefits and barriers that emerging market SME's do experience in the adoption of the e-commerce process. Three hypotheses were generated from the literature reviews, which highlighted the current topical issues that are being discussed on the subject. The data that was gathered from 153 respondents aimed at investigating these issues and tested the hypotheses specific to SME's in an emerging market. The major findings are expanded on below.

### 7.2. MAJOR FINDINGS - BARRIERS

- Barriers currently do exist for certain SME's that want to adopt e-commerce. The positive aspect is that most of these barriers are short-term in nature and should disappear in the medium term. These barriers include a lack of knowledge on how to set up e-commerce, business partners who are not on-line, and the reliability of the internet connection.
- On the negative side, there is a definite correlation between the adoption of e-commerce and the owner's view on technology. The SME's that have not adopted e-commerce need to do a proper internal assessment to ensure that the barriers they do experience are real and do not only exist in their minds, due to a negative outlook on technology by their

owners. With the advent of e-commerce becoming a commodity, these SME's will find it progressively more difficult to stay competitive with their national and international competitors.

- There is no significant difference in the range or level between the different barriers. They all seem to be perceived on a similar level adding to the theory that they are only perceived barriers and that the real barrier is the owner.

### 7.3. MAJOR FINDINGS - BENEFITS

- There are many different and contradicting views on the benefits that SME's can achieve when they adopt e-commerce. The most debated of all these are whether the SME's achieve financial benefit when they change from traditional commerce to e-commerce. The research into Greek, Dutch, and Canadian SME's indicated that they do not adopt e-commerce primarily for financial benefit and that those that have already adopted e-commerce did not extract major financial benefit from it. However, this was contradicted by this study as well as previous research done in the UK and in South Africa.
- There is a general consensus that e-commerce has moved from a developing to a more mature technology and has become a commodity. There is, therefore, no clear competitive advantage for the SME's although those lagging behind will find it progressively more difficult to compete.

#### 7.4. ADOPTION

- This study has confirmed previous studies that SME's are at different levels of adoption. The basic functionalities are adopted first and, as and when the need arises, adoption is expanded. An encouraging result was that South African SME's are in an advanced level of adoption. The initial comparison was with the Dutch study performed in 2000. It is clear that it would be unfair to compare South Africa to that study, as the adoption stage is far beyond where the Dutch companies were in 2000.
- The research also confirmed a study by Saulnier and Rosson (2004), which suggested that there are no specific demographics that predict the adoption of e-commerce by a SME. No evidence could be found, demographic or behavioural, that would point to a predictability factor. However, it was determined that there is a positive correlation between the length of time that a business has adopted e-commerce against the length of time it has been in operation. It seems that where the business adopts e-commerce early in their business life cycle, it tends to not only keep the technology, but also grow more dependent on the functionality.

#### 7.5. RECOMMENDATIONS FOR FURTHER RESEARCH

- It was clear from the outset that there would be benefits and barriers for local SME's when they adopt e-commerce. A recommendation for further studies would be to determine the level of these barriers and benefits using this study as a base. The research could aim to investigate

whether the intensity of the various components increased or decreased.

Do the perceived short-term barriers disappear?

- Another area of study that would be beneficial, is to determine what role strategy plays in the adoption decision process.

However, these studies would become increasingly difficult as e-commerce becomes more of a commodity, a 'must have' in the way that business is conducted.

#### 7.6. RECOMMENDATIONS FOR STAKEHOLDERS

- SME's that have not yet adopted e-commerce need to reconsider their strategy. Enough evidence exists for benefits that are achieved, even at the bottom end of e-commerce adoption. It has become a matter of survival and, as a result, e-commerce is no longer just 'nice to have'.
- Government has a definite role to play. From the utilisation statistics, it can be concluded that there is a fair amount of electronic interface with government departments but it ought to be used as leverage. There are major benefits for both the SME and government in developing the use of this channel.
- The second area where government has a role to play is in education, specifically relating to start-up knowledge. More effort should be directed towards proper business education for SME's.
- The third component where government can play a major role is the set-up and on-going cost of the internet connectivity. South Africa is still perceived to have one of the most expensive telecommunication

infrastructures. Lower cost structures will mean that more consumers will have access to the internet, and more pressure will be put on SME's to take the leap and adopt e-commerce.

#### 7.7. CONCLUSION

The research was aimed at determining whether barriers and benefits do exist for emerging market SME's in adopting e-commerce. It was proven that they do exist, albeit at different levels. This should form the basis of future research to determine the level of the factors and how they are changing as time progress. To ensure that the country stays competitive in this globalisation era, every single SME needs to ensure that e-commerce is widely adopted and all stakeholders should pull resources to achieve this in the shortest available period.

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## APPENDICES



**APPENDIX A: BLANK QUESTIONNAIRE**

**E-commerce adoption by Emerging Market SME's**

**SECTION 1 - BUSINESS INFORMATION**

1	Business's Name	
2	Name of Interviewee	
3	Interviewee's position in the business	
4	Location: Province	
5	Number of Employees	
6	Do you have more than one branch or outlet?	
7	How long has the business been in operation?	
8	What is the ownership structure of business?	
9	What is the business's annual turnover?	
10	Are you currently making use of the Internet for business purposes?	

**SECTION 2 - INTERNET UTILISATION**

1	What type of Internet connection are you using?	
2	How long have you had internet access?	
3	Do you use the Internet for E-mail?	
4	Do you use the internet for searching for information?	
5	Do you use the internet for Banking?	
6	Do you use the internet for dealing with Government organisations? (SARS, UIF etc.)	
7	Do you use the internet to do business with <b>Customers?</b> (orders, payments etc)	
8	Do you use the internet to do business with <b>Suppliers?</b> (orders, payments etc)	
9	List any other usage(s) of the Internet	
10	Does the business have a web site?	
11	If yes, record web address	

**SECTION 3 - BENEFITS**

**Rate the benefits achieved through e-commerce usage**

1	Reached a bigger market - Nationally	
2	Reached a bigger market - Internationally	
3	Increased sales	
4	Increased productivity	
5	Cost savings	
6	Increased Profitability	
7	New business opportunities	
8	Relative advantage over competitors	
9	List any other benefit(s) achieved through e-commerce usage	

**SECTION 4 - BARRIERS**

**If your business has not adopted e-commerce yet**

**Rate the possible barriers to adopt e-commerce for business**

1	Cost of set-up (PC, Installation etc)	
2	Ongoing cost (Monthly rental etc.)	
3	Do not know how to get going	
4	Other business partners (customer & suppliers) are not on-line	
5	Systems and Network Security	
6	Productivity loss through abuse	
7	Reliability of service providers	
8	Staff Computer Literacy	
9	Any other barriers in adopting Internet?	
10	Have you ever considered using e-commerce before?	
11	Will you obtain e-commerce in the next 12 months?	

**SECTION 5 - TECHNOLOGY OUTLOOK**

**Technology outlook (True or false)**

1	We believe Internet is <b>only</b> valuable for <b>communicating</b>	
2	We believe Internet is suitable for doing business	
3	We believe Internet is the future of conducting business	
4	Select the option that best describes the <b>owner's</b> view of <b>Technology</b>	

**SECTION 6**

1	Interviewer's name	
2	Interview date	