

**SOUTH AFRICAN SMME OWNER/MANAGERS' PERCEPTIONS OF  
E-COMMERCE RELATED RISKS**

**by**

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## DECLARATION

**I, Ping Ping Yang, declare that the contents of this thesis represent my own unaided work, and that the thesis has not previously been submitted for academic examination towards any qualification. Furthermore, it represents my own opinions and not necessarily those of the Cape Peninsula University of Technology.**

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**Signed**

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**Date**

## ABSTRACT

E-commerce, as one of the applications of the Internet, has been considered as a possible channel for small businesses to be benefited. However, due to their nature, it is challenging to involve e-commerce in small businesses; some new risks arise that typically are not adequately addressed in SMMEs' (Small, Micro and Medium Enterprises) established risk management programs. Therefore, to obtain the benefits from e-commerce adoption, SMME owner/managers need to identify and manage these risks.

Identifying SMME owner/managers' perceptions of e-commerce related risks, and how they manage them is crucial for ascertaining the factors that affect the successful small business e-commerce adoption, as their perceptions influence their decision-making process. This research identified South African SMME owner/managers' perceptions of e-commerce related risks, and their effects on e-commerce and SMMEs' development. The investigation was conducted by using a quantitative research methodology, drawing on the data obtained from a sample of 50 questionnaires, and the 17 interviews out of the 50, by using qualitative research methodology to achieve the research objectives.

The SMME owner/managers' perceptions imply that they are unaware of e-commerce related risks, they lack risk management attention to and skills in e-commerce related risks and their businesses, which can affect the development of e-commerce adoption and SMMEs. The perceptions also exhibited the SMME owner/managers' attitudes to risk-taking; the research provides a platform for SMMEs to understand their risk management performance. On the other hand, the perceptions reflect the orientations of developing SMMEs' e-commerce adoption such as: how to provide SMMEs with a better understanding of obtaining the benefits from e-commerce adoption? How to help SMMEs to manage e-commerce related risks? In conclusion, this research study proposed a model to assist SMMEs to understand e-commerce related risks in order to obtain the maximum benefits of e-commerce adoption.

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# 1 Chapter One: Introduction

## 1.1 Introduction

In the last few years, e-commerce has been increasingly adopted by South African SMMEs; however, in the Internet virtual environment, e-commerce related risks have not received enough attention by SMME owner/managers. To achieve a successful e-commerce adoption, identifying and managing e-commerce related risks would be crucial to that success.

The main aim of this research study was to obtain an understanding of South African SMME owner/managers' perceptions of e-commerce related risks. The research also aimed to find out how SMMEs deal with these risks and whether the owner/managers' perceptions of them affect the development of e-commerce and SMMEs.

The research:

- reviewed literature related to the subject of field study to achieve a theoretical framework;
- applied a quantitative research methodology to find out SMME owner/managers' perceptions of e-commerce related risks;
- analysed the research results and drew some research findings that addressed the research objectives;

This thesis reports on the research and concludes with a summary of the entire study.

## 1.2 Background to the research problem

The Internet represents a new and important technology. Since its inception, advances in this new technology have paved the way for innovations that promote rapid globalisation (Javalgi, Todd & Scherer, 2005:421). E-commerce, as one of the applications of the Internet that takes advantage of globalisation, has been considered as a possible channel for businesses to attract a wider range of customers, build extended relationships with suppliers, and cut the costs of serving established clients (Karagozoglu & Lindell, 2004:291).

However, even with these potential benefits in mind it is challenging for *small* businesses to involve themselves in e-commerce due to their nature; some new risks arise that typically are not adequately addressed in SMMEs' established risk management programs (Eeden, Viviers & Venter, 2003:14). According to Kelly and Erickson (2004:211), there are considerable risks that small businesses might face in adopting e-commerce, relating to:

- security,
- privacy,
- legality,
- fraud and
- intellectual property.

These are of concern to the survival of every organisation, but especially small businesses because of their limited resources (when compared to larger businesses). Therefore, SMME owner/managers should have the capability to identify and manage these risks (Pathak, 2004:556). The early stages of this study found that not much attention has been paid to the perceptions and understanding of these risks by SMME owner/managers in South Africa, and it was therefore decided to proceed with this research.

Experts have noted that perceptions of e-commerce risks have a significant influence on the decision-making processes of SMME owner/managers, and a proper understanding of the risks is crucial to adopting e-commerce successfully (Dholakia, 2001:1342). In South Africa, there is a strong national focus on the role of SMMEs in delivering economic empowerment and so risk management within the SMME sector is particularly important to the national interest; there is also a high level of expectation that e-commerce can assist the development of SMMEs and so the influence of perceptions of risks in adoption, implementation and operation of e-commerce will affect SMMEs' success or failure, and can be seen in national economic indicators such as GDP (Gross Domestic Product) and the unemployment rate.

Adopting e-commerce and managing the related risks properly can lead to innovation and enable SMMEs to succeed competitively. However, in South Africa, SMMEs do not keep up

with the e-commerce evolution (Cloete, 2003:123), and this may be due to being risk averse. Nieuwenhuizen and Kroon (2003:140) found that "In South Africa, there is a high failure rate of SMMEs; the unsuccessful owners of SMMEs do not take any risks, or they make expensive, impulsive and less clear decisions".

This issue in South Africa has motivated researchers to seek possible reasons. It might be expected that *perceptions* of owner/managers are an important factor in the evolution of e-commerce, but an early search of the literature revealed no work that has addressed perceptions of e-commerce related risks in South Africa.

### **1.3 Statement of research problem**

The research problem statement reads as follows:

**It is not known how SMME owner/managers in South Africa perceive e-commerce related risks, and how these perceptions affect the development both of e-commerce and SMMEs.**

### **1.4 Research questions**

Given the research problem as stated above, the research question, sub-questions and objectives were developed and agreed as follows:

#### **Research question:**

What are SMME owner/ managers' perceptions of e-commerce related risks, and what are the effects of these perceptions on e-commerce and SMMEs development?

#### **Sub-Questions:**

- i. Which risks associated within e-commerce are faced by SMMEs?
- ii. How can these risks be managed?
- iii. What are the SMME owner/managers' perceptions of these risks?
- iv. How do they deal with these risks?
- v. What are the effects of these perceptions on e-commerce and SMMEs?

**Research Objectives:**

- To review the academic literature (secondary data) in the field of e-commerce, to identify various sources of related risks and how these risks are managed.
- To determine and analyse SMME owner/managers' perceptions of e-commerce related risks and to identify how they deal with these perceived risks in Cape Town, South Africa.
- To determine how SMME owner/managers' perceptions of related risks affect e-commerce development.
- To establish a framework to guide small businesses in managing e-commerce related risks.

**1.5 Research design**

The research set out to take an objective view of risks in SMMEs and the intention was to develop generalised results that would apply to most SMMEs undertaking e-commerce. From the arguments given by Michael Myers (1997), this is best achieved with a positivist approach and a quantitative methodology, and questionnaires were used to collect the statistical data. The advantage of a properly deployed quantitative method is that it collects and analyses a relatively large volume of numerical data that can be used to describe the situation of the academic research question, and to determine a generalised set of results (Struwig & Stead, 2004:8). However, as will be explained, a small proportion of *qualitative* data was also collected by means of personal contact with respondents.

The study proceeded as follows:

- Literature searches were conducted by using bibliographic databases.
- Actual e-commerce risks and benefits reported in other research were analysed and tabulated.
- This tabulation of risks was incorporated into a Likert-type scale questionnaire.
- A sample of 100 SMMEs was identified in Cape Town.
- The owner/managers of these SMMEs were approached to complete questionnaires.
- By administering the questionnaires personally, limited qualitative evidence was

gathered to augment the quantitative data.

- The data was analysed by using descriptive data analysis techniques, such as frequency tables and cross tabulations.
- The findings were then presented graphically in bar and pie charts.

## **1.6 Delineation of the research**

This study of small businesses was focused on the perceptions of e-commerce external risks held by SMME owner/managers, and the identification of how they manage these risks. The work was delineated in two significant ways:

- The potential benefits and risks of adopting, implementing and operating e-commerce and how to identify and manage risks were established *by study of the literature*; it follows that there might be additional potential benefits and risks that have not been reported.
- This study was restricted to the Cape Town area; it follows that there might be additional factors that are only evident in other places, but the intention here is to study a representative sample that provides generalised results.

## **1.7 Contribution of the research**

New and advanced technologies create more opportunities for businesses, but they also introduce risks. Like other businesses, SMMEs are attracted by the opportunities but must recognise and understand the risks. They may be more exposed to failure than larger enterprises because of limited resources and incapacity to deal effectively with the risks; it follows that it is important to understand current *perceptions* of SMME owner/managers in developing their use of e-commerce, and to rationally manage actual risks in order to minimize losses and maximize profits. This research contributes to the academic body of knowledge by providing information on perceptions of e-commerce related risks based on a study of SMMEs in Cape Town, and it offers guidelines on how SMMEs can focus on and handle actual risks.

## **1.8 Overview of chapters**

In this thesis, Chapter 1 has set out an introduction to the research field, background, research problems, objectives, and the research design. In the following chapters: Chapter 2 provides a review of literature concerning SMMEs, e-commerce, e-commerce related risks, risk management and e-commerce related risks; Chapter 3 presents the research methodology; Chapter 4 presents the research results; Chapter 5 discusses the research findings; Chapter 6 draws conclusions and provides a framework that summarizes the research.

## **2 Chapter Two: Literature Review**

### **2.1 Introduction**

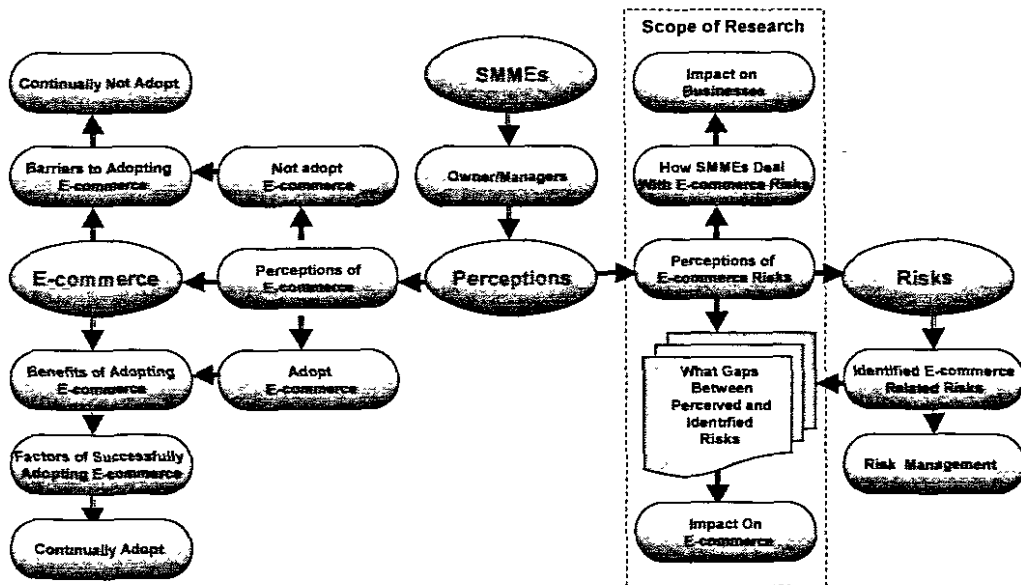
The history of SMMEs adopting e-commerce goes back several years, since information technology first made it possible for small managerial units to take advantage of its communications features (Post & Anderson, 2003:12). In America and Europe, the adoption of e-commerce during those years has been rapid. But in South Africa it has fallen short of expectations. This literature review presents an overview of previous academic research into e-commerce, and SMMEs, and examines how e-commerce can be integrated into SMMEs' operations successfully. Finally, it looks at previous work on the risks of e-commerce, and how to manage them.

Using e-commerce is considered by most experts to be an opportunity for SMMEs, and a real contribution to economic development. However, success is not universal and some might argue that economic development is retarded during a period when e-commerce is being introduced, because of the distraction of the necessary business changes. Widmer (2000) states that too many small and medium-sized businesses are unaware of the risks of e-commerce. Therefore, it is important to understand the key factors that affect SMMEs' success, and the risks that might lead to failure.

#### **2.1.1 An early conceptual model**

An early conceptual view of the domain of this study is shown below. This conceptual model was a first attempt to organise the issues at hand, and it guided the approach to the literature review.





**Figure 2.2.1: An early conceptual model of SMME owner/manager's perceptions of e-commerce related risks**

Some of the salient features of this early view of the research domain are as follows:

- There are a number of “circles of influence” at work. For example, SMME owner/managers have perceptions of e-commerce risks that will impact on their business and e-commerce adoption (top and bottom right-hand corner of the figure).
- Their overall perceptions of e-commerce (benefits and barriers) will lead to a decision to adopt e-commerce or not; should they do so, then their experiences of e-commerce related risks will augment their understanding of risks and modify their perceptions (centre left of the figure).
- The gap between the perceived e-commerce related risks, and the actual risks evident, is one of the focal issues that motivated this study.

### 2.1.2 The literature review

During the literature review, it was found that there have been numerous research studies focused on SMMEs in South Africa and elsewhere, many in recent years. Special efforts were made to access the latest reports in order to make the study as relevant and useful as possible. It emerged that e-commerce has been studied as a popular topic very widely, not

only in South Africa of course. A range of books, journals, articles and working papers relating to e-commerce are available. However, little work was found that looked specifically at e-commerce related risks; most of the reported work concentrates on specific fields such as e-commerce adoption strategies, security and trust. Very few reports have been found that studied e-commerce related risks, especially those faced by small businesses. This vindicates the decision to embark upon this study.

The remainder of this chapter presents aspects of the reviewed literature concerning:

- SMMEs
- E-commerce
- E-commerce within SMMEs
- Risks and risk management
- E-commerce related risks
- The government's role in reducing e-commerce risks and
- Perceptions of risk

## **2.2 SMMEs**

Schlenker and Crocker (2003:10) state that SMMEs make up 98 percent of all European, Middle Eastern and African companies; they provide employment to 66 percent of the labour force and generate 54 percent of the total private sector turnover. Although SMMEs differ from large companies in that any one SMME might seem to be insignificant, taken together they are now recognised as a vital and significant part of many national economies.

In South Africa, SMMEs play an important role in setting and achieving national goals, such as increasing economy and employment growth (Schaper & Volery 2004:71). In order to improve company performance to create and sustain long-term competitive advantage, an understanding of the concept and typical characteristics of SMMEs is necessary. This review explains the intrinsic characteristics of such firms – how they operate, the way they differ from larger companies, the advantages and barriers to owning and managing a small business, and the factors that result to their success and failure. It draws on up-to-date empirical data showing how SMMEs can become:

- more innovative in the ways that they manage their businesses;
- more efficient in their use of information technology; and

- more successful in driving management skills and knowledge forward.

### 2.2.1 SMMEs

There are two ways to define a business: quantitatively and qualitatively.

Schaper and Volery (2004:71) state that the first way is the quantitative characteristics of businesses. Measures of size have been regarded as key defining features to distinguish different kinds of businesses, being relatively easy to define and measure. Different countries have different definitions; some common quantitative variables, which are used to categorize and sort businesses in South Africa, are set out as Table 2.1 below (Dimant, Lebone & Cardo, 2004:2001).

**Table 2.1 Definition of South African SMMEs**

	<b>Full-time employees (less than)</b>	<b>Annual turnover Rm (less than)</b>	<b>Gross asset value Rm (excluding)</b>
<b>Medium</b>	<b>100</b>	<b>12.00</b>	<b>3.00</b>
<b>Small</b>	<b>50</b>	<b>6.00</b>	<b>1.2</b>
<b>Very small</b>	<b>10</b>	<b>1.20</b>	<b>0.25</b>
<b>Micro</b>	<b>5</b>	<b>0.15</b>	<b>0.10</b>

The qualitative characteristics of SMMEs are often based on subjective concepts (Schaper & Volery 2004:71). These qualitative definitions are useful in helping to understand the nature of the business and the role of the owner, as well as how the business is running. The following qualitative characteristics have been regarded as defining SMMEs (Schaper & Volery 2004:71).

- **Independently owned and operated.** The business is not part of a larger corporation, or effectively controlled by another firm. In other words, the owners of the business are the only ones for decision-making.

- **The owners contribute most to the operating capital.** The owners take the responsibility of funding the business idea, shoulder the business risks (such as potential bankruptcy) if the project fails, and obtain most of the profits if it succeeds.
- **The main decision-making functions rest with the owners, who usually also work full time in the firm** (accordingly, they are often referred to as "Owner/managers"). Most of the critical decisions are made by one or two people, although the firm is rarely big enough to support a group of professional specialists in areas such as marketing, administration, finance or logistics.
- The business has only a **small share of the market in which it operates.** Typically, the firm does not dominate its industry, but rather is just one of many businesses competing for a limited pool of customers.

To fully identify a business's characteristics, an understanding of both the quantitative and qualitative characteristics is necessary. From the qualitative characteristics, specific SMME owner/managers' characteristics will contribute to identify causes of business success and failure (Schaper & Volery, 2004:71).

### **2.2.2 SMME owners and their features**

A business owner is someone who possesses a business. In small businesses, usually the owners play more than one role: owner, investor, manager, operator, decision-maker etc (Schaper & Volery, 2004:74). To achieve profits by seeking opportunities and augmenting capitalization are the purposes of owners creating a business and facing risks and uncertainties (Zimmerer & Scarborough, 2002:4). So, identifying SMME owners' characteristics gives an important perspective on how operate and how they manage their business risks (Schaper & Volery, 2004:74).

The characteristics of individual owner/managers, such as age, gender, work experience, educational qualifications and family background are frequently hypothesized to influence

business performance (Tilley & Tonge, 2003:3). In terms of small businesses, owners are sometimes seen as entrepreneurs. However, one must note the substantial differences between business "owners" and "entrepreneurs" exist, and that small businesses are not necessarily entrepreneurial in nature.

Hodgetts and Kuratko (2002:7) find that typically SMMEs will tolerate only lower risks, so that SMME owners do not engage in many new innovative practices and thereby reduce the potential for growth. Their aims are stable sales, profits, and growth, but their aversion to risk limits what they actually achieve. On the other hand, true entrepreneurs are of course involved in variable risks, prefer to undertake more ventures and seek more profitability and rapid growth - they adopt innovative business strategies in their search for growth. The differences between SMME entrepreneurs and owner/managers become significant.

Schaper and Volery (2004:35) identify the characteristics of SMME entrepreneurs via the psychological characteristics and the personalities of the individuals, and see them as determinants of SMME owners' behaviours.

**Table 2.2: Characteristics of successful entrepreneurs (Schaper & Volery, 2004:35)**

Self-confidence	Tolerance of ambiguity
Risk-taking propensity	Responsiveness to suggestions
Flexibility	Dynamic leadership qualities
Independence of mind	Initiative
Energy and diligence	Resourcefulness
Hard-work ethic	Good communication skills
Creativity	Perseverance
The need for achievement	Profit-orientation

This list highlights the typical features of SMME entrepreneurs, but many are not found in SMME owner/managers; this influences (and limits) SMME owner/managers' thoughts and behaviours in developing their businesses.

The owner/manager's personal characteristics lead to some organisational characteristics of the businesses that they own or manage (Schlenker & Crocker, 2003:10). They find that in

typical cases:

- **First**, the primary purpose of most SMMEs is to obtain an income for the owners when starting their businesses, but not to maximize revenues. So they offer limited products or services and gain a low level of net profit.
- **Second**, most SMMEs are not a source of economic growth in terms of their employment and turnover, even if they are acknowledged as playing a role in reducing the unemployment rate; therefore, according to Hopkins (1997, cited by Schlenker & Crocker, 2003:10) only 3 percent of all SMMEs wish to, or are able to, grow.
- **Third**, most SMMEs do not have certain core processes, such as conception, manufacturing, sales, delivery, services after sales, etc. Usually, they associate with "doing businesses", because they have to collaborate with each other for survival in the competitive environment to obtain sustainable revenues.

Schlenker and Crocker (2003:75) remind us that SMMEs are often family-based businesses, where their ownership and managerial control is vested in the members of the family and outsiders can rarely reach high-level management positions.

The above characteristics of SMMEs and SMME owners affect SMMEs' performance at management and operational levels. Thus, the difference between SMMEs and large businesses is not only just about size, but is related to many other aspects of the organisations' activities, operations, and management methods (Schaper & Volery, 2004:76).

### **2.2.3 The differences between SMMEs and large businesses**

*Small businesses are substantially different to large businesses and understanding the differences is crucial in recognising the causes of success or failure of SMMEs. The differences are described by Schaper and Volery (2004:76) as follows:*

- *Small business owner/managers have fewer qualifications than executives in large businesses, for example at the tertiary level.*
- *They are less likely to use formal management improvement and planning techniques.*

- Large companies use information systems to develop their businesses, and strive to use new business techniques; small businesses are less likely to do so.
- SMMEs are less likely to access government assistance. Government has been helping SMMEs by all kinds of approaches, such as providing useful information and marketing resources, but uptake is limited by SMMEs rather than by government's efforts.
- SMMEs are less likely to export. Although international trade is an important channel for expanding businesses, most SMMEs focus on local markets; large companies are more likely to occupy global markets.
- SMMEs use less external financing. Business reinvestment for subsequent growth is always a financial problem. External financing usually comes with terms and conditions, so SMME owner/managers do not usually use it.
- SMMEs are less likely to want to grow bigger. The goal of many SMME owners is simply to operate their business successfully, not to be larger.
- SMMEs are more likely to fail. This is one of the fundamental characteristics of SMMEs, and will be discussed later.
- SMMEs have different managerial perspectives that are important but difficult to measure.

By their nature, small businesses rely on their owner/managers, and have very limited resources, which means small businesses have very different thoughts, plans and implementation decisions from large businesses, and also leads to small businesses often planning for short term aims (Schaper & Volery, 2004:76). Some people have great business ideas but most never act on them, or fail in the realisation of the idea (Zimmerer & Scarborough, 2002:4). This is due to many reasons, but an understanding of the owners' characteristics is helpful in recognising their behaviour and performance in managing their business. It can contribute to a better understanding of business owner/managers' perceptions: the way in which SMME owner/managers operate business, the opportunities they can obtain and the level of risks they are facing (Schaper & Volery, 2004:76).

## 2.2.4 How do SMMEs obtain business opportunities?

Gaining the competitive advantage is the key to surviving and growing for SMMEs in this dynamic economic world. Seeking opportunities and being innovative is a bridge to achieve this advantage - *business risk-taking behaviour and attitudes becomes a crucial factor in creating innovation* (Shoham & Fiegenbaum, 2002:127).

Other experts agree that SMME owner/managers have different personalities, backgrounds and goals as have been identified above, but then argue that it is important for SMMEs to be rational when searching for business opportunities in various environments; Schaper and Volery (2004:8) hold this view, and suggest a rational process of seeking opportunities as follows:

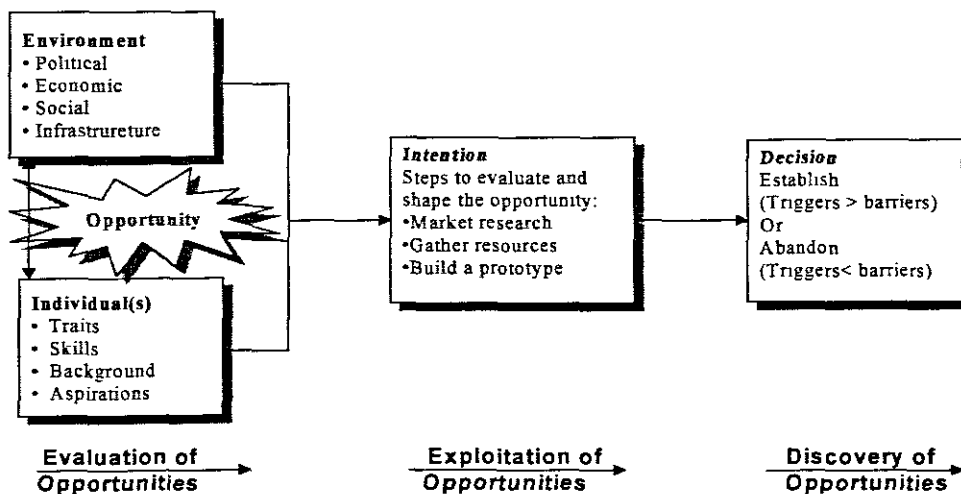


Figure 2.2: A model of new venture formation

(Adapted from Schaper & Volery, 2004:8)

The key factor in this process is the individual (regarded as an SMME owner/manager). When opportunities arise in the business environment, decisions must be made to act on those opportunities or not, and so evaluation needs to be based on market research, access to resources and experimentation with prototypes.

Whether SMME owner/managers are rational or emotional risk-takers in taking opportunities, they are perceived to be different from entrepreneurs in important ways. The need for



achievement, the level of confidence and a propensity for risk-taking are three traits that highlight the different types of business owners; they have been identified as psychological traits and have been used in many studies (Schaper & Volery, 2004:8). However, grasping an opportunity does not mean assured success; other characteristics inherent in the business (as opposed to those in the owner/manager) impede performance. Owner/managers need to break them down in order to maximize the chances of success.

### **2.2.5 The barriers to SMMEs growth**

Understanding SMMEs' attributes and the psychological characteristics of the owner/manager will help to overcome the barriers to survival and growth. Tilley and Tonge (2003:4) list some problems confronting business's growth which need to be addressed.

- *“Unwilling to improve competitiveness;*
- *Lack of motivation - internal;*
- *Lack of skilled labour;*
- *Poor understanding of financial knowledge, especially tax and VAT;*
- *Obtaining capital and the absence of guaranteed income;*
- *Levels of demands for products and services;*
- *Retaining personal control and business independence; this has been recognised as a key factor limiting the growth of many SMMEs.”*

*(Tilley & Tonge, 2003:4)*

Thus, to overcome the barriers to SMMEs' growth, SMMEs need to be willing to grow and understand their weaknesses; on the other hand, the government needs to provide support to SMMEs' growth (Tilley & Tonge, 2003:6), if SMMEs are really to become more important to the development of the national economy.

All of this evidence suggests that many small business owner/managers lack the management skills needed to perform necessary core business processes. At the heart of this problem is the fact that a low tolerance to risk-taking will impede the management that is

necessary to deal with unavoidable external risks (Schaper & Volery, 2004:36). Another problem area is that competitive value in today's environment not only comes from the production process itself, but also the services and information that are integrated into the products (Schlenker & Crocker, 2003:11). SMMEs must be aware of these kinds of threats and opportunities, because they might be able to react much more quickly than larger businesses, and thereby obtain better competitive advantage.

Making SMMEs aware of the strengths and weaknesses that derive from their characteristics can help them to overcome the barriers to their growth. Providing better services and useful information within existing operations more effectively than their competition (Aljifri, Pons & Collins, 2003:130), will lead to advantage; the realisation of better services and the delivery of useful information in turn suggest that advanced technologies such as electronic commerce will have an important role to play. Recent published work dealing with e-commerce confirms this.

## **2.3 E-commerce**

### **2.3.1 Define e-commerce**

*"In recent years electronic commerce has been one of the most significant developments in the business world. Basically, e-commerce refers to doing business online spanning both business-to-consumer (B2C) and business-to-business (B2B) dimensions." (Karagozoglu & Lindell, 2004:290; Post & Anderson, 2003:6)*

Many sources argue that e-commerce is one of the most important investments in technology in business today, because its impact on competitive strategy and its formulation is regarded as fundamental (Karagozoglu & Lindell, 2004:290). To review the history of e-commerce and to understand its emerging relevance to small as well as large businesses, is useful.

The Internet has a history that goes back to the late 1960s, but it was the introduction of the "World Wide Web" (the "Web") in the 1990s that made it useful, because the Web allows computer users to locate and view multimedia-based documents on almost any subject, in

almost any language.

In the late 1960s, the early work on the Internet was funded by ARPA - the Advanced Research Projects Agency of the Department of Defence, and quickly led to the delivery of "ARPAnet", the earliest form of today's Internet. TCP ("Transmission Control Protocol") was the mechanism that ensured messages on ARPAnet were properly routed from sender to receiver; the addition of IP ("Internet Protocol") achieved true networking, and is the foundation of the current architecture of the Internet (Deitel, Deitel & Steinbuhler, 2001:5). It was only in 1990 that Tim Berners-Lee of CERN (the European laboratory for particle physics) conceived the hypertext mark-up language ("HTML") that provided the foundations for the Web, and additional communication protocols for file and data transfer that form the backbone of the Web (Deitel, Deitel & Steinbuhler, 2001:5). Today, the term "Internet" is usually used to indicate both the low level protocols that achieve transmission, and the functionality of the Web that makes it useful to virtually all people in the developed world, including small businesses.

The Internet combines computing and communication technologies, making work easier and instantly and conveniently transferring information to the world (Taylor & Murphy, 2004:280). Businesses rapidly realized that by making effective use of the Internet they could expand the scope of their business, turning to international operations and offering new and better services to their clients; vast amounts of money were spent in the development and enhancement of the Internet for these purposes (Deitel, Deitel & Steinbuhler, 2001:5). Doing business with Web technologies, using the Internet, enables businesses to operate 24 hours a day, 7 days a week, worldwide. E-commerce makes it possible for individuals and small businesses to get into worldwide marketplaces; it is changing the way that business is done in fundamental ways (Deitel, Deitel & Steinbuhler, 2001:5).

Much e-commerce is of course directed at customers, and if customers are comfortable with e-commerce, they are more likely to adopt it (Ndubisi & Sinti, 2006:18); customer attitudes have changed markedly since the early days when suspicion and caution prevailed widely

and annual reports of the level of business were done "online". Of course, not all e-commerce is directed at the end customer, more commonly it has been between businesses in the middle stages of the supply chain. In the developed world, e-commerce is now seen as a way of building competitive advantage and generating economic dynamism, growth and jobs on a wide basis (Taylor & Murphy, 2004:280). Adopting e-commerce within businesses gains new opportunities and leads to innovation. Technology can support a company's vision of its future in fundamental ways, and can lead to significant success as familiarity with its use is gained stage-by-stage.

### **2.3.2 Stages of e-commerce**

Companies usually go through a number of stages as they grow to realize the power of e-commerce (Botha, Bothma, Geldenhuys, Singh, Van der Merwe, Booysen, & Fourie, 2004:8). Generally, these stages move according to the businesses' needs or goals (Stone, 2003:348). The five progressive stages that a business may potentially follow are summarized by Courtney and Finch (2001) (as cited by Cloete, 2003:125) as follows:

- **E-mail:** The Internet is regarded as an additional publication channel; through it, the Internet visitors can obtain information from the organisations (Botha *et al.*, 2004:8). Use of e-mail to send messages is adopted by most of the users. In businesses, it also provides internal communication between staff, or allows communication between businesses and their suppliers and customers.
- **Website:** At this stage, using businesses' own websites to attract visitors is the vision of businesses. Websites list published information about products and services. The information can be checked online 24 hours a day.
- **E-commerce:** At this point, there is online interaction between a business and its customers or a business and its suppliers for the placement of orders. The Internet becomes an important part of the company. It has different forms, such as B2B, B2C, C2C and C2B. This stage focuses on the changes of businesses from having a simple interface with the market to changing the whole distribution process and delivery of its products and services (Botha *et al.*, 2004:8).

- **E-business:** This is a more general term that includes e-commerce and Internet use. It retains e-commerce to support the business relationship between a customer and a supplier but more for other business tasks, such as teamwork, communication and new business services (Post & Anderson, 2003:7). As companies realize at this stage that the Internet not only increases their internal efficiency, but also creates more market opportunities, more companies will provide e-business services such as digital, remote data backup, and language translation.
- **Transformed organizations:** The final outcome is the integration of all these activities with the internal processes of a business. The focus is customer service.

It is difficult to distinguish between e-commerce and e-business. It seems there is no clear boundary. According to Andrew Bartel, vice president and research leader of e-commerce trends at Gina Information Group (Deitel, Deitel & Steinbuhler, 2001:8):

*"E-commerce involves exchange among customers, business partners and vendors. E-business is composed of these same elements, but also includes operations that are handled within the business itself. For example, production, development, corporate infrastructure and product management."*

However, McKay and Marshall (2004:12) have a different view of the stages of adoption. In their opinion, **step one** is "wait and see" approach (wait for competitors or business associates to go online to see if they are benefiting). **Step two**, static online presence (information published online presents contact details, products/ services information and catalogues). **Step three**, interactive online presence (such as e-mail, browsers, and websites; the Internet is not used to complete the transactions, but to support business operation in traditional ways). **Step four**, electronic commerce. **Step five**, internal integration (integrate Internet transaction within businesses by the support of Internet Technologies and Information Systems). **Step six**, external integration (integrate business processes and technologies of networks with business partners) (McKay & Marshall, 2004:12).

In comparing these approaches, one is driven by technology, and the other by management attitude. The best advice to a small business is to take a managerial approach, if risks are to

be minimized.

### **2.3.3 Different levels of using e-commerce**

The stages of adoption as described above are considerations, but other experts see other ways to characterise the use of e-commerce. Karagozoglu and Lindell (2004:291) see three levels based on the different sizes of businesses that are using e-commerce:

- the focus is mainly on cutting costs and raising productivity, or
- gaining access to new customers and markets, or
- building up gains at the previous levels but also seeking sustainable competitive advantage by complete integration of e-commerce into the company's overall business strategy.

The third level is mostly seen in large companies, where there is the capability to handle greater complexity and risk (Straub & Klein, 2001:4; Karagozoglu & Lindell, 2004:291). However, the first and second levels are more compatible with SMMEs which play important roles in the economy and employment development.

To achieve the third level, SMMEs need to fulfil certain conditions: working relationships with business partners, availability of finance, staff operating ability, information systems availability. The higher the level achieved, the more the benefits obtained, it is argued.

With the availability of the Internet and the acknowledged benefits of e-commerce, e-commerce is seen as an increasingly valuable tool to a wider range of companies, especially those regarded as "traditional". E-commerce has a large role to play in the future (Post & Anderson, 2003:7) and will continue to contribute significantly to the emergence of global markets and businesses. The benefits of e-commerce adoption have been widely researched and reported.

### 2.3.4 The benefits of adopting e-commerce

According to Aljifri, Pons and Collins (2003:130), advanced e-commerce introduces obvious benefits that derive from the development of new technologies, such as easier access to information, easier promotion and lower cost sales of products and services, and co-operation within and between supply chains that lowers the cost of doing business.

Other experts have worked on the benefits at a finer level of detail. Schlenker and Crocker (2003:11); McKay and Marshall (2004:14); Pathak (2004:559); Fillis, Johannson and Wagner (2004:181) identify the following:

- More information.
- Increased levels of quality and services.
- Lower production and distribution costs.
- Lower costs for buying and selling.
- More precise targeting of customers.
- Benefits from virtual communities.
- Improved value proposition associated with ease of use (the ability of clients to contact the firm and understand its product offer).
- Process control (the ability of the firm to understand and manage activities like sales, distribution and customer service).
- Client intimacy (relationship building through interaction with individual customers before, during, and after the sale).
- Partnering (relationship building through business partners based on a common vision of the market. These relationships are shaped into four areas: advertising; order taking; customer service and customized products/services.).
- Integration (using information technology as a support for organisational change both within the firm and within the supply chain).
- Ability to enter supply chain for larger companies; this can be gained from online trade with all sizes of companies, especially large companies.

According to McKay and Marshall, obtaining these benefits depends on the costs and stage of adoption of e-commerce. For instance, in the later stages substantial investments could be required (McKay & Marshall, 2004:14). Benefits also depend on business size and where a small business has a clear vision and appropriate products and services (Fillis, Johannson & Wagner, 2004:182) benefits can be obtained, but possibly only in the long term. As already noted, SMMEs have to recognise that e-commerce risks need to be managed, and adoption barriers need to be broken down.

### 2.3.5 The barriers to adopting e-commerce

E-commerce has been recommended to SMMEs by experts since the last decade, but at the start of the new decade adoption levels remained low (Levy & Powell, 2003:177; Mehrtens, Cragg, & Mills, 2001:167; Poon, 2000:73). It has been found that although some SMMEs are using e-commerce, the benefits are elusive even with government support (Jutla, Bodorik & Dhaliqal, 2002:140; Korchak & Rodman, 2001:21; Van Beveren & Thomson, 2002:251).

This under-achievement of e-commerce benefits is partly due to SMME's lack of e-commerce knowledge. Simpson and Docherty (2004:320) identified that SMME owner/managers' unwillingness to make technological changes appears to be the main barrier to e-commerce adoption. Although other researchers (Chappel Feindt & Jeffcoate, 2002:123) consider that cost was the principal barrier to the adoption of new technologies by SMMEs, Dongen, Maitland and Sadowski (2002:76) believe that e-commerce investment does not require high levels of investment, nor advanced pre-existing telecommunications infrastructure.

The table below lists some major barriers to e-commerce adoption, collected from a range of sources as indicated.

**Table 2.3: Barriers to adopting e-commerce**

Barriers to adopting e-commerce	Sources
The unwillingness of managers to be	Kalakota & Robinson (2001:8).



responsible for technological change.	
Use of ICT to reduce costs and improve efficiency rather than for trading online.	UK, Office of the e-Envoy (2002:14).
Fear of entry into global markets.	Bodorick, Dhaliwal, & Jutla (2002:141).
Lack of support from market makers.	Stockdale & Standing (2004:307).
Readiness and adoption rates by industry sector.	Simpson & Docherty (2004:320).
The older SMME less likely to use e-commerce.	Simpson & Docherty (2004:320).
Integration of legacy systems is difficult.	Simpson & Docherty (2004:320).
Executive understanding is poor.	Simpson & Docherty (2004:320).
Ignorance surrounds the technology, fuelling concerns about security, cost, legislation and interoperability.	Dongen, Maitland, & Sadowski (2002:76).
Lack of profitable business models.	Simpson & Docherty (2004:320).
Lack of qualified employees and further staff training.	Lawson, Alcock, Cooper & Burgess (2003:272); Fillis, Johannson & Wagner (2004:181).
Complexity of available e-commerce services.	Simpson & Docherty (2004:320).
Limited resources.	Darch & Lucas (2002:151).
Costs.	Darch & Lucas (2002:151).
Lack of awareness of what is involved.	Darch & Lucas (2002:151).
Lack of appropriate skill.	Darch & Lucas (2002:151); Fillis, Johannson & Wagner (2004:182); Lawson, Alcock, Cooper & Burgess (2003:272).
Lack of knowledge of the Internet.	Darch & Lucas (2002:151); Fillis, Johannson & Wagner (2004:181).
Lack of understanding of environment.	Porter, (2001:4).
Lack of help.	Darch & Lucas (2002:151).
Lack of time.	Darch & Lucas (2002:151).
Lack of standards.	Lucking-Reiley & Spulber, (2001:60).
<i>Inadequate telecommunications infrastructure.</i>	Darch & Lucas (2002:151).
Lack of trust.	Darch & Lucas (2002:151); Simpson & Docherty (2004:320).
Lack of relevance to their particular industry sector.	Darch & Lucas (2002:151); Simpson & Docherty (2004:320).
Lack of SMME bespoke information.	Chappell Feindt & Jeffcoate (2002:123).
Wrong type of product or service for e-commerce.	Simpson & Docherty (2004:320).

With so many barriers identified, it is not surprising that the impact of adopting e-commerce depends on how businesses deal with the opportunities and threats of e-commerce and new technologies generally, and the way that they see themselves in the competitive marketplace (Fillis, Johannson & Wagner, 2004:181).

### 2.3.6 What factors impact on e-commerce adoption in South Africa?

There is a rapid growth of e-commerce adoption in many countries. In the United States, Canada, Scandinavia and many Western European countries, more than 50 percent of the population are online and learning about the benefits of e-commerce to the end customer. Asia, Singapore, Hong Kong and Taiwan lead the way in e-commerce. In Australia, the typical profile of the Internet users is home users (McKay & Marshall, 2004:7). The impact of e-commerce and internet-based technologies on social development, as McKay and Marshall (2004:9) point out, is much more significant than has been realized. They consider that there are two broad categories of e-commerce formats that can be identified: Business to Customer (B2C) and Business-to-Business (B2B), and they find that B2B e-commerce has grown much more rapidly than B2C e-commerce, and at the time of their study it was estimated to be between 10 and 20 times larger than B2C e-commerce.

There are a number of identifiable factors that impact on the adoption of e-commerce in South Africa, which ranges between:

- *“Low use of e-commerce by Customers and Suppliers. This means that there is little incentive for businesses to engage in e-commerce until their customers and suppliers are also using it.*
- *Concerns about security aspects.*
- *High costs of development and computer and networking technologies in commerce.*
- *Limited knowledge of e-commerce models and methodologies.*
- *Unconvinced of benefits to the company.” Courtney and Finch (2001:5, Cited by Cloete, 2003:126).*

A more critical factor is the heavy reliance on acceptance of e-commerce technology by the business owner; if the owner does not perceive the technology to be useful, understand its potential, or is willing to use it, then he/she will be reluctant to adopt it (Cloete, 2003:126). Business owners are also concerned about short-term return on investment, and this exerts pressure on the business to focus on medium-term survival rather than long-term viability (Cloete, 2003:126). This might lead owners to hesitate in making substantial investments

when short-term returns are not guaranteed.

## **2.4 E-commerce within SMMEs**

Due to the successful adoption of e-commerce in big organisations, its fundamental role in responding to the needs of small business is becoming eligible (Schlenker & Crocker, 2003:11). However, small businesses are not necessarily a minor feature of the economy. In the UK, small and medium businesses generate a substantial portion of the overall volume of business:

*"...the 3.7 million SMEs produce 40% of GDP, and have an annual turnover of approximately one trillion pounds. Employing 12 million people, they account for some 55% of the private sector workforce."*

*(Dixon, Thompson, & McAllister, 2002:6, cited by Taylor & Murphy, 2004:281)*

SMMEs with e-commerce can compete in global markets and find new opportunities. The level of adoption of e-commerce in a country, and within different kinds of business as within the country, becomes an interesting standard with which to measure a country's level of development.

As noted already, there is a general trend to encourage e-commerce within SMMEs, but previous general research has found barriers to adoption. Schlenker and Crocker (2003:10) find that there are some specific reasons that limit small businesses' ability to adopt e-commerce:

- Many small businesses have a hierarchical management relationship: information flows straight from top to bottom.
- Managers and employees do not share much knowledge and experience.
- Intuition pilots the owners' decision-making instead of the company's market research.
- More often, business-to-business is conflictive rather than consensual, win-lose rather than win-win.
- Businesses are not at the centre of the markets; they are on the periphery of

customer demands.

These factors all inhibit the adoption of information system technology within small businesses. The value of information systems in SMMEs is often limited to word processing, accounting and stock management, and experts have found that significant change will be required if they are to gain the full value:

*"It is important to note that innovation in information technology will not produce sustainable value for small business unless there is a corresponding evolution of the organisation itself."*

*(Schlenker & Crocker. 2003:10)*

Tse and Soufani (2003:317) have pointed out that when they are developing e-commerce strategies, small firms might want to:

- Avoid being fixated in pursuing technological and cost leadership.
- Consider all value sources and propositions and that no one of them should be given priority attention over the others.
- Be circumspect when adopting e-commerce strategies, as some of them are less suitable for small firms.
- Realize that large firms can influence the effectiveness of the small firms' chosen strategies.

SMMEs want to benefit from e-commerce; a key factor is the attitude of SMMEs to technology, typically keen to retain control of their businesses. Owners who are innovative and comfortable with IT, and have a positive attitude towards it, are more likely to adopt e-commerce (McKay & Marshall, 2004: 96). This implies that more knowledge, awareness and control can lead to less risk.

#### **2.4.1 Success factors for adopting e-commerce within SMMEs**

Due to their small size, SMMEs have the potential to gain competitive advantage by being much quicker and more flexible than large firms in responding to the opportunities of the Internet (Fillis, Johannson & Wagner, 2004:181). There are other factors that can contribute to

the success of e-commerce adoption. From the review of e-commerce benefits, reasons for adopting e-commerce have been identified; from the review of e-commerce barriers, problems in adopting e-commerce have been identified. These benefits and barriers comprise a background against which we can see the means to succeed.

Some critical factors in the success of SMMEs engaging in e-commerce have been identified. For instance, Bytheway and Craig (2006) focused specifically on "critical success factors for e-commerce in small businesses" and developed propositions in four categories: 1) e-commerce ambitions, 2) business processes, 3) changes in management and 4) partnership. From Taylor and Murphy (2004:286), Bytheway and Craig (2006) and Stone (2003:347), success factors of e-commerce adoption can be summarized as below:

- The relevance of e-commerce to all businesses involved in a particular e-commerce proposition.
- The products and services involved and their suitability to e-commerce.
- The convenience and quality of websites (usability, resilience, security and continuity of services).
- The level of control of e-commerce within business processes.
- The relationship between suppliers and customers (and other business partners).
- E-commerce users' capabilities and attitudes.
- The overall business strategic approach.
- The impact on business's systems and the integration of new e-commerce subsystems into them.
- The level of community with other organisations in the sector.
- The requirements of business's website characteristics by owner/managers' perceptions.
- Price competition arising from adoption of e-commerce.
- Relevance of e-commerce to individual companies.
- The impact on brand management and the use of online and offline branding techniques.

- Commitment to use e-commerce, and the nature of partnerships (trust, systems process integration within businesses).
- Managerial capability to meet the challenges and deliver the benefits of e-commerce.
- Awareness of the role of information technology and systems in operating e-commerce.
- Competencies to achieve implementation.
- Achievement of a beneficial partnership with consumers and suppliers.
- Willingness to undertake negotiation and sharing of costs, risks and benefits.
- The need for appropriate changes in business strategies at all levels.

Many factors have been recognised as promoting business success in general among SMMEs (Taylor & Murphy, 2004:286), most of which relate to the internal rather than the external conditions of the firm. Principal among these (Taylor & Murphy, 2004:286; Simpson & Docherty, 2004:323; Kaynak, Tatoglu & Kula, 2005:633) are:

- Owner motivation, experience and management skills.
- Expertise in managing growth.
- Access to resources (money, technology and people).
- Innovation, a competitive advantage and flexibility.
- Close contact with customers.
- A focus on profits rather than sales; and
- Strong demand and operating in a growth market.

These statements provide SMMEs with potential successful factors for e-commerce adoption, but they also imply barriers to adoption – as is often the case, we see “both sides of the same coin” when looking at issues concerning success and failure. There are other lessons that have been learned from SMME’s e-commerce adoption in other countries.

#### **2.4.2 Lessons learned about SMMEs adopting e-commerce**

There is an emerging body of understanding about issues and problems that has contributed to e-commerce growth, based on the use of e-commerce on a worldwide basis. It is useful to learn from cases of failure as well as success. McKay and Marshall (2004:101) point out that some problems have been overcome by trial and error, or serendipity, so analysing and

planning these experiences carefully can assist SMMEs to avoid making the same mistakes.

Some major issues or problems that are summarized by McKay and Marshall are as follows:

- *"Inadequate knowledge of e-commerce (potential, risk, benefits and so on) leading to inadequate decision-making.*
- *No clear business vision with respect to e-commerce.*
- *Limited or no clear strategy development with respect to e-commerce.*
- *Limited or no integration of e-commerce vision and strategy with existing organisational vision and strategy or no consideration of the impact of one (e-commerce vision and strategy) on the other (existing business vision, strategy and activities).*
- *Little or no consideration of the appropriateness of existing business processes and practices in light of the requirements of e-commerce.*
- *Little or no consideration of the requirement of changes to performance measurement systems (HR, customer satisfaction, finance etc).*
- *Little or no consideration of the possible effects on key relationships with suppliers, or inadequate fostering of appropriate supplier relationships.*
- *Little or no attention paid to the logistics capabilities required supporting the e-business activities.*
- *Little or no understanding of the nature of e-competition and the implications of potentially entering into a global e-marketplace.*
- *Little or no attention to understanding and effectively managing customer relationships in the e-business environment.*
- *Little or no attention paid to developing a marketing plan for the e-enterprise.*
- *Inadequate consideration of required resources, such as IT expertise, financial backing and so on.*
- *Insufficient consideration of the need for organisational change management."*

*McKay & Marshall (2004:101)*

Barriers inhibit e-commerce adoption (Stoney & Stoney, 2003:74), and in light of so many difficulties is it simply too risky for SMMEs to safely adopt e-commerce? The answer is:

certainly not! If SMMEs can realize their own deficiencies and improve their knowledge and capability to manage e-commerce, these problems can be reduced or avoided and SMMEs will gain the benefits. In a world of change, successful business owners are those who learn to take opportunities and manage risks (Schaper & Volery, 2004:8). Decision makers are trammelled by the limitations of their cognition; risk-taking propensity is, however, strongly influenced by cognitive heuristics (Schaper & Volery 2004:36).

## **2.5 Risk and risk management**

By their nature, in a dynamic and competitive market economy, risks exist in all kinds of businesses. In other reviews of risks issues, it has been concluded that if a business is going to succeed in the long run, it must take greater risks to get more opportunities (Schaper & Volery 2004:36). Actually, a company with a low tolerance to risks is unlikely to get a high rate of return, as argued by Carey and Turnbull:

*"Evaluating and controlling risks effectively will ensure that opportunities are not losses, competitive advantage is enhanced, and less management time is spent firefighting" (Carey & Turnbull. 2001:10).*

These authors believe that risk management should be an integral part of every business management philosophy; it should not be managed just for temporary needs.

In risk management, opportunities are perceived as positive situations where there is a high degree of control and the likelihood of achieving a gain. Threats are perceived as negative situations that imply little or no control and a high probability of loss (Ottesen & Grønhaug, 2006:101). Decision makers are limited by their own understanding of a situation, which may mislead their perceptions of opportunities or threats. Perceived opportunities not only involve some possibility of gains, but also the uncertainty of possible losses (Ottesen & Grønhaug, 2006:101). Therefore, to obtain the gains, threats need to be identified first.

### **2.5.1 What is risk?**

Risk is generally identified as "the chance or possibility of danger, loss, injury, etc" (Thompson,



1998:786). Hertz and Thomas (1994) identify that risk offers a lack of predictability about problem structure, outcome or consequence in a decision or planning situation. It includes both uncertainty and the result of uncertainty.

Some risks are related to the essential nature of businesses. **Business risks** are treated as uncertainties, which are associated with business operations (Li, 2003:111). Tchankova (2002:290) indicates that risk is an inherent part of business and its public life that covers all aspects of business activities, including all management levels.

There are some identified business risks listed by Dunn, Cherrington and Hollander (2005:432) that threaten many companies:

**Economic risks** – Risks associated with factors that affect the entire economy:

- Global economic downturns
- Wars
- Epidemics
- Terrorist attacks
- Environmental disasters (floods, hurricanes)

**Industrial risks** – Risks associated with factors that affect the enterprise's industry:

- Industry wide cost increases
- Industry wide decrease in demand for products
- Economy risk especially for a specific industry
- Unexpected competition from another industry

**Enterprise risks** – External factors:

- Increased competition from other companies
- Reduction of perceived brand quality and/ or firm's reputation
- Crises involving business partners (value system relationships)
- Catastrophe that causes an interruption of operations
- Merger or acquisition involving another enterprise

**Enterprise risks** – Internal factors:

- Lack of ethics
- Low employee morale
- Employee incompetence

**Business process risks** – Risks associated with actual business process objects:

- Resources
- Enterprise activities
- Agents (individuals, departments, divisions, or organizations that participate in the control and execution of events)
- Resource – event relationships, agent relationships
- Events – event relationships, agent relationships

**Information Process risks** – Risks associated with:

- Recording information from the business processes
- Maintaining information about the business processes
- Reporting information about the business processes.

The risks listed above are not a comprehensive list; actually, in the complicated world of business it is impossible to identify all the risks due to dynamics of the economy, unpredictability of marketplaces, variant environments, everyday updated technologies, people's capricious minds, and so on (Dunn, Cherrington & Hollander, 2005:432). Risks are increased by these dynamic and uncertain changes; therefore to manage these risks is the key to success.

## 2.5.2 Risk management

Archbold (2005:31) states that risk management is a process used to identify potential risks and liabilities that could result in some kind of benefits or losses for both public and private organizations. The nature of the organization, including management style and organizational goals, determine the risk management strategies (Conrow, 2000, cited by Archbold, 2006:31).

Risk management depends on change of the internal and external environment of the business. It has become a main part of a business's activities, and its main aim is to help all

other management activities to achieve their objectives directly and efficiently. However, it is not easy. Tchankova (2002:292) earlier lays credence to the fact that businesses have problems in risk identification, in treating risk identification as a continual process, and in continuously seeking out new risks.

However, business owner/managers should be aware that:

*"[The] possibility of poorly judged decision making, human error, deliberate circumvention of controls, or unforeseen circumstances can never be ruled out." (Carey & Turnbull, 2001:11)*

### **2.5.3 How to manage risk?**

Typically, risks have been managed mainly by decision-makers' intuitions, experiences and feelings. As Williams, Bertsch, Dale, Van Der Wiele, Van Iwaarden, Smith and Visser (2006:67) state: simply, risk management aims to provide decision makers with a systematic approach to coping with risk and uncertainty. In many companies, risk management has been widely used to access the new business environment because of its changeability and less controllable characteristics for many interrelated reasons (Williams *et al.*, 2006:68).

#### **2.5.3.1 Risk management process**

Williams *et al.* (2006:68) define risk management as

*"... a process, affected by an entities board of directors, management and other personnel, applied in strategy setting and across the enterprise, designed to identify potential events that may affect the entity, and manage risk to be within its risk appetite, to provide reasonable assurance regarding the achievement of entity objectives".*

There is a wide range of possibilities when attempting to manage the effects of identified risks. In order to manage these risks, the model below shows some necessary steps that are suggested by Williams *et al.* (2006:69).

- 1. Risk recognition**

2. Risk prioritisation and
3. Risk management

These three stages have different steps (Carey & Turnbull, 2001:12).

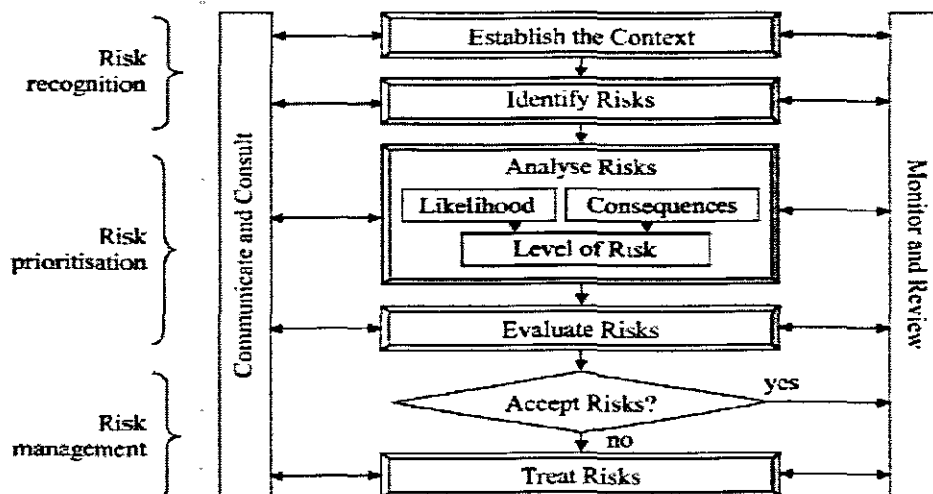


Figure 2.3: Risk management processes

(Adapted from Williams *et al.*, 2006:69)

### 2.5.3.1.1 Risk recognition

The **first** stage is to identify risks in the established context. Identifying risks is the foundation of this effective control process (Carey & Turnbull, 2001:11). Risk identification covers the identification within the established context of uncertain events that could cause harm or benefits. Identifying risks, their associated causes and their potential consequences are necessary to discover what are at risk and what events could potentially cause harm or benefits (Williams *et al.*, 2006:70).

### 2.5.3.1.2 Risk prioritisation

The **second** stage includes risk analysis and risk evaluation. Once having been identified, risks must be prioritised to identify the risk levels. This can be done initially by evaluating the risks, associated with analysed events or situations (Dunn, Cherrington & Hollander, 2005:435). Risk analysis is based on likelihood and consequence. Williams *et al.*, (2006:69) further explain

*"Likelihood depends on the probability of occurrence and the frequency of activity. The consequence can be measured in many ways, such as effects on results or on the enablers of results."*

The potential impact should be assessed by reference to the potential effect on the realization of corporate objectives. Evaluation is another foundation stone of this effective control process (Carey & Turnbull, 2001:11).

### **2.5.3.1.3 Risk management**

The **third** stage depends on the work of the previous steps. Once the risks have been evaluated, the risk profile can be determined; based on the evaluation, a decision can be made as to acceptance or elimination. After accepting the risks, the treatment of risk is the next stage of managing risks. The different levels need to be dealt with in different ways (Williams *et al.*, 2006:69). Williams *et al.* (2006:69) suggest that failed decisions are due to lack of attention to individual risks; it is recognized that different types of businesses require different types of management. According to Carey and Turnbull (2001:13), there are four main strategies that can be used to handle risks:

- *"Avoidance – not undertaking the activity gives rise to "risk reduction" – reduce the probability of a risk event occurring, and/or the impact of that event.*
- *Risk reduction is the most common of all risks.*
- *Transfer – transfer of risk in whole or part to another party.*
- *Retention – accept risk and therefore the consequences should it eventuate."*

**Avoiding risks** and exploiting opportunities is crucial to survival and prosperity in a business (Ottesen & Grønhaug, 2006:100). Risk avoidance is the most simplistic approach to reducing problems. In general, it means not doing the things that could lead to the problem occurrence. This might mean not entering into a line of business, a particular deal or a new IT project, because it carries a risk. However, risk avoidance could mean avoiding undertaking anything new, hence not being able to benefit fully from business opportunities.

**Risk reduction: risk transfer** is a more constructive approach. Insurance is a form of risk transfer, and is a normal part of doing business. Sometimes risk transfer clauses can be written into the contracts for a deal such as a project. IT risk is, however, difficult or very costly to transfer effectively.

To implement this process, there are two interactions that must be undertaken from the first stage, first step until the last stage, last step. One interaction is communicating and consulting, with related resources and information on risks, taking all the steps to approach the margin of risk possibilities. The other interaction is monitoring and reviewing, which relates to all the activities so that they can be monitored and reviewed with regard to the feedback provided from each step, for the further refinement of the risk management process. Carey and Tumbull (2001:13) state that continuous monitoring is a critical part of a sound management process; decision-makers should regularly receive and review the feedback to manage risks effectively.

### **2.5.3.2 Other important factors in driving risk management**

A major characteristic of risk is that it is difficult to measure; however, the achievement of profit is generally the reason why businesses exist, and to make profit there is a need to understand and manage risks (Bertsch, Williams, Dale, Smith & Visser, 2006:70). Miccolis, Hively and Merkley (2001) reviewed a range of other studies and found that some of the important drivers of success in risk management were:

- Strong and perceptible support from senior management (CEO, CFO, CRO)<sup>1</sup>.
- A dedicated group to drive risk management implementation and continue to push it in its operational stage.
- Appropriately link risk management to the key strategic, financial aims and business processes of the organization.
- Use risk management within the organization as an augment to already entrenched and well-accepted processes, rather than as a new, stand-alone process.

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<sup>1</sup> CEO – Chief Executive Officer, CFO – Chief Financial Officer, CRO – Chief Risk Officer

- Importing ideas from the outside.
- Proceeding incrementally and leveraging "early wins".

It will be interesting to find whether these principles apply to SMMEs. The above risk management processes are suitable to most of the businesses. Certainly, managing risks has a purpose which is to achieve profits and minimize losses within a risky context such as a new e-commerce environment (Bertsch *et al.*, 2006:70). E-commerce (as has been established earlier) offers benefits but clearly also carries risks (Bertsch *et al.*, 2006:69).

## **2.6 E-commerce related risks**

E-commerce offers all kinds of businesses opportunities such as the ability to expand markets (Sharma & Gupta, 2003:39). *"To successfully exploit a new opportunity is, however, a difficult task"* (Ottesen & Grønhaug, 2006:101). Adopting e-commerce is a new opportunity but presents its own risks to the value or added value within an organization (Bertsch *et al.*, 2006:69). If businesses succeed they will gain profit; however, if they fail they suffer losses.

Businesses need to know that the e-commerce environment is not a risk-free context, and businesses need to consider the types of risks they face in adopting e-commerce (Liebermann & Stashevsky, 2002:291). It has been established that changes to business processes, employee adaptability, financial resources, integration with existing systems, relationships with partners, data security and privacy are all potential problems for businesses adopting e-commerce. However, advanced technologies can mitigate many perceived e-commerce risks (Sutton & Hampton, 2003:38). These risks impact on business strategies and can lead to operational and financial management issues (Liebermann & Stashevsky, 2002:291).

In assessing their relative importance, firstly companies need to identify the risks in their context (Carey & Turnbull, 2001:11).

### 2.6.1 Identify e-commerce related risks

The Internet is a virtual space where goods, suppliers, customers, banking and transactions do not necessarily come face to face with the businesses they relate to, so it is risky for businesses to choose objectives which are unknown and intangible. However, the potential benefits still attract businesses that are willing to take the risk. To adopt e-commerce, the various e-commerce risks must be identified and managed so as to increase the chances of success (Archbold, 2005:31). Collinge (2000) classifies e-commerce related risks into two categories: **internal risks** and **external risks**.

The **internal risks** listed below are organized by Collinge (2000) into three different categories: strategic risks, financial risks and operational risks.

#### **Strategic risks**

- Market entry
- Resource allocation
- Production capacity
- Product life cycle

#### **Financial risks**

- Investment management
- Credit
- Access
- Interest rates
- Currency/foreign exchange
- Liquidity
- Reinvestment/rollover
- Pension funding

#### **Operating risks**

- Human resource
- Service failure
- Supplier management

In the South African Green Paper (South African Department of Communications, 2000), **external risks** are identified that are a cause for concern in adopting e-commerce. They include privacy, fair trade requirements, copyright protection, access to information by law enforcement agencies, increasing cross border business in consumer trade, computer crime,



hacking and other aspects of current legal frameworks that are designed to protect the rights of citizens.

These are aligned with other external e-commerce risks from a variety of sources (Liebermann & Stashevsky, 2002:293; Bowers, 2001:58; Collinge, 2000) as listed below:

1. Security
2. Privacy and data protection
3. Legal & regulatory
4. Intellectual property
5. Political & social change
6. Trade secrets
7. Technology risk
8. Fair trade
9. Reliability of information and trading partners

A key factor that must be recognized is the importance of being open to external influences within business and being willing to deal with them. It is difficult to eliminate risks in the external e-commerce environment; no matter how enticing the opportunities are, there are always so many imponderables (Jones, 2003:28). Risks threaten businesses, especially small businesses that cannot possibly have internal access to all the skills, knowledge and other abilities necessary to identify and deal with them (Jones, 2003:28).

When identifying risks, SMME owner/managers should be careful to not just select potential candidates from generic risks - the risks should be specific to the other sectors in which the business operates and to the company's circumstances at a certain time (Carey & Turnbull, 2001:11). The following notes identify some general risks that are associated with e-commerce.

### **2.6.2 Security risks**

As the use of the Internet continues to grow, websites are assuming greater importance as the public face of a business; organizations are becoming ever more reliant upon them within the core activities of their business, and so a major concern is about security and the protection of

data when transactions are conducted over the Internet (Smith, 2004:272). An IBM Internet Business News reports:

*"During the first half year of 2005, 137m of the 237m security attacks were reportedly aimed at the four sectors, with 54m directed at government, 36m at manufacturing, 34m at financial services and 17m at healthcare. Criminals are said to be focusing on extortion, fraud and identity theft, resulting in a decrease in the ratio of spam to genuine e-mail from 83% in January to 67% in June. (Internet Business News, 2005)*

These factors make security a fundamental necessity to e-commerce. Businesses need to communicate with their partners by transmitting data through the networks; customers are buying products, trading stocks and banking online, and in doing so (using websites) they provide their credit-card numbers, social-security numbers and other highly private information. Businesses send similarly confidential information to suppliers and clients over the Internet (Smith, 2004:272; Shih & Wen, 2005:123). Thus, businesses are forced to focus on the security of data on the Internet. Internet security failures threaten individuals and organisations; poorly designed and implemented Internet-based systems are vulnerable to data theft and hacker attacks that can corrupt files, slow down and even shut down e-businesses by invading their web sites and corrupting the core processes that they are intended to support (Smith, 2004:274). Security risks can add significantly to the cost of a company's network (Hausman, Alston, Chapple & Hausman. 2005). Security attacks are a real threat to online business (Boudreau, 2006).

Early opinion was that conducting business through e-commerce without fully understanding the security risks involved was the most serious flaw in organizational e-commerce strategies, where businesses must concern themselves about policies, procedures, private and company assets as well as audit trails (Chang & Ho, 2006:345). This is still a matter of concern as no "safety net" is fully in place to assure the overall safety and security of e-commerce.

In an e-commerce environment, security mechanisms can offer technical guarantees which

ensure that legal requirements and privacy will be effectively protected at a technical level (Fiavián & Guinalíu 2006:604), but there needs to be policies and procedures that take care of the non-technical risks. For example, a company may promise that data will not be given to third parties without a customer's agreement, yet hackers might still get hold of the data by accessing a poorly implemented company database, and then use this private information to steal money, or to harass people and businesses, or sell the data on to other criminals who wish to extort the organisation or individual in other ways (Hausman *et al.*, 2005).

Essentially, systems need to be protected from the threats posed by **hackers, viruses, fraud and denial-of-service (DoS) attacks**.

### **2.6.2.1 Hackers**

Hackers originate viruses and denial-of-service attacks, as well as interfering with the working of internal systems. Hackers use errors in software application design, technical implementation or systems operation to obtain private information, interrupt business activities or destroy information systems. In addition, vulnerabilities in technical security give opportunities for attack by hackers (Pathak, 2005:575).

Although internal breaches of security were at one time the most common type, there has since been a dramatic rise in the number of successful "attacks" from the outside, such as those initiated by hackers (Jones, 1999). They can take over an entire machine, collect anything on the machine and turn it into a zombie; all this is fully automated (Pathak, 2005:571). The author pointed out that such attack is much more sophisticated than it was a few years ago (Pathak, 2005:575).

### **2.6.2.2 Viruses**

Viruses may be defined as computer programs or codes, often sent as an attachment to an email, or hidden in an email attachment, video clips or games which can be spread by flash drives, floppy disks, portable hard drives, CD-ROM and DVD optical media, and wireless connectivity (Smith, 2004:275; Hausman *et al.*, 2005). Viruses can destroy files and even

wipe out a hard drive; they can attach to (or overwrite) other programs to replicate themselves (Smith, 2004:275). Today, viruses are spread over the Internet and local networks simply by means of infected files embedded in e-mail attachments, documents or programmes.

A worm is similar to a virus, but it is not considered as a virus. Worms they are spread between computers and networks (Smith, 2004:275). The difference is that a worm can spread and infect files on its own over a network; it usually spreads through file transfer or e-mail. Worms do not need to be attached to another program to spread (Hausman *et al.*, 2005).

Once a virus or worm is released, it can spread rapidly and infect millions of computers worldwide within minutes or hours (Smith, 2004:274). It has been found that these attacks use multiple attack vectors exploiting unannounced vulnerabilities through Spam, are motivated by extortion, information theft and organized crime for the purposes of theft, data export and destruction (Hausman *et al.*, 2005). They are still a matter of great concern, even though the world has been working to overcome these threats for more than ten years.

### **2.6.2.3 Fraud attacks**

While the web can empower access to information, it also leaves the unwary exposed to variations of fraud and abuse schemes – anyone in the privacy of their own home or anywhere can make a solicitation for fraud over the Internet (Byers, Rubin & Kormann, 2004:239). According to Pathak (2004:560) possible fraudulent activities include the following:

- *unauthorized movement of money such as payments to fictitious suppliers;*
- *located in jurisdictions where recovery of money will be difficult;*
- *misrepresentations of company tenders;*
- *corruption of the electronic ordering or invoicing systems.*

A more recent survey in America shows that fraud incurred \$200 million losses in 2005, 8 percent more than in 2004, and representing 1.2 percent of revenue from 1.1 percent in the previous year. In this survey, medium and large companies fared worst (Kuchinskas, 2005).

#### **2.6.2.4 Denial-of-service attack**

This kind of attack occurs when an unauthorized individual attacks and overloads a network's resources, leaving the network unavailable for legitimate users. Typically, the attacks are performed by flooding servers with data packets using false messages to crash a business's system (Auty, 2004:217; Smith, 2004:274). This action greatly increases the traffic on the network, overwhelming the servers and making it impossible for legitimate users to download information (Smith, 2004:274). This can have a devastating impact upon a business, especially if it is dependent upon its e-commerce system. It can disrupt services on a website and can even shut down critical systems such as telecommunications or flight-control centres (Deitel, Deitel & Steinbuhler, 2001:18). Denial-of-service attacks usually require the power of a network of computers working simultaneously; the attacks cause networked computers to crash or disconnect from the network, making services unavailable (Smith, 2004:274). Businesses lose reputation easily because of the "poor" network services, and also this type of attack may result in a distrust of online businesses (Smith, 2004:275). The growth of the Internet means that there are ever more opportunities to mount attacks.

Another type of denial-of-services attack targets the routing tables of a network. Essentially, routing tables are the road map of a network, providing directions for data to get from one computer to another (Pathak, 2004:561). This type of attack is accomplished by modifying the routing tables to disable network activity (Smith, 2004:275). This change can, for example, send all data to one address in the network. In a distributed denial-of-services attack, the packet flooding comes from many separate computers and is co-ordinated by a single individual who has installed viruses on various computers for illegitimate purposes, and it is easy to cause fraud transaction (Pathak, 2004:560). The attack forms are summarized as:

- *duplication of payment;*
- *denying an order was placed;*
- *denying an order was received;*
- *denying receipt of goods;*
- *denying that payment was received; and*

- *falsely declaring that a payment was made.*

*(Pathak, 2004:561)*

This kind of attack is difficult to stop because it is difficult to distinguish which network user is legal and which is an attacker, especially as the attacks do not come directly from the attacked computer (Smith, 2004:275).

### **2.6.3 Privacy and data protection risks**

The concept of privacy has been defined as *an individual's ability to control their personal information, that which is required and how it is used* (Flavián & Guinalíu 2006:603). With the dramatic increase in e-commerce Kelly & Erickson (2004:210) have found that purchasers are becoming more aware of, and concerned about, the use of their personal information, especially by businesses (So & Sculli, 2002:503). Misuse of personal data can lead to personal and business disturbances, and irritations such as an excess of junk mails that consumes resources and seriously hampers normal business working.

Flavián and Guinalíu (2006:604) report that the protection of privacy is the greatest single concern of Internet purchasers. (Flavián & Guinalíu 2006:601) Privacy affects aspects such as the use, treatment and potential transfer of private data. The obtaining, distribution or unauthorized uses of personal information and also security in information systems have been very great concerns of businesses for some time (Kelly & Erickson, 2004:215). For example in Europe, during the early expansion of e-commerce, over 40 percent of consumers felt that their privacy was jeopardized, 45 percent believing that the laws currently governing the Internet did not go far enough (Flavián & Guinalíu 2006:601). This survey showed that a lack of privacy in online transactions was becoming a major obstacle to the spread of e-commerce (Flavián & Guinalíu 2006:601). Consequently, consumers lost trust in how their personal data was being gathered and processed.

Flavián and Guinalíu (2006:604) state that privacy is linked to legal requirements and good practice with regard to the handling of personal data, such as the need to inform customers at the time of accepting a contract what data is going to be collected and how it will be used.

However, as Smith (2004:281) warns, messages on the Internet are being passed through shared domains; therefore customers are right to be uncomfortable with sending personal information across the Internet. Of course, the use of secure servers is now almost universal, but concerns still prevail. Flavián & Guinalú (2006:605) continually mention that customers want their private information to be respected, either through the law, good practices, secure systems or a combination of the three. These requirements are widely evident within e-commerce guidelines and the law; they depend on the reliability of information systems and a commitment to protecting the rights of suppliers, customers and other business partners (Smith, 2004:284).

Businesses may use their websites to collect information on visitors who come to those sites to browse. For example, they might ask users to register on the site, in which case they must inform people about what the business does, provide the name and address of a contact person, and explain how they plan to use people's personal information (Smith, 2004:276). Personal data is about living individuals such as customers, suppliers, other business contacts or even employees, and businesses must comply with the requirements of **e-commerce law** concerning the use of personal data (Smith, 2004:284).

*"Perceived security may be defined as the subjective probability with which that consumers' personal information (private and monetary) will not be viewed, stored, and manipulated during transit and storage by inappropriate parties in a manner consistent with their confident expectations"*

*(Flavián & Guinalú 2006:604).*

It is important that businesses should not publish any individual's personal information on the website without agreement.

#### **2.6.4 E-commerce and the law – legal issues**

The South African Electronic Communications Transaction (ECT) Act came into effect in South Africa in 2002. It followed the model of the Organisation for Economic Co-operation and

Development (OECD), which is an organisation representing twenty-nine countries in the world.

Laws are necessary because of the ease of engaging in e-commerce; where a comprehensive body of laws is not available then experts consider that there are legal risks (Reinsch, 2005:169).

*"The Internet makes it possible to conduct business throughout the world entirely from a desktop. With this global revolution looming on the horizon, the development of the law concerning the permissible scope (of law) is in its infancy stages."*

*(Reinsch, 2005:169)*

So the reason for engaging in e-commerce – the perceived low entry cost – is threatened by potentially high legal costs when there is inadequate protection from applicable laws, or when for other reasons recourse has to be made to legal processes.

Businesses need to comply with local laws when undertaking e-commerce and e-marketing activities. The current weaknesses in e-commerce law in the world have been pointed out both from the perspective of the trader and the consumer (Stoney & Stoney, 2003:74). From the business side, a major concern when operating in global markets is the level of protection for their trade under local laws. The performance of companies (in terms of the return on investment) may be affected by legal risks or insufficient legal resources (Stoney & Stoney, 2003:74). Companies need to know that their investments or other trades are legally compliant and protected so that they are able to assure their profits. Some important legal issues involved in e-commerce include: **personal jurisdiction, conflict of law, formation of the contract, the validity/enforceability of the contract, export/import rules and related issues, product liability, government rules and regulations as to product safety, labelling, import/export regulations, advertising regulations, intellectual property issues, and tort issues** (Reinsch, 2005). This research will not cover these legal issues in detail as they cover a wide field and are beyond the scope of this research. However,



intellectual property is one area of specific interest.

### **2.6.5 Protecting intellectual property**

Intellectual property is an important branch of e-commerce (Botha *et al.*, 2004:452). All businesses have intellectual property regardless of their size or sector. Intellectual property issues could relate to the name of the business, or copyright, designs, patents, trademarks (including domain names), trade secrets owned by them, and unfair competition (Reinsch, 2005:176). The introduction of virtual stores opens up new problems; intellectual property risks become a major concern in the cyber world (Reinsch, 2005:176).

Intellectual property is a source of potential profit in business and likely to be a valuable asset in the future. Securing and protecting it could be essential to a business's future success, so it is vital to understand a business's rights and how the law can help businesses to achieve it. (Botha *et al.*, 2004:452). Businesses should know the different kinds of legal protection available for intellectual property, and use them to protect and manage business intellectual property rights. However, in the e-commerce environment conventional intellectual property laws do not work well (Botha *et al.*, 2004:452).

These issues are hard to define (Widmer, 2000). Therefore, to protect intellectual property on the Internet, the owners should insure that they have legal recourse for violation of their ownership rights, and must understand, they can not be protected effectively by intellectual property laws because there are no uniform international laws currently in the world that will protect intellectual property under the current world (Reinsch, 2005:177). However, it is necessary to mention that the South African ECT Act doesn't deal with any of them specifically, leaving it to the DTI (Department of Trade and Industry) to amend the appropriate legislation where necessary (Botha *et al.*, 2004:452).

### **2.7 Other external risks**

Beyond the risks that are identified above, there are others that are of concern to an online

business: **trade secrets, impact on tax, trade and regulatory policies, impact on employment, labour policy, impact on competition policy, technologies risks, fair trade and reliability of information and trading partners** (Reinsch, 2005; Stoney & Stoney, 2003:74).

E-commerce related risks occur depending on the business's characteristics, internal and external environment. Managing these risks is crucial to online businesses (Ritchie & Brindley, 2001:30). Developing e-commerce, the related risks need to be identified, reduced and avoided. SMMEs' access into the e-commerce virtual environment is even more risky due to their relative weakness when viewed beside resource-rich large businesses. To provide SMMEs with the necessary assistance, government plays an important role.

## **2.8 The government's role in reducing e-commerce risks**

The lack of management and technical skills amongst owner/managers of SMMEs is the main reason why businesses fail (Darch & Lucas, 2002:149). Many owners believe that the *uniqueness of their business* will lead them to succeed, and they choose to ignore the general advice that might help them avoid problems (Mole, 2002:150). The unwillingness of SMMEs to accept good outside advices is greatly different to the attitude of large companies (Robson & Bennett, 2000:193) The role of government in providing support and good advice is important to SMMEs, and should *increase their chances of success if they can be persuaded to listen and involve themselves in government support programmes* (Robson & Bennett, 2000:194).

The government needs to provide a framework to develop the progress of e-commerce. For example, it has been noticed that a lack of trust is one of the main barriers to the spread of e-commerce (Flavián & Guinaliu 2006:605) and government can play a role in engendering higher levels of trust and reliability.

*In South Africa, the government should develop a framework for SMMEs and their customers that will build trust for online transactions, such as to create awareness about the immediate*

threats to small businesses; to promote understanding of best-practice for small businesses; or to provide convenient access to relevant products and services (Pillay, 2004:591). The e-commerce related risks as reviewed above are warning indications to motivate the government to focus on how to address businesses' needs for reducing e-commerce risks, to encourage and lead SMMEs in using e-commerce successfully. Obviously, to keep up with the rapid development of advanced technology, attention needs to be paid to e-commerce by the government.

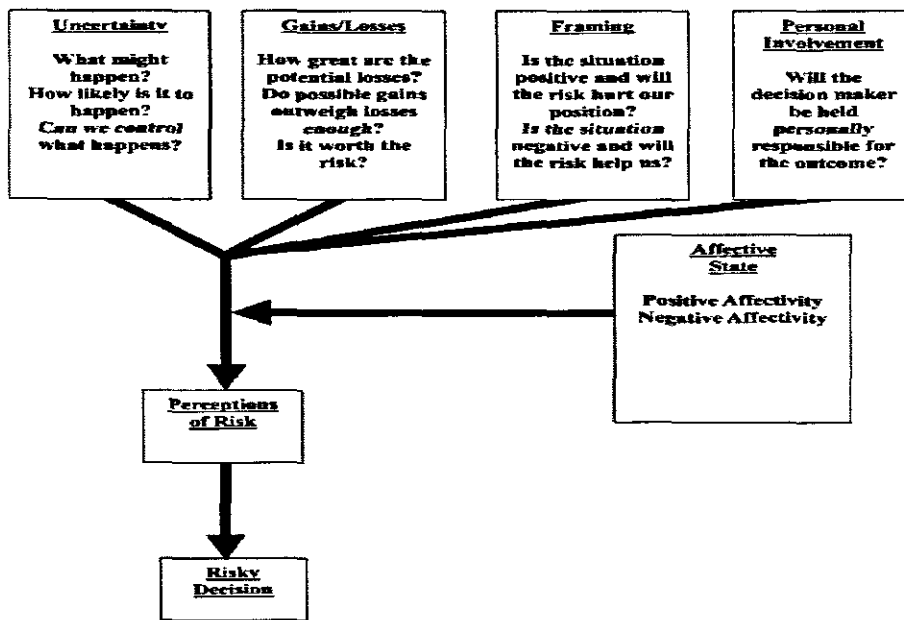
## **2.9 Perceptions of risk**

The increasing adoption of e-commerce for business advantage is very much dependant on owner/manager orientation (Fillis, Johannson & Wagner, 2004:181). While much previous work has focused on the technical risks and the legal and commercial frameworks within which e-commerce can be made to work, the evidence is that there are other softer issues, especially the characteristics of owner/managers and their perceptions of e-commerce benefits and challenges. Ottesen & Grønhaug (2006:102) argue that previous success will affect the perceptions of opportunities; on the other hand, a lack of experience easily leads to anxiety about a new situation and reluctance to get involved. Therefore, as more and more businesses move to adopt e-commerce, success is vulnerable to human risks as well as technical ones.

*"Risk involves perceptions of the range of potential outcomes, the probability that potential outcomes will occur, or the extent to which possible outcomes might be influenced, and the influences will be how decision makers perceive risk and their likelihood of seeking risk"*

*(Williams, Zainuba & Jackson, 2003:134).*

The framework below developed by Williams, Zainuba and Jackson shows factors that act on affectivities, perceptions of risk and decisions:



**Figure 2.4: Affective influence on risk**

(Adapted from Williams, Zainuba & Jackson, 2003:129)

This all suggests that *perceptions* need to be considered as a primary factor in decision-making. They are part of the strategic decision making process; key factors that explain the existence of different decision frameworks and strategies in the same objective setting are based in the different perceptions of different managers (Parker & Mobey, 2004:20).

Risk-taking attributes rely on cognition, motivation and obligation (Parker & Mobey, 2004:22). Cognition - a concern about the environmental factors; motivation - stimulates business to consider risks; obligation - estimate before making decision. Businesses taking risks require information and insight inside and outside the business (Parker & Mobey, 2004:22). A cognitive approach to the perceptions of risk is offered by Perry (1990:22), which tends to understand how a person's perception, cognitive and decision-making styles, heuristics, biases and intentions affect behaviour.

Considering the importance of SMMEs' needs and the advantages of e-commerce, some human factors influencing risk management are offered by Parker and Mobey (2004:21):

- Stress avoidance of risk situations:
  - Self esteem – fear of identifying weakness:
  - Complacency – lack of understanding;
  - Predictability – need for stability;
  - Trust and relations – between employees and management; and
  - Organisation's readiness for change – preparation and planning gets forgotten.
- (Gilgeous and Gilgeous, 1999:43)

The factor that influences a decision maker's risk perception and intentions is mood (Gilmore, Carson & O'Donnell, 2004:350). In general, a good mood brings more optimistic, possible outcomes and consequences by positive affectivity, and will influence the decision maker's judgments in a positive way (Arkes, Herren & Isen, 1988:182; Nygren, Isen, Taylor & Dulin, 1996; Williams and Wong, 1999) (Cited by Williams, Zainuba & Jackson, 2003:126). Similarly, negative affectivity tends to emphasize the negative aspects of risky decisions (Wright & Bower, 1992:276; Williams, Zainuba & Jackson, 2003:126).

Finally, a business owner/manager's understanding of risk will be affected by the context or frame in which the risk-related decision is made (Diacon, 2004:183). Botha et al (2004:11) state: "... the view of e-commerce will actually depend on the personality of the individual defining it." The core of managing e-commerce risks is SMME owner/managers' perceptions of technologies, benefits and challenges, and the concomitant risks (Williams, Zainuba & Jackson, 2003:134). It can result in a range of perceptions from the highly positive viewpoint to the much more conservative, resistant-to-change stance (Fillis, Johannson & Wagner, 2004:181).

## **2.10 Chapter summary**

According to the initial conceptual model, this chapter reviewed the principles of SMMEs, SMME owner/managers' characteristics, the nature of e-commerce, the benefits and challenges of e-commerce adoption, general issues relating to risk and risk management,

e-commerce related risks and perceptions. The aim of this chapter was to build up a theoretical background concerning the management of e-commerce related risks by SMMEs in order to underpin and inform a study of South African SMME owner/managers' perceptions of e-commerce related risks. To achieve the research objectives, the following chapters present the research methods, the research results and the findings.

### 3 Chapter Three: Research Methodology and Design

#### 3.1 Introduction

The objectives of this research were: to identify how SMME owner/managers perceive e-commerce related risks, how they deal with these risks, and to discover the influences of these perceptions on e-commerce and SMMEs' development.

To obtain adequate and reliable evidence to achieve the research objectives, the study followed a research processes as shown below:

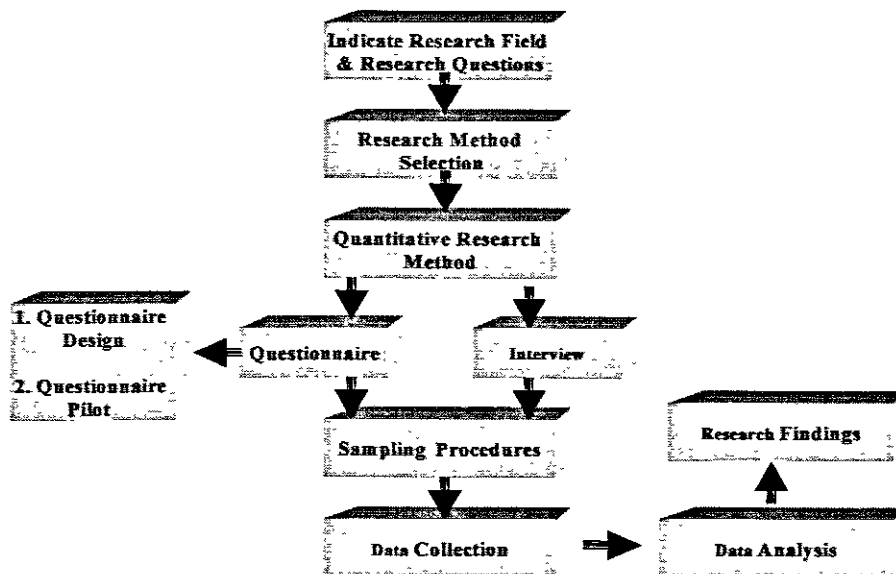


Figure 3.1: The research design framework

This chapter describes the research method and research process that was used. As indicated in the figure above, the research study was founded on four principal steps: (1) research method selection, (2) sampling procedures, (3) data collection, and (4) data analysis. Each step will be discussed in detail in the paragraphs below.

#### 3.2 Research context

In the Internet era, e-commerce is becoming a major channel for business communication. However, the adoption of e-commerce in South Africa is still at a low level. As established by

the literature review in Chapter Two, South Africa has confronted the challenge of integration into the global economy in order to sustain its economic growth through competitiveness, leading to employment generation and income redistribution. The South African Department of Trade and Industry (DTI) policies have increasingly encouraged the promotion of SMMEs activity and the adoption of e-commerce. Numerous research projects have been carried out in South Africa in order to guide SMMEs in the field of e-commerce development, but much more remains to be investigated.

Research of this kind is an interaction between academics and businesses; the development of each depends to some extent on the other. However, it proved difficult to conduct this research study because there were not many SMME owner/managers who were willing to be involved; many declined to take part in the study. It may be that they are not acquainted with e-commerce, or that they are unaware of the advantages of academic research. SMME owner/managers have to fulfil different roles in their businesses, so a lack of time is another problem. Whatever the reason, this reluctance to participate hampered data collection and threatened the representativeness and validity of the study. Issues of sampling are discussed below, following discussion of the selection of research method.

### **3.3 Research method selections**

The reliability of research such as this is dependent on the chosen research method (Brace, 2004:43). Choosing an appropriate research method is crucial to achieving the research objectives and a key to finding solutions to the research questions (Stenbacka, 2001:551).

In the early stages of this study, a qualitative research method was considered, because in-depth interviews can accurately gather evidence about perceptions from those who are interviewed. Qualitative research "involves the use of qualitative data, such as interviews, documents, and participant observation data, to understand and explain social phenomena." (Myers,1997). Qualitative research leads to answers that are typical for a specific phenomenon in a specific context, and explains what makes this phenomenon different to others (Stenbacka, 2001:551). However, this method does not provide results that can be



generalised and therefore does not suit the purposes of this study, which sets out to obtain generalised research findings. For this reason, a quantitative research method was chosen.

### **3.3.1 Quantitative research**

Quantitative research is about establishing a sample and then examining people's "characteristics, opinions, attitudes or previous experiences – by asking them questions and tabulating their answers" (Leedy & Ommrod, 2005:183). The intention of this research was to obtain generalised perceptions of SMME owner/managers in the Cape Town area, and so the research set out to obtain the information by surveying a sample from that potentially large population.

The quantitative research method works with large, representative samples and it uses structured data collection to obtain a general conclusion to the phenomena (Thomas, 2004:22; Leedy & Ommrod, 2005:183; Struwig & Stead, 2004:4; Johnson & Harris 2002:101). The significance of using a quantitative research method is that the research is replicable by a different organization in the same investigating area, and the same research results should be obtained (Johnson & Harris, 2002:101).

To obtain reliable statistical results, questionnaires and interviews were used of collected research data. The questionnaire was conducted by the statistical analysis; the interviews were conducted by the contents analysis.

### **3.3.2 Why use a questionnaire?**

The role of a questionnaire is to elicit information by requiring respondents to answer objective questions (Brace, 2004:9). It can be sent to a large number of potential respondents from a population; it is also a channel of communication between the researcher and the subject.

With large-scale surveys, it is possible and easy to handle and interpret data with a standardised question format (Brace, 2004:2). As well as offering direct questions, a

questionnaire can be designed that asks respondents to reveal their opinions and attitudes by indicating their agreement (or disagreement) with statements according to a Likert scale.

Likert scales are useful when evaluating behaviour, perception, attitude or other phenomena (Leedy & Ormrod, 2005:185) and are therefore particularly appropriate to the present purpose. This research mainly used statements with a five-point Likert scale, ranging from "strongly disagree" to "strongly agree", or "very unchallenging" to "very challenging".

In this research, 100 questionnaires were issued during August and September 2006; the last feedback arrived at the end of September 2006.

### **3.3.2.1 The advantages of a questionnaire**

Brace (2004:36) states that the primary advantage of using a questionnaire is that the researchers can leave the questionnaire with respondents, so that they have time to consider the answers with little pressure on them.

Another advantage of questionnaires is that respondents can respond to "open" questions that allow them to use descriptive written responses (Brace, 2004:36). This idea was adopted in this research and space was provided on the questionnaire for respondents to write additional comments on six questions concerning how SMME owner/managers manage e-commerce related risks. Very limited but potentially useful evidence was gained in this way.

### **3.3.2.2 The disadvantages of a questionnaire**

The use of questionnaires as a data collection method has the following disadvantages:

- Lack of interaction between researcher and respondents; it is impossible for a researcher to elicit information from the specific respondents by asking tailor-made questions (Brace, 2004:5).
- In a questionnaire, researchers can only get answers to the questions that have been asked (Johnson & Harris, 2002:102).

### **3.3.3 Why use interviews?**

The above advantages and disadvantages of questionnaires can be contrasted with the use of interviews. To gain a generalised result a questionnaire is generally seen as the more appropriate route to follow. However, in this research, the open questions can be difficult for inexperienced respondents to understand and reply to, and there was a concern as to whether the open questions could be answered properly. Interviews can spontaneously yield additional vital information (Johnson & Harris 2002:102). Struwig and Stead (2004:86) introduce the theory that based on the research purposes; standardised interviews with a limited number of questions in large sample sizes can be conducted in qualitative research. It was decided to administer the interviews "face-to-face" and, in effect, interviews were conducted as the questionnaires were completed.

Brace (2004:5) reminds us that quantitative researchers must be aware that respondents may have useful information that is not exercised by the questions in a questionnaire. By working "face-to-face" this research obtained crucial information from owner/managers in 17 cases within the sample. The open questions in the questionnaire were used to guide the interviews. Putting questions in the same way to different people is a key to most survey researches, so that it is possible for researchers to interpret the answers (Brace, 2004:5). Confidentiality is of course a concern here, and as Leedy and Ormrod (2005:185) point out that if respondents are assured that their responses are confidential they will be more truthful in a personal interview than they would otherwise be.

#### **3.3.3.1 The advantages of face-to-face interviews**

Brace (2004:25) lists the following advantages of face-to-face interviews:

- Respondents can query the meaning of questions.
- Misunderstood questions from the questionnaire may be corrected.
- Respondents can be encouraged to provide deeper responses to open questions.
- Ability to stimulate respondents into deep conversations.
- More complex questions can be asked.

### **3.3.3.2 The disadvantages of face-to-face interviews**

The disadvantages of face-to-face interviews are (Brace, 2004:25):

- Self-presentation bias – possible meanings are dependent on the researcher's understanding of the conversations.
- Selection bias – data collection relies on researcher's opinion; the researcher may miss the importance of certain information in the interviews.

Developing the potential advantages and mitigating the weaknesses of the chosen method is the motivation for selecting the specific method, which is the core of every research method selection (Brace, 2004:25).

### **3.3.4 Questionnaire design**

Good questionnaire design ensures a successful quantitative research. Designing a questionnaire is a crucial process in achieving the research objectives in quantitative research; it is necessary to formulate appropriate questions that respondents will understand (Brace, 2004:11).

The research was divided into six areas of interest, each of which was the subject of a main question on the questionnaire. Question 5 addressed the principal objective of the research study: the perceptions of e-commerce related risks in SMMEs, as shown in Figure 3.2. This question delivers the answer to the principal research question.

The sequence of questions that related to the principal research question was designed as:

- What are SMME owner/managers' perceptions of e-commerce identified risks (Question 5)?
- Which risks have they experienced (Question 4)?
- How do they manage e-commerce related risks? (Question 6)
- What factors could affect their perceptions?
  - 1) Levels of e-commerce adoption? (Question 1)
  - 2) Purposes (related to the benefits) of e-commerce adoption? (Question 2)

- How important do they perceive e-commerce related risks to be when adopting e-commerce? Which successful factors are considered? (Question 3)

The layout of a questionnaire affects response rate and the acquisition of usable, analysable data (Brace, 2004:11). In terms of achieving the research objectives and combining with the research conceptual model, this research questionnaire layout focused on being easily accepted by the respondents, and was not consistent with the sequences of their thoughts, as shown in the figure below.

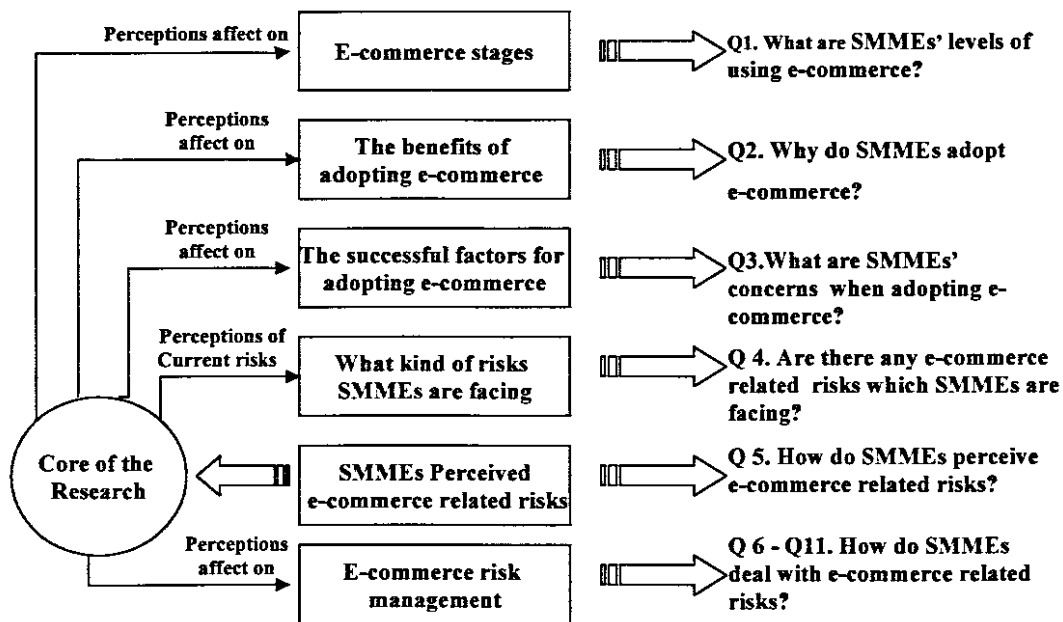


Figure 3.2: Questionnaire design

The questionnaire used here was organised in six parts over 8 pages:

**Part 1:** A letter of introduction to the respondents describing the researcher and research department from the supervisor.

**Part 2:** The cover page of introduction to the research, researcher and appreciation for the responses. Here the topic was properly defined so that the respondents could clearly understand what the research was about.

**Part 3:** Section one, which included three main questions:

- Q1. The Internet usage level;
- Q2. Reasons for using e-commerce;
- Q3. Factors affecting the adoption of e-commerce.

**Part 4:** Section two, which included two sets of statements to identify SMME owner/managers' perceptions of e-commerce related risks.

A five-point Likert scale was used to rate the two sets of statements, one (Q4) investigating which e-commerce related risks the respondents experienced and were facing ("Strongly agree" to "strongly disagree") and the other (Q5) investigating the degree of challenge of e-commerce related risks ("very challenging" to "very unchallenging"). This part aimed at comparing responses between experienced and inexperienced perceptions, which were presented in Chapter 4.

**Part 5:** Section three, which included six open questions (Q 6 to Q 11) on how SMME owner/managers deal with e-commerce related risks.

**Part 6:** The demographic questions aimed at establishing some of the characteristics of respondents and SMMEs to correlate (Weiser & Morrison, 1998:159) with their perceptions. There was a concern that personal questions presented right at the start might affect the respondents' willingness to provide more appropriate answers, so this part was left until the end of the questionnaire.

The following factors were considered in formulating the detail of the questions (adapted from Brace, 2004:157):

- Language: everyday, simple words were used to ask the questions, where possible.
- Question phrasing: questions and statements were made as clear as possible.
- Question length: short sentences were used to obtain meaningful answers.
- Question order: the six parts of the questionnaire progressed logically from early to late e-commerce issues.
- Question formats: complex questions were avoided.
- The questionnaire avoided using the word "risk" overtly to avoid respondents giving what they guessed were the "right" or "expected" answers rather than their own perceptions.

However, it was not unproblematic to simplify the questionnaire for respondents who might not have any Information Technology or e-commerce knowledge. This questionnaire design

and refinement took one and a half months in an attempt to ensure that the necessary questions were included so as to be able to achieve the research objectives.

For instance, business network services might be “poor” because of the attack by “Denial-of-services”. Surveying this problem and ensuring that it would be easily understood by respondents, the statement (Q4.4) in the questionnaire was “the Internet services are steadily available for online transactions”. Question design also considered that the respondents might be unfamiliar with the term “intellectual property” (it was asked of some business owners during the questionnaire design for this reason); this risk was separated to items as: the name of the company, product design, trademarks *et al.* Even then, some respondents still complained about the difficulty of understanding and answering some of the questions.

### 3.3.5 Questionnaire pilot

When a first draft of a questionnaire has been made, it is important to pilot it before issuing to a large population: “[test] it out before committing to a large-scale study is an essential precaution” (Brace, 2004:163). This is an important part of a quantitative research process; failure to pilot a questionnaire is a high failure risk for a research project. The pilot exercise provides some guarantee of obtaining useful research results.

Following the pilot, the first version of the questionnaire was evaluated and, as Brace suggests, issues of quality and validity were addressed as follows:

**Table 3.1: Questionnaire pilot**

Issue	What was done
Does the questionnaire sound right when read out?	Yes, but a few statements were changed.
Do the respondents understand the questions?	Yes, but a few statements were changed.
Does the researcher ask the right questions?	Two statements were deleted.
Are there any ambiguous questions, double-barrelled questions, loaded or leading questions included?	No.
Can the respondents answer the questions?	Yes.
Does the interview retain the attention of respondents throughout?	Yes.

---

Can the interviewees and respondents understand the routing instructions in the questionnaire?	Yes.
Does the interview flow properly?	Yes.
Do the questions and the responses answer the brief?	Yes.
How long does the interview take?	Average 7 minutes
Have mistakes been made?	Yes, a few mistakes were corrected.
Does the routing work?	Yes.

---

After dealing with the changes in the piloted questionnaire, the questionnaires were issued to SMME owner/managers for completion.

### 3.4 Sampling procedure

The source elements in research such as this are called "the population", and can comprise individual people, groups, organisations, industries, documents, processes, events and even time periods (Thomas, 2004:105).

The population of this research was SMME owner/managers in the Cape Town area, some who had adopted e-commerce and some who had not. In the questionnaire design, it was recognised that some SMMEs might not be using e-commerce. However, this study still regarded them as a part of the population, because this group might adopt e-commerce in the future and their perceptions are equally interesting; understanding this group's perceptions is possibly more crucial than the others, as it is the decision to actually adopt e-commerce that exposes SMMEs to risks and this decision needs to be well informed.

Defining the population is an important prelude to establishing a sample from it. There are many sampling techniques to choose an appropriate population depending on the research circumstance (Thomas, 2004:105). In a quantitative research, there are considerable threats to the results' validity and the generalisability of choosing sampling approaches (Hoinville, Jowell, & associates, 1978:60). According to the research purpose, which is to generalise the research findings, a random sample selection is an appropriate approach to this study.

However, due to a lack of listed SMMEs' detailed information for random selection in the



research area, this study used a snowball sampling technique and a purposive sampling technique to obtain more respondents. According to Cooper and Schindler (2003:201) purposive sampling technique is a non-probability sampling technique that conforms to certain criteria. The snowball sampling technique is used when it is deemed necessary to obtain additional respondents based on the initial respondents.

#### **3.4.1 How should these units be selected?**

The researcher chose to "cold call" on small businesses to gather the research data. As mentioned above, some SMME owner/managers refused to complete the questionnaires for various reasons, and so where there was co-operation respondents were asked to introduce other business owners known to them in the Cape Town area – selection by "snowballing".

#### **3.4.2 How many units should be selected?**

In quantitative research, relatively large numbers of respondents are required. For example, 50-100 has been recommended as the smallest usable subgroup (Hoinville, Jowell, & associates, 1978:61). 100 questionnaires were distributed in this research.

### **3.5 Data collection**

The underlying principle of sample selection in this research is that the respondents are SMME owner/managers. Fifty-seven responses were received, which is a 57 percent response rate. The difficulty of data collection was due mainly to most of the respondents' lack of time; they asserted that they could not complete the questionnaire at the time of calling (the questionnaire typically took 10 minutes to complete). Some of them deferred return of the questionnaire more than three times, some failed to return it at all. The period of data collection extended from 1<sup>st</sup> August to 30<sup>th</sup> September 2006.

Analysis revealed that the reasons for null responses were: (1) The respondents' lack of time; (2) The respondents' lack of e-commerce knowledge and of the Internet - most of the respondents emphasised that they did not know much about e-commerce; and (3) the

respondents' aversion to research.

Some respondents asked to complete the questionnaire in their private time, but they then ignored or lost it, and had to be reminded. One of the respondents when asked whether the questionnaire was completed said she had totally forgotten it; she could not even find where she had put the questionnaire. The longest response time was four weeks. Nevertheless, after completing the questionnaire, most of the respondents gave their contact details to show their interest in obtaining the analysed results, even though some of them were initially reluctant to fill in the questionnaire.

The researcher also observed people's attitudes and behaviour when they were responding to the questionnaires and interviews. Interviews and questionnaires carry different advantages and disadvantages, as has been mentioned earlier. For instance, although they had "ticked the boxes" in the main sections of the questionnaire, when interviewed some respondents clearly stated that they did not know e-commerce, intellectual property, e-commerce law or risk management; so clearly they had ticked the answers in an ill-informed way.

Data collection affects data analysis facility, and both influence the reliability of research results (Brace, 2004:163). It was necessary to choose an appropriate method of analysis to minimise potential problems.

### **3.6 Data analysis**

Quantitative research data is normally subject to statistical analyses (Thomas, 2004:22). Thomas defines three broad types of quantitative research approaches: descriptive, comparative and prescriptive. Comparative analysis (the statistical comparison of data between two or more groups) and prescriptive analysis (from simple regression to complex structural equation modelling-based approaches, such as path analysis) did not suit the purposes of this research study; however, the descriptive approach was appropriate and is explained below.

### **3.6.1 Descriptive approach**

The descriptive statistics approach does not involve comparison between groups or predict what the likely outcome of an action will be. Essentially, it is a simplified description of some phenomenon by using numbers (Johnson & Harris, 2002:101). This study used two characteristics of descriptive statistics approach: one was to identify the characteristics of a phenomenon, which could be observed; another one was to explore possible correlations among different phenomena (Leedy & Ormrod, 2005:179).

The descriptive statistics approach only describes the situation in its original shape under the investigation; the truth can't be changed or modified, the trend is towards determining the cause and relationships. This is also a reason for choosing this approach to describe the analysed data.

### **3.6.2 Content analysis**

The open questions in the questionnaire produced limited but valuable answers, and the interviews addressed this gap. Content analysis was applied to the interview texts to classify and quantify the contents. Berelson (1954:489, cited by Thomas, 2004:218) states that content analysis is "*a research technique for the objective, systematic, and quantitative description of the manifest content of communication*". The 17 interviews were analysed and interpreted to convey an understanding of the meaning of the texts.

### **3.6.3 Statistical analysis**

The aim of statistical analysis is to enable the constructed data to be tackled in relation to the overall objectives of the studies, and broadly includes summarization and identification of relationships (Thomas, 2004:205). The author further determines that the summarization of quantitative data is an important outcome of the research and a prelude to further analysis (Thomas, 2004:206).

Frequency analysis is one of the broad methods of organizing and summarizing statistical

data; this study has mainly used this approach in presenting the results. To show the results, pie charts and bar charts are widely used as will be seen below.

To identify relationships, the study then used cross-tabulation and Chi-Square Tests to obtain the results. SPSS (Statistical Package for the Social Sciences) is a statistical package that is widely used for research analysis, and this study used it to analyse relationships between responses to the main statements and the demographic factors that describe the respondents.

### **3.7 Research ethics**

Research ethics provide an important philosophical guide to researchers' conduct during research processes, "from the beginning of defining one's ontological positioning to the end of justifying of epistemological positioning" (Kakabadse, Kakabadse & Kouzmin, 2002:21).

According to Struwig and Stead (2004:66), this research study followed the ethics of research.

- Recorded the respondents' actual thoughts and behaviour; ensuring the research data and results are a true reflection of an individual in pieces of evidences.
- Avoided the research being influenced by the researcher's views of social reality, and researcher's personal biases.
- By respecting the rights of respondents, the study treated their personal information confidentially and their responses to the questionnaires and interviews. Confidentiality in the questionnaire and the contents of interviews were assured. After the data had been analysed, the questionnaires were destroyed and the interview recordings were deleted.
- Plagiarism was avoided in collecting both primary data and secondary data in this research study.

These ethics provided guidelines and guaranteed that this research study was strictly conducted in an acceptable way. Honesty is a key to doing research, which ensures that the research results are true, reliable and valid.

### **3.8 Chapter summary**

This chapter reviewed literature on research methodology both quantitative and qualitative, by connecting with the actual research performance. The intention of presenting this chapter in this way was to illustrate in clear steps doing research with the researcher's true thoughts before, during and after the survey. It provides a legible line to readers to understand this research framework, research design and research performance. The results of the questionnaires and the interviews are presented in the following chapter.

## 4 Chapter Four: Research Results and Findings

### 4.1 Introduction

This chapter presents the results of the research concerning SMME owner/managers' perceptions of e-commerce related risks and how they deal with these risks. The results are drawn from the completed questionnaires and interviews. 57 questionnaire responses were received out of the 100 issued questionnaires; 50 of them were completed, 7 of them could not be used as they were not properly completed. 17 business owner/managers amongst the 50 responses were interviewed, based on the questionnaire's open questions, thus providing useful additional data.

This chapter also provides the results of statistical analysis that were applied to the data. According to the 50 available responses, the total response rate is 50 percent for the questionnaires and within that 34 percent for the interviews.

### 4.2 Research questions

The principle research question addressed here is:

*What are SMME owner/managers' perceptions of e-commerce related risks, and what are the effects of these perceptions on e-commerce development?*

#### **Sub-Questions:**

1. Which risks associated within e-commerce are faced by SMMEs?
2. How can these risks be managed?
3. What are the SMME owner/managers' perceptions of these risks?
4. How do they deal with these risks?
5. What are the effects of these perceptions on e-commerce development?

Sub-questions 1 and 2 were preparatory to the development of the questionnaire and the details are to be found in Chapter Two, which reviewed recent academic books, research

papers, journals and articles related to the research field. Research questions 3 and 4 comprised the basis for the questionnaire and the interviews, which were themselves organised around a series of 11 more detailed questions (see Figure 4.1 below). This chapter is therefore organized principally according to these questions. Research question 5 is addressed in the discussion that follows in Chapter 6.

The figure below shows the structure of the questionnaire which was shown in Chapter 3. Here again, in effect, it is a transfixion of the discussion that follows in this entire chapter:

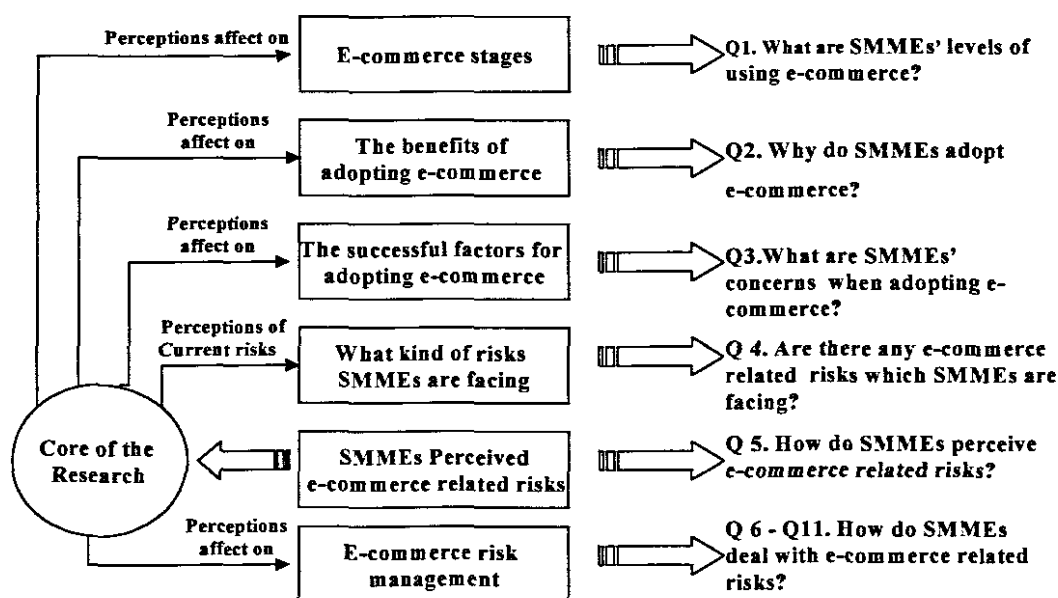


Figure 4.1: Questionnaire design

### 4.3 Detailed research results of questionnaire closed questions

There are 11 major questions in the questionnaire (see Appendix A): Questions 1 to 3 were part one, which used multiple choices; Questions 4 and 5 were part two, which used five-point Likert scales and were analysed by statistical techniques; Questions 6 to 11 were open questions. The short answers from the questionnaire responses were analysed together with the interviews, which dealt with the same questions. This chapter shows the analysed results of these questions one by one.

### 4.3.1 SMMEs' levels of using e-commerce (Question 1)

The frequencies and percentage frequencies of the responses to the level of e-commerce usage are presented in Table 4.1.

**Table 4.1: SMMEs' current levels of e-commerce usage**

Current levels of e-commerce usage (50 respondents)	Positive Responses	Percent of total
We use electronic-banking.	48	96
We use e-mail to communicate with suppliers or customers.	47	94
Our company has its own website.	34	68
We accept credit cards for customer payments.	22	44
My company has an intranet that links to internal departments.	22	44
The internet is a main channel between our suppliers and my company.	20	40
We have had advertising on the internet.	17	34
We sell products online.	10	20
Customers can order products or services from our website.	9	18
My company has information systems link to customers or retailers.	6	12
None of the above applies to my company	0	0

Table 4.1 shows that all SMMEs in the sample are using the Internet for business, but at different levels; most of them are using electronic banking and e-mail; 68 percent have a website. However, only 18 percent indicated that their customers are using their websites to place orders and only 12 percent of the SMMEs in the sample have information systems linking to customers or retailers. These results mean that a relatively low percentage of SMMEs are utilising the Internet fully.

### 4.3.2 Reasons for adopting/or going to adopt e-commerce (Question 2)

This question also applied the frequencies and percentage frequencies of the responses, as shown in Table 4.2 below:

**Table 4.2: Reasons for adopting or intention to adopt e-commerce**

Reasons for adopting e-commerce or intention to adopt e-commerce (47 of 50 respondents)	Positive Responses	Percentage of total
Obtain new customers.	35	70



Improve customer services by using e-commerce.	34	68
Adopt e-commerce to reduce the costs.	29	58
Improve the interaction between partners and our company using e-commerce.	22	44
Integrate e-commerce into business management long term objectives.	22	44
Satisfy requirements of our suppliers.	20	40
Raising productivity.	18	36

Three respondents (6% of the sample) did not answer this question due to the low level of e-commerce adoption: one only uses e-mail, the second one only uses electronic banking and e-mail with customers, and the third one only advertises online. These three companies are not using e-commerce at a significant level and were not able to give any indication as to their reasons for adopting e-commerce now, or in the future.

For the others, the reasons for e-commerce adoption are: 70 percent of the respondents sought to obtain new customers; similarly, 68 percent of the respondents sought to improve customer service; 58 percent wanted to reduce costs. These reasons are the basic requirements for adopting e-commerce and it implies that SMMEs will still keep staying at the low level of using e-mail and having their own websites. 40 percent adopt e-commerce for satisfying the requirements of their suppliers. The lowest rate, 36 percent adopt e-commerce for "raising productivity" may be due to the operating field of the respondents.

#### 4.3.3 Concerns of adopting/going to adopt e-commerce (Question 3)

In order to avoid the respondents ticking all the options to give theoretically right answers instead of dealing with the real concerns, this question required respondents to choose – according to their opinion – only the five top factors from the 13 listed. A few respondents chose less than five factors: two chose 4 factors, one chose three factors, and one chose 1 factor only (transaction safety). There were also two respondents who did not answer this question. The responses in Question 3 and the percentage of the 50 respondents were shown in Table 4.3:

**Table 4.3. Question 3 options and responses**

Options	Responses	Percentage of total
---------	-----------	---------------------

3.1. Assess the cost of adopting e-commerce.	20	40
3.2. Return investment on adopting e-commerce.	15	30
3.3. Staff capabilities.	15	30
3.4. Information systems usability.	17	34
3.5. Internet service availability.	26	52
3.6. Evaluate added brand value.	15	30
3.7. Identify the potential benefits.	24	48
3.8. Identify the potential risks (such as security).	23	46
3.9. Communicate with group of customers or suppliers.	26	52
3.10. Business transactions safety.	25	50
3.11. Competitive pressure.	18	36
3.12. E-commerce law issues.	2	4
3.13. Avoiding or mitigating the potential risks.	6	12

The analysis of this question is more complicated than other questions in the questionnaire. Respondents were also required to rank the five top factors in order of importance from 1 to 5, so every respondent ranked five different factors in different ways. To obtain a useful outcome from the question, the level of importance of the total responses to each option was calculated firstly (shown in Table 4.4).

**Table 4.4: The frequencies of the e-commerce adoption concerns**

Most Important	Frequencies												
	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8	3.9	3.10	3.11	3.12	3.13
1	4	4	3	5	7	2	5	3	7	6	2	0	0
2	3	3	1	2	9	3	5	3	7	5	4	1	1
3	2	5	5	4	2	5	7	7	3	5	1	0	1
4	5	2	4	3	8	3	3	5	4	5	4	1	0
5	6	1	2	3	0	2	4	5	5	4	7	0	4
Total	20	15	15	17	26	15	24	23	26	25	18	2	6

The statistical techniques of mode, means, average rating, frequencies and median were applied to the ranked data, but after comparing the results from the above techniques with the total responses, it was found that they were not convincing. Thus, for a reasonable analysis, the study presented the sequences of the total amounts of all the options that were chosen by the respondents, and presents them from the most important to the least. These results are shown in Table 4.5.

**Table 4.5: The level of concerns in adopting e-commerce**

Options	Responses	Percentage of total	Rank
3.5. Internet service availability.	26	52	1
3.9. Communicate with group of customers or suppliers.	26	52	2
3.10. Business transactions safety.	25	50	3
3.7. Identify the potential benefits.	24	48	4
3.8. Identify the potential risks (such as security).	23	46	5
3.1. Assess the cost of adopting e-commerce.	20	40	6
3.11. Competitive pressure.	18	36	7
3.4. Information systems usability.	17	34	8
3.2. Return investment on adopting e-commerce.	15	30	9
3.6. Evaluate added brand value.	15	30	10
3.3. Staff capabilities.	15	30	11
3.13. Avoiding or mitigating the potential risks.	6	12	12
3.12. E-commerce law issues.	2	4	13

In Table 4.5, the levels of importance reveal the respondents' strategies of e-commerce adoption. The levels can be classified into three groups:

The first group voiced the top five concerns. More than half of the respondents were concerned about "3.5. Internet services availability" and "3.9. Communicate with the group of customers or suppliers", then follows at 50 percent "3.10. Business transactions safety", 48 percent "3.7. Identify the potential benefits" and 46 percent "3.8. Identify the potential risks (such as security)". These results suggest that the respondents do not yet feel that the Internet environment is reliable and safe.

The second group voiced the six concerns in the middle part of the Table 4.5, ranking from 6 to 11. These concerns were selected by 15 to 20 respondents, and can be regarded as not so important. Although only 18 respondents chose "3.11 competitive pressure" as a concern, it has the highest frequency at importance level 5. In other words, typically respondents don't deem this as the most important factor of e-commerce adoption, but for those to whom it is important it was ranked highly.

The third group raised the last two concerns in table 4.5. E-commerce law was chosen by two respondents, and only six were concerned about "avoiding or mitigating the potential risks of adopting e-commerce". It can be concluded that typical SMMEs are not aware of e-commerce related risks, and e-commerce related laws; their concerns are still at the basic level of Internet requirements. These results are discussed again later in this chapter, taking other factors into account.

#### **4.3.4 Which e-commerce related risks are SMMEs facing? (Question 4)**

This question aimed to find out what kind of e-commerce related risks SMMEs are facing. The scope of these risks (drawn from the literature review) includes Internet-related risks, security risks, privacy and data protection risks, intellectual property risks and e-commerce law. In this question, to avoid the respondents following a simplistic "optimistic" or "pessimistic" line, some statements were reversed into the negative form so as to cause respondents to think more carefully about their answers. To facilitate the analysis, those negative statements were then reversed back into the positive form.

Five-point Likert scales were used, from "strongly agree" to "strongly disagree". To facilitate presentation of the results (see Table 4.6 below), "strongly agree" and "agree" were consolidated to "agree"; "strongly disagree" and "disagree" were consolidated to "disagree". However, to obtain the rank (see the last column of Table 4.6), a comparable numerical value to the five-point Likert scales were weighted as follows:

- "Strongly agree" = 2;
- "Agree" = 1;
- "No view" = 0;
- "Disagree" = - 1;
- "Strongly disagree" = - 2.

Afterwards, the average of the frequencies by the codes was calculated for sequence of rank. The results were shown in Table 4.6:

**Table 4.6: E-commerce related risks that SMMEs are facing**

<b>Statements (50 respondents)</b>	<b>Agree (Percent)</b>	<b>Disagree (Percent)</b>	<b>No view (Percent)</b>	<b>Rank</b>
4.22. In the future I will adopt/continually adopt e-commerce within my business.	80	4	16	0.9
4.6. A third party is not allowed to review our partner's information that we have stored.	70	18	12	0.9
4.5. Viruses attacked (our) computer systems.	86	12	2	0.76
4.3. Spam is a problem to a (my) company.	32	66	2	0.46
4.19. I am worried about online information reliability.	50	36	14	0.14
4.13. I mind that the name of my company is similar to other companies on the Internet somewhere in the world.	48	42	10	0.04
4.18. South African e-commerce law can protect online businesses efficiently.	20	20	60	0
4.21. We have defendable steps to protect our trade secrets.	32	30	38	-0.04
4.14. I am worried that our product designs that will be used by other companies.	40	44	16	-0.08
4.16. I am worried that the design of our trademark will be used by other organizations.	36	48	16	-0.08
4.20. I am worried about online partners' reliability.	38	40	22	-0.08
4.11. Internet fraud affects my trust of using e-commerce.	38	54	8	-0.14
4.15. I am worried that our unique products that will be imitated by other companies.	34	50	16	-0.14
4.17. I know the SA law about e-commerce.	24	38	38	-0.2
4.12. Copyright plagiarism affect (my) company at this stage.	30	52	18	-0.28
4.8. Theft of private information (in my company) is a problem.	26	58	16	-0.44
4.2. The Internet security is a threat to our business.	22	74	4	-0.58
4.10. Unauthorized attacks make suppliers deny having received payment.	12	62	26	-0.64
4.7. (My) company incurred losses by unauthorized access.	10	70	20	-0.76
4.4. The Internet services are not steadily available for online transactions.	12	84	4	-0.78
4.9. Unauthorized attacks make our customers deny having received goods or services.	8	68	24	-0.78
4.1. The Internet virtual environment is risky for our business.	12	80	8	-0.86

This reveals that the e-commerce related risks which the respondents are facing are security risks such as viruses (4.5), spam(4.3) and online information reliability (4.19). SMMEs do not see other e-commerce related risks. Intellectual property risks are of little concern to the respondents; e-commerce laws received more "no views". 80 percent of the respondents

definitely accept e-commerce, and 80 percent of them perceived the Internet environment is not risky to businesses.

### The general perceptions

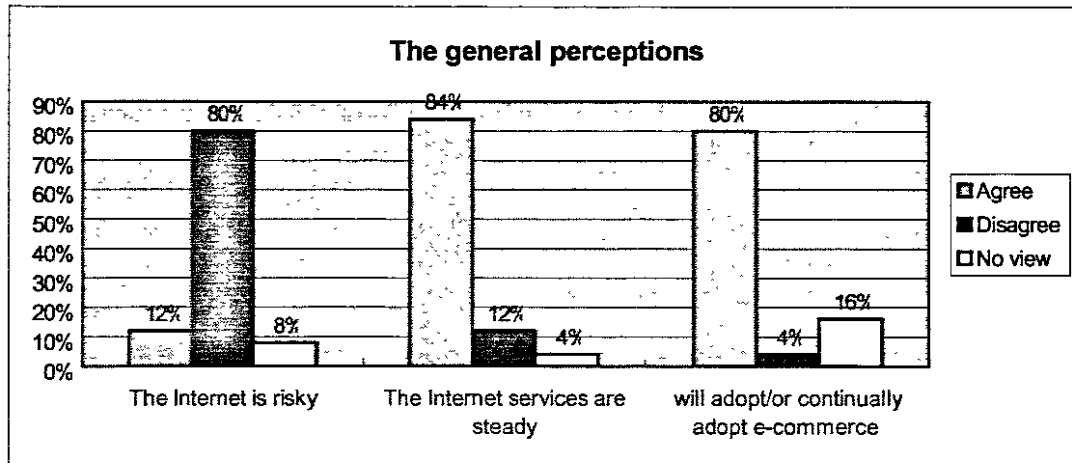


Figure 4.2: The Internet risks

Table 4.2 above shows the respondents' perceptions of the Internet. Overall, 80 percent of the respondents deemed the Internet virtual environment to be not risky for businesses and the Internet services to be steady. However, this result differs from their concern in Question 3 where transaction safety is a major concern. Eight-four percent of the respondents agreed that "the Internet services are steadily available for online transactions", but this was still one of their major concerns when adopting e-commerce in Question 3. However, 80 percent of them "will adopt or continually adopt e-commerce in the future" providing a positive result.

In order to summarise and clarify these results, these statements have been classified into different e-commerce related risks according to the literature review: security risks, privacy and data protection risks, intellectual property risks and e-commerce law – legal risks.

- **Security risks**

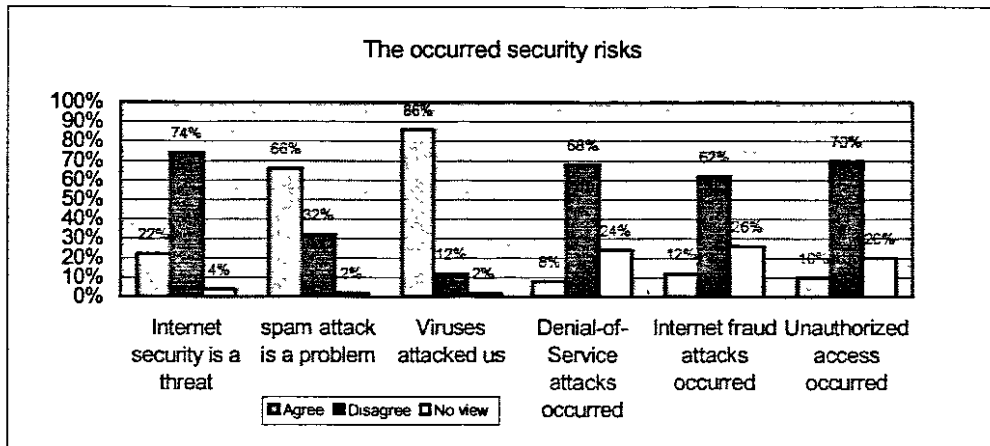


Figure 4.3: The occurred security risks

Security risks are the major concerns when adopting e-commerce. This graph depicted in Figure 4.3 shows that more than 70 percent of the respondents think that Internet security is not risky, although more than 60 percent of the respondents think spam is a problem, and viruses attacked their systems. Seventy percent of the companies did not have unauthorized access losses.

- Privacy and data protection risks

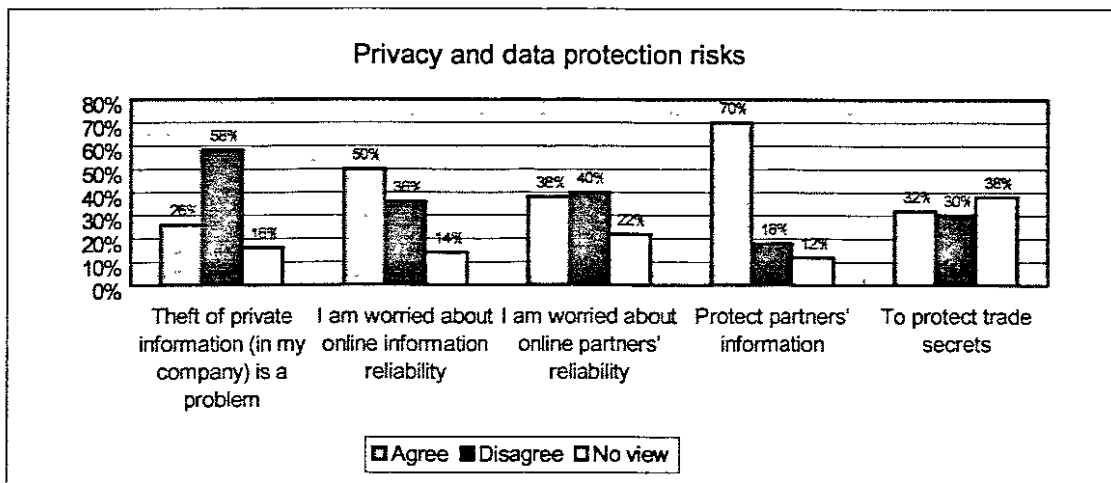
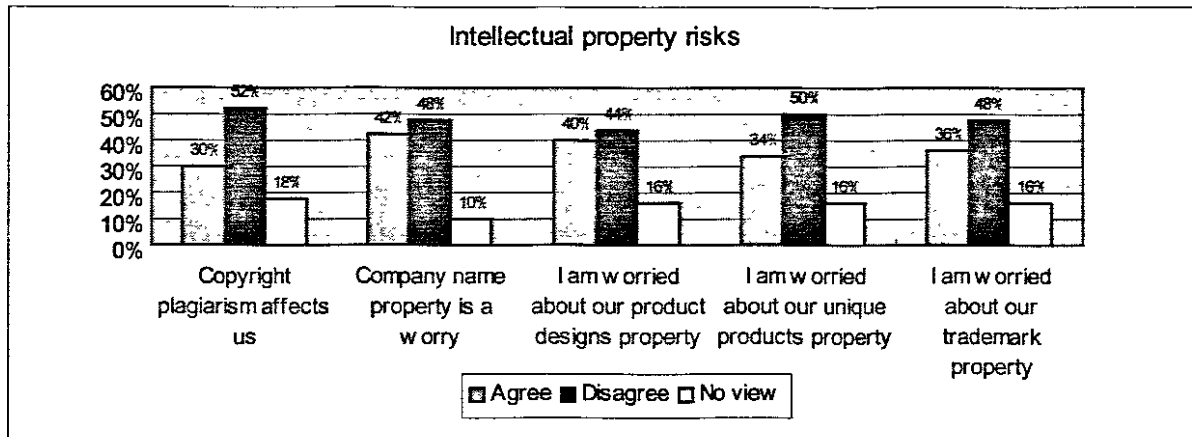


Figure 4.4: Privacy and data protection risks

Figure 4.4 shows that 70 percent of the respondents are aware of protecting their partners' private information. However, it shows some problems such as theft of private information, and their partners' reliability. It is also clear from the results that the respondents do not know how to protect their trade secrets due to only 32 percent of them having taken steps to protect

their trade secrets.

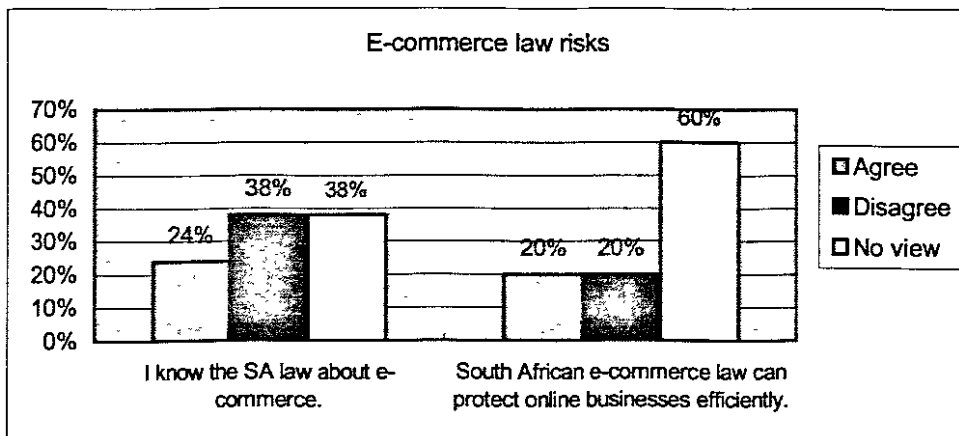
- **Intellectual property risks**



**Figure 4.5: Intellectual property risks**

In Figure 4.5, on average, less than 50 percent of the respondents disagreed that intellectual property issues could be problems in their business at that stage, less than 40 percent agreed, more than 10 percent had no view about these statements. It was concluded that intellectual property risks are not considered by most of the respondents.

- **E-commerce law – legal risks**



**Figure 4.6: E-commerce law - legal issues**

In Figure 4.6, 38 percent of the respondents indicated that they did not know South African law on e-commerce, 38 percent of them had no view, and 24 percent of them agreed that they knew. However, regarding the statement “South African e-commerce law can protect online business efficiently”, 60 percent of the respondents held “no view”, and both options “agree”



and "disagree" were chosen by 20 percent of the respondents.

#### 4.3.5 What are SMMEs' perceived e-commerce related risks? (Question 5)

This set of statements also required five-point Likert scales responses. The respondents were required to choose the appropriate options from "very challenging" to "very unchallenging". For obtaining a number of the positions instead of the degrees also, these options were consolidated from "very challenging" and "challenging" to "challenging"; "very unchallenging" and "unchallenging" to "unchallenging". During the survey the respondents, especially the micro business owner/managers, pointed out that this question was difficult to complete, and that they had never noticed some contents of the statements before. However, some respondents commented that the statements prompted them to start considering some aspects in their own businesses, which certainly encouraged the researcher.

The study also aimed to rank the degree of general e-commerce related risks that the SMME owner/managers perceived as risky. The weighting of responses is similar to Question 4:

"Very challenging" = 2  
 "Challenging" = 1  
 "No view" = 0  
 "Unchallenging" = -1  
 "Very unchallenging" = -2

Then the averages were used to calculate the rank. The aggregate results are shown in Table 4.7:

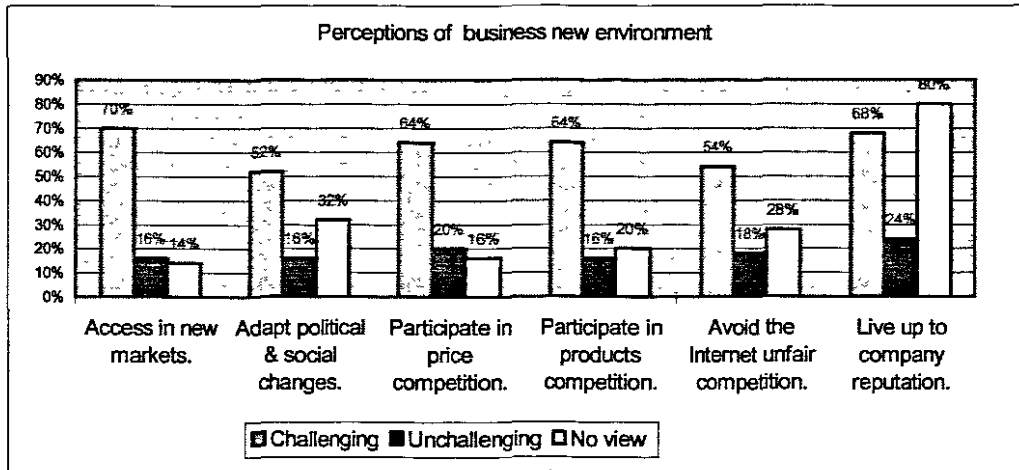
**Table 4.7: SMMEs perceived e-commerce related risks**

Statements (50 respondents)	Challenging (Percent)	Unchallenging (Percent)	No view (Percent)	Rank
5.18. Avoid internet fraudulent transactions.	80	8	12	0.98
5.19. Enhance information privacy or data protection.	74	14	12	0.78
5.1. Access in new markets.	70	16	14	0.72
5.16. Protect patents including the protection of layout and design of integrated designs.	62	12	26	0.72
5.13. Protect the design of trademarks.	64	18	18	0.62

5.15. Protect the profits of original ideas	58	18	24	0.62
5.22. Needed assistance by government.	60	14	26	0.62
5.4. Participate in products competition.	64	16	20	0.6
5.5. Avoid security attacks.	68	24	8	0.6
5.3. Participate in price competition.	64	20	16	0.58
5.12. Protect the profits of copyright.	54	14	32	0.58
5.20. Live up to company reputation.	68	24	8	0.56
5.9. Keep up with information technology progress.	64	28	8	0.5
5.2. Adapt political & social changes in wide marketplace.	52	16	32	0.48
5.21. Use the e-commerce law to protect businesses.	52	12	36	0.48
5.10. Avoid the Internet unfair competition.	54	18	28	0.46
5.14. Protect the profits of industrial designs.	52	18	30	0.46
5.23. Track network reliability.	54	22	24	0.44
5.11. Protect the profits of inventions.	50	22	28	0.4
5.6. Comply legal issues with local trade laws.	50	20	30	0.38
5.17. Avoid the threat of company's name be used.	52	28	20	0.3
5.8. Protect trade secrets.	48	34	18	0.18
5.7. Comply legal issues with international trade laws.	38	26	36	0.14

Table 4.7 shows that most of the statements were perceived as challenging. The highest concern was to avoid fraudulent transactions on the Internet; this is an important factor that affects SMMEs using the Internet and e-commerce in their businesses; it is not clear, however, whether it has been exposed as a barrier to SMMEs e-commerce adoption in South Africa. It is very interesting that the legal issues (local trade laws and internal trade laws) and "protect trade secrets" are perceived as not so challenging, because less than half of the respondents chose "challenging". From these results, it can be said that trade laws and legal issues are ignored by most of the respondents.

Firstly, some statements were purposed to identify the respondents' perceptions of businesses entering the e-commerce business new environment.

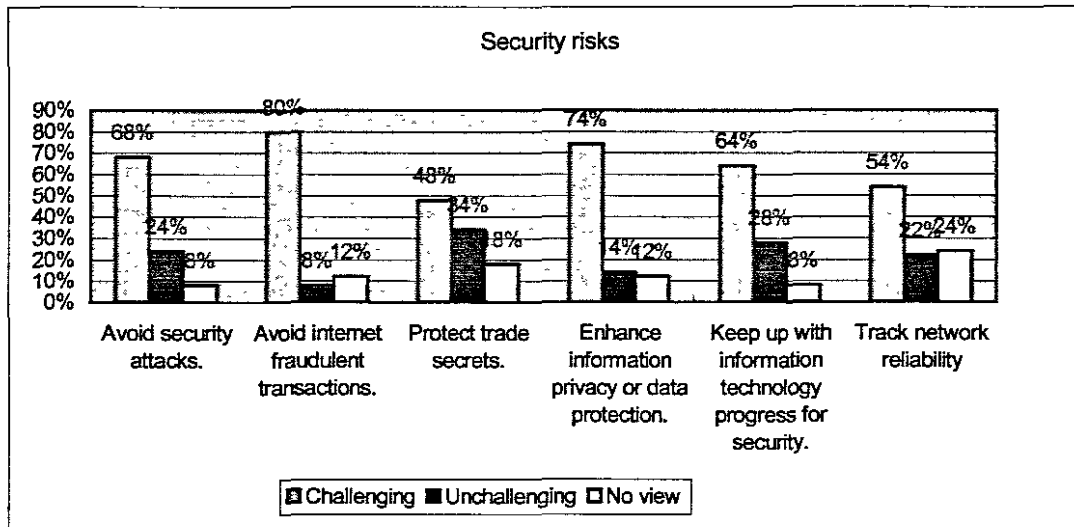


**Figure 4.7: Perceptions of business new environment**

Figure 4.7 shows that opportunities provided through the e-commerce environment to wider marketplaces bring more concerns to SMMEs. Seventy percent of the respondents perceived that “access in new markets” and “live up to company reputation in the Internet virtual environment” were challenging. It is noted that over 30 percent of the respondents held no view about adapting to political and social changes in a new environment, and nearly 30 percent held no view on the Internet unfair competition. The respondents who chose no view were mostly the smallest enterprises.

The similar characteristic statements in Question 5 (see Table 4.7) were split into different groups based on the literature review. For the comparison analysis, the percentage of the total responses was used. The results are shown as below:

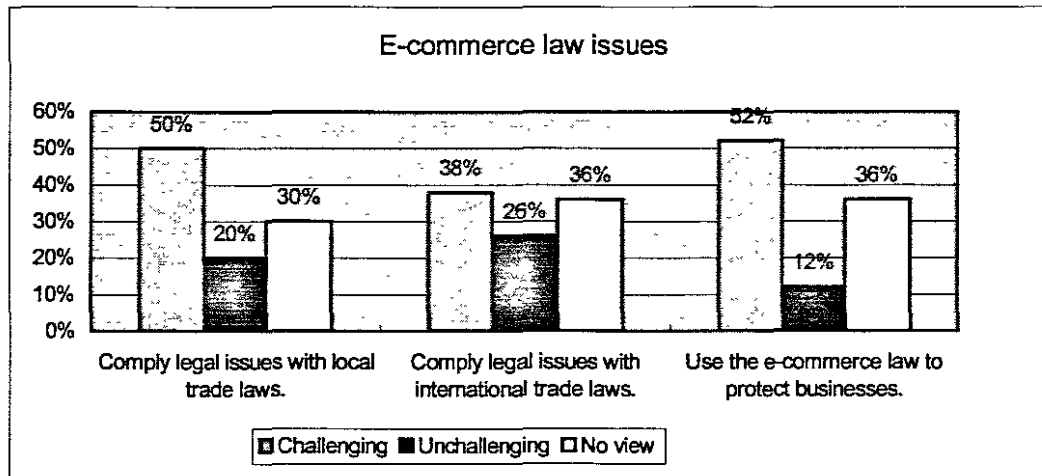
- **Security risks**



**Figure 4.8: Security risks**

In Figure 4.8, the biggest challenge perceived by the respondents was to avoid fraudulent transactions on the Internet, already mentioned above. Another high risk was the need to enhance information privacy or data protection, which was chosen by over 70 percent of the respondents. Also, approximately 70 percent of the respondents perceived that to avoid security attacks is challenging. Of importance is that more than 60 percent of the respondents perceived that to “keep up with information technology progress for security” is difficult. This provides a related consideration: it is very possible that the difficulty of “updating new technologies to protect online business transaction safety” is a reason for “security risks” (in Question 3) and “data protection risks” (in Question 5) being big concerns for the respondents.

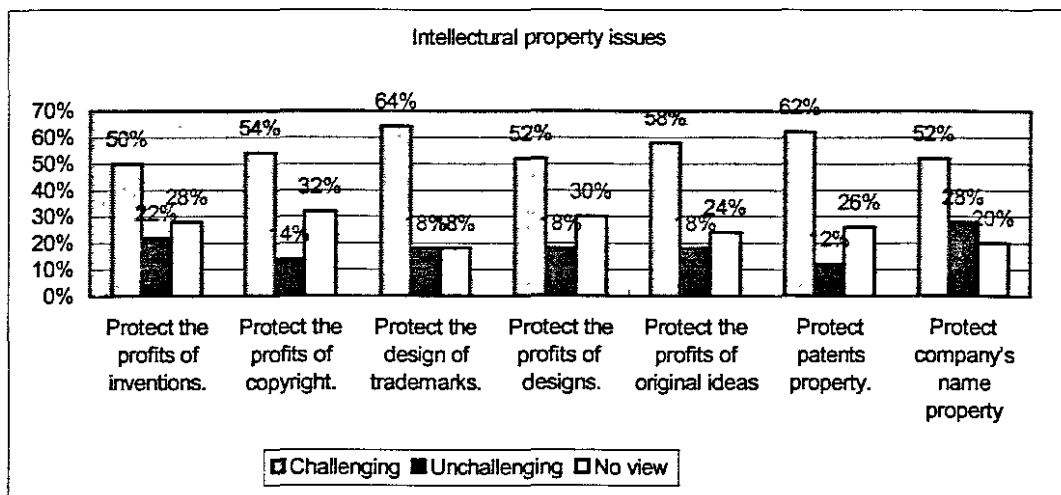
- **Law and legal risks**



**Figure 4.9: E-commerce law - legal issues**

On average in Figure 4.9, 34 percent of the respondents held no view about trade laws, e-commerce laws and legal issues; while nearly 50 percent of the respondents deemed these statements to be challenging. Thus, the law and legal issues can be regarded as risky to the respondents - only 26 percent of them certainly perceived it to be “unchallenging”.

- **Group four: Intellectual property issues.**



**Figure 4.10: Intellectual property issues**

In Figure 4.10, the average percentage of respondents who chose “challenging” option for all the statements in this group was approximately 55 percent. It shows that more than half the respondents thought that the Intellectual property risks were challenging, but also more than 20 percent of them held no view on whether it was difficult to protect their online business’s properties. As has been mentioned above during the survey, some respondents indicated that

they did not know about intellectual property issues. Therefore, intellectual property risks are major concerns to businesses, particularly to online businesses where profit losses are also invisible.

One specific statement concerned assistance from the government. From the responses, 60 percent of the respondents felt that "to get needed assistance from the government" is challenging; 26 percent held no view, and only 14 percent of the respondents perceived it to be unchallenging. This was an unexpected result as so much attention has been paid by the government to developing e-commerce adoption by SMMEs in order to decrease SMMEs' failure rate and unemployment rate, such as the published white paper, green paper, the efforts of the Cape Chamber of Commerce, and so on.

#### **4.3.6 The comparison of perceived risks**

As mentioned in Chapter 3, the purpose of designing Questions 4 and 5 was to identify whether the experienced respondents perceived differently to the inexperienced respondents. It would be interesting to know if there is a trend that affects the respondents' perceptions of e-commerce related risks. A two-by-two matrix was considered to be a suitable way to show the results. The steps for analysing these statements were:

- a) The statements with responses were separated into different groups in Questions 4 and 5, as was drawn previously (security risks, privacy and data protection risks, intellectual property risks, and e-commerce law risks).
- b) Put the same groups together from Question 4 and Question 5.
- c) Compared the responses in each group.
- d) According to the figures of the two by two matrix, put the counts into each determined quadrant.
- e) Calculated the frequencies of each quadrant.
- f) Analysed the trends.

Based on the different groups, different matrixes were used shown as below:

- **E-commerce Security Risks**

**E-commerce Security Risks**

Level of experience	Experienced	7 (14%) out of 50	22 (44%) out of 50
	Inexperienced	5 (10%) out of 50	11 (22%) out of 50
		Unchallenging	Challenging

**Figure 4.11: The e-commerce security risks matrix**

Figure 4.11 shows the results of experienced and inexperienced respondents' perceptions of security risks. The experienced security risks were: Spam, viruses, fraud transaction and denial-of-services (unauthorized attacks). More than half (58%) of the respondents experienced security risks (any one of the security risks). Totally, 33 respondents perceived to avoid security attacks was challenging. From the total experienced respondents, 22 (76%) out of 29 perceived "challenging", 7 (24%) out of 29 perceived "unchallenging". From the total 16 inexperienced respondents, 11 (69%) perceived "challenging", 5 (31%) perceived "unchallenging". So here the experienced respondents felt it was more challenging to avoid the security attacks.

- **E-commerce privacy and data protection risks**

**E-commerce Privacy and data protection Risks**

Level of experience	Experienced	6 (12%) out of 50	13 (26%) out of 50
	Inexperienced	4 (8%) out of 50	23 (46%) out of 50
		Unchallenging	Challenging

**Figure 4.12: E-commerce privacy and data protection matrix**

In Figure 4.12, the results show the experienced and inexperienced respondents' perceptions of whether it was challenging to protect business privacy and data. Except for 4 "no view" responses (two were inexperienced, two were experienced), 46 percent of all the respondents who did not experience the risks, chose "challenging". From the entire group of experienced respondents, 6 out of 19 (32%) chose "unchallenging", 13 out of 19 (68%) chose "challenging". From the entire group of inexperienced respondents, 4 out of 27 (15%) chose "unchallenging", 23 out of 27 (85%) chose "challenging". In this matrix, inexperienced respondents felt it was more challenging to protect online business privacy and data protection.

- **E-commerce intellectual property risks**

**E-commerce intellectual property Risks**

<b>Level of concerns</b>	<b>Concerned</b>	3 (6%) out of 50	10 (20%) out of 50
	<b>Unconcerned</b>	2 (4%) out of 50	19 (38%) out of 50
		<b>Unchallenging</b>	<b>Challenging</b>

**Figure 4.13: E-commerce intellectual property risks matrix**

In this group, the researcher considered that the respondents might not have experienced e-commerce intellectual property risks (as mentioned in Chapter 3, the researcher had asked some business owner/managers about this issue during the questionnaire design), so the researcher investigate their concerns about the risks rather than their experiences, otherwise their responses will mostly be "disagree". The statements identified the statuses of respondents' concerns of intellectual property risks (Question 4), and their perceptions of protecting intellectual property (Question 5). A total of 13 "no view" responses was obtained (3 respondents did not reply to the concerns and the risks, 4 respondents were concerned but had no views about the challenge, 3 respondents held no view about concerns but perceived it to be challenging, 6 respondents were unconcerned and had no views). 58 percent of the respondents opted for "challenging" for protecting their intellectual property, 10 percent of



them chose “unchallenging”. The trend in this matrix was that the respondents who were unconcerned about their intellectual property risks, felt more challenging to protect them.

- **E-commerce law risks**

**E-commerce law Risks**

<b>Know</b> Level of Knowing	<b>2 (4%) out of 50</b>	<b>10 (20%) out of 50</b>
	<b>2 (4%) out of 50</b>	<b>17 (34%) out of 50</b>
<b>Do not know</b>	<b>Unchallenging</b>	<b>Challenging</b>

**Figure 4.14: E-commerce law risks matrix**

Figure 4.14 shows the results of the respondents' understanding of e-commerce law (Question 4) and their perceptions of using the laws to protect their businesses (Question 5). This set of statements received 29 “no views” out of all the respondents. Analysis of the responses shows that 54 percent of the respondents opted for “challenging” to these statements, 20 percent amongst them know e-commerce law, and 34 percent do not know it. So the trend is that the respondents who know e-commerce law perceived that using e-commerce law to protect their businesses is challenging.

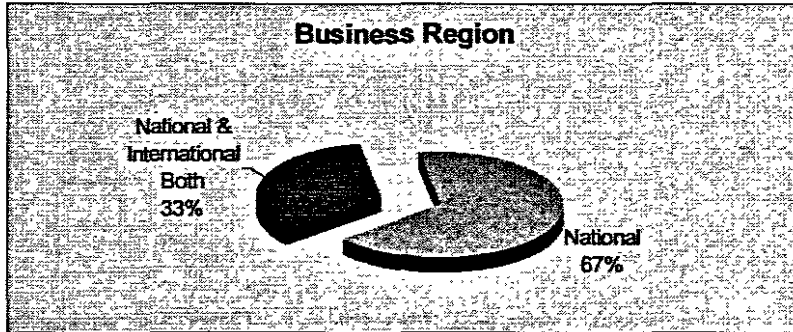
Further discussion of these results is presented later in Chapter 5. Questions 6 to 11 of the questionnaire were open questions and were analysed in tandem with the interview results because they are based on the same questions. Before showing these results, some attention needs firstly to be paid to the demography (the last part of the questionnaire), as it might reveal some interesting factors that affect the respondents' perceptions above.

### **4.3.7 Demography**

It is important to find out whether there are dependencies or relationships between the demographic background of the respondents and their perceptions. The demographic section

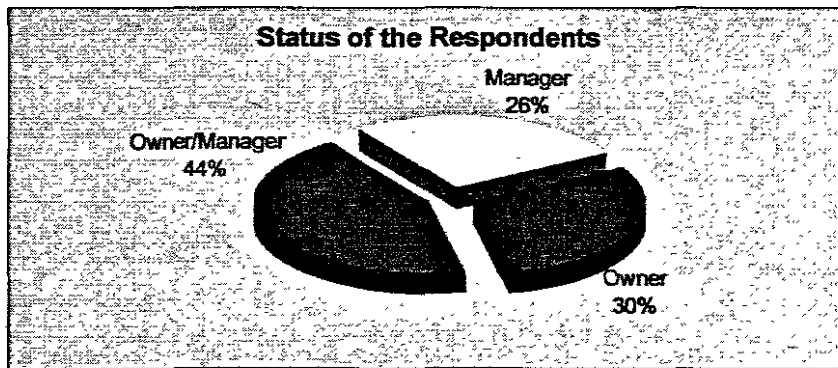
of the questionnaire addressed the characteristics of both the businesses and the respondents. The relative circumstances are presented in the pie charts below.

**Business Region (50 responses):**



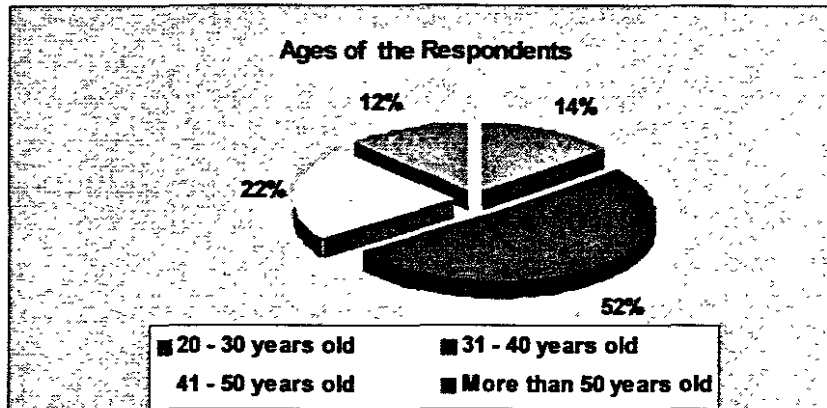
**Figure 4.15: Business region**

**Status of the respondents (50 responses):**



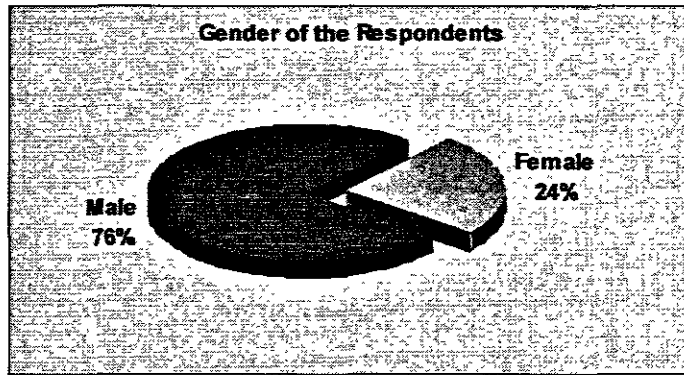
**Figure 4.16: Status of the respondents**

**Age of the respondents (49 responses):**



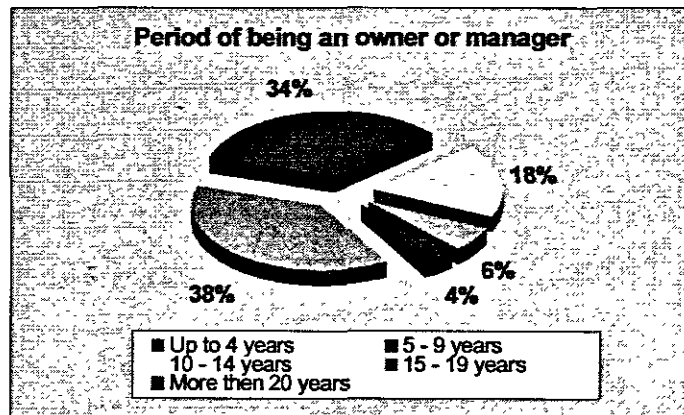
**Figure 4.17: Ages of the respondents**

**Gender of the respondents (49 responses):**



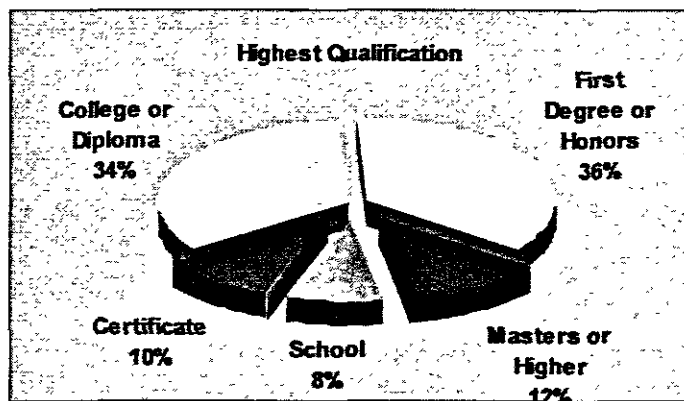
**Figure 4.18: Gender of the respondents**

**Period of being an owner or manager (50 responses):**



**Figure 4.19: Period of being an owner or manager**

**Highest qualification of the respondents (50 responses):**



**Figure 4.20: Highest qualification of the respondents**

**Statistical Business Type (50 responses):**

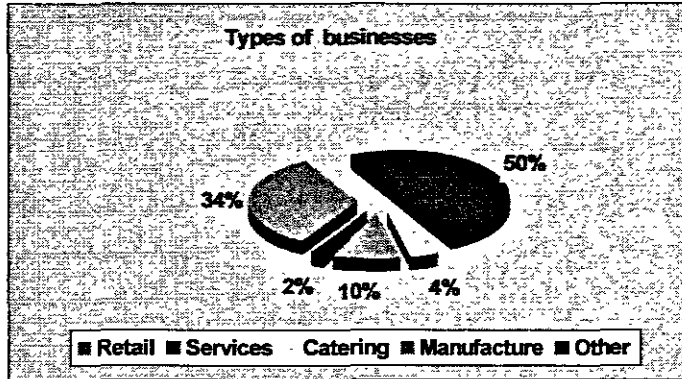


Figure 4.21: Types of businesses

Business sizes (50 responses):

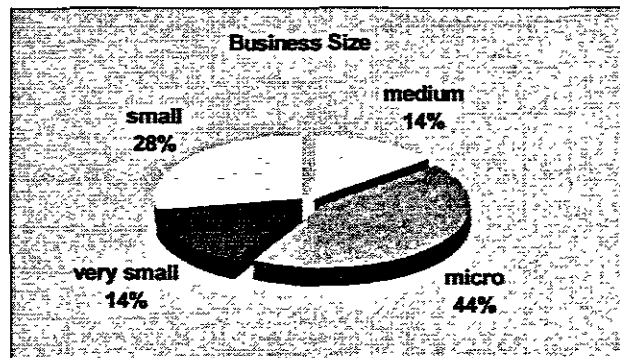


Figure 4.22: Business sizes

Period of business's existence (50 responses):

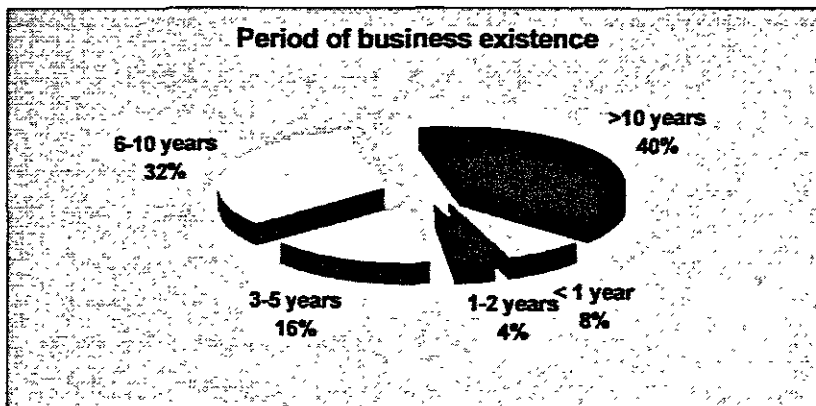


Figure 4.23: Period of business's existence

All the factors in demography were analysed applying Chi-Square Tests to the 22 statements in Question 4, and the 23 statements in Question 5. Perceptions may be affected by the characteristics of the respondents or their businesses, thus these analyses were intended to identify significant correlations between the demographic characteristics and perceptions. It

was a requirement of a statistical analysis that size of groups in each range (of age and education) should be sufficient for reliability. The analysis merged some options in order to comply, such as ages were merged into: 20-30, 31-50, older than 50, instead of the 5 options as in the questionnaire; qualifications were merged into "School" (School and Certificate) and "University" (others).

The results suggest that there are few significant correlations between demographic factors and perceptions. The entire analysis (using SPSS software) is, however, extremely lengthy - more than two hundred pages of analyses cannot be shown here. Therefore, only correlations that have significant relationships (P-value less than 0.05) are shown here (illustrated in the appendices), as table 4.8:

**Table 4.8: Correlations between the demography and the statements in Question 4, Question 5**

Demography	Statements	Effective factors	Options	P Value
Age	Use the e-commerce law to protect businesses.	20-30	Challenging	0.05
Gender	Live up to company reputation.	Male	Challenging	0.044
	The Internet virtual environment is risky for our business.	Male	Disagree	0.036
	The Internet security is a threat to our business.	Male	Disagree	0.017
Period of being an Owner/Manager	A third party is not allowed to review our partner's information that we have stored.	5-14 years	Agree	0.006
Highest Qualification	The Internet services are steadily available for online transactions.	University	Agree	0.037
	Viruses can attack (our) computer systems.	University	Agree	0.007
	I am worried about online information reliability	University	Agree	0.011
	Copyright plagiarism does not affect (my) company at this stage.	University	Agree	0.046
	We have defensible steps to protect our trade secrets.	School	No View	0.025
	Comply legal issues with local trade laws.	School	No View	0.03

The analysis was applied to: age, gender, period of being an owner/manger and qualification. Among these, the factors that primarily affect the respondent's perceptions are gender and particularly qualification. It shows that higher qualified respondents are more aware of some

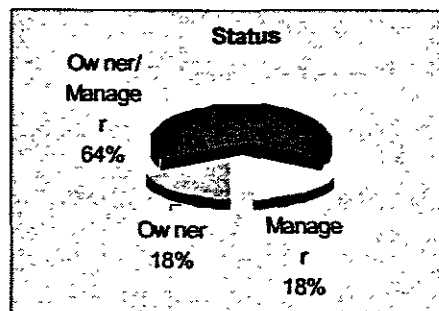
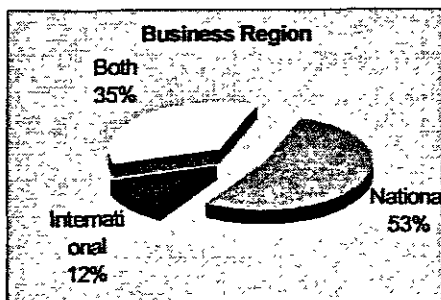
e-commerce risks than lower qualified ones. In some specific statements as shown in Table 4.8, lower qualified respondents provided more "no view". Due to the small sample size of this study, these correlation results cannot be presented as a generalisable result but they are interesting. A further study, using a larger sample, is needed to extend the results that emerged here.

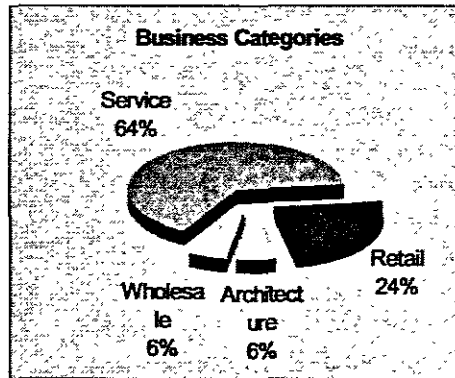
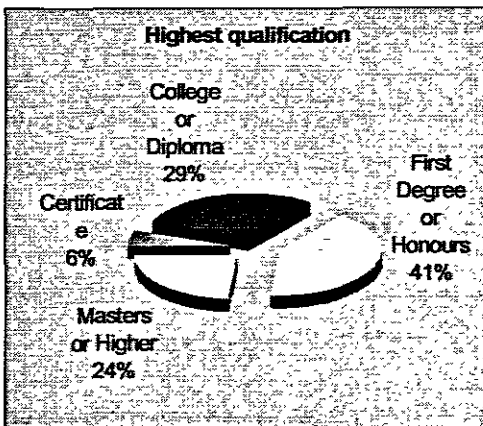
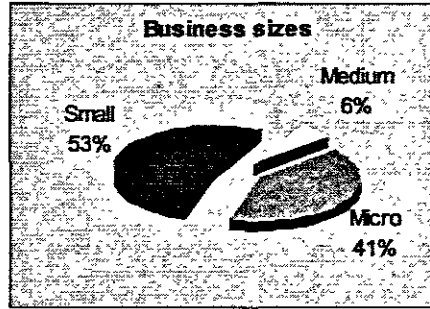
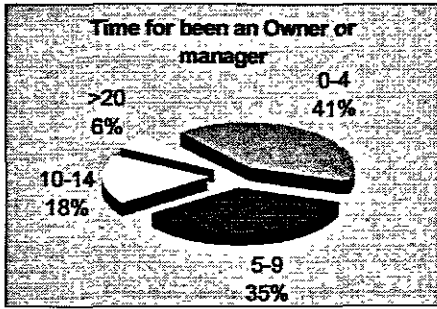
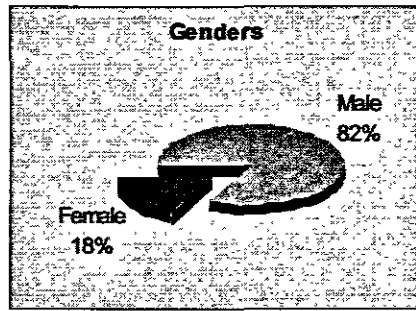
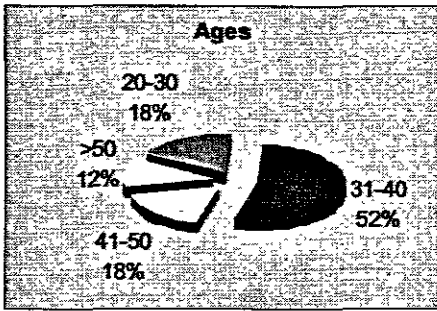
#### 4.4 Results of open questions: short answers and interviews

This study aims mainly to identify SMME owner/managers' perceptions of e-commerce related risks, based on a sample drawn from SMMEs in Cape Town. Perceptions will clearly affect decisions relating to the risks of e-commerce, and the outcome of these decisions will reflect the business management skills within SMMEs.

The study further planned to identify how SMMEs deal with these risks and six open questions were included in the questionnaire that were also addressed by interviews. 17 of the 50 respondents agreed to be interviewed and what follows is therefore based on only a portion (34 percent) of the total sample.

It is always important to know what kind of owner/managers have been interviewed, thus the detailed demographic table of the interviewees is shown in the appendices, and the pie charts of the demography are shown as below:





The charts above summarise the demographic characteristics of the 17 interviewed owner/managers. In order to obtain maximum information from the interviews, they were recorded and transcribed afterwards. Some interviews lacked a good ambience because they were conducted in shops, where there was loud music or other noise, which made the transcription work very difficult. In the event, some words are missing in the transcription and an important lesson in data collection has been learnt.

Because some SMMEs might not be using e-commerce but still have interesting perceptions about it, respondents were asked to base their answers on their general knowledge as well as on any actual e-commerce experience. Vague or uncertain responses were clarified by more

detailed related questions to ensure the best possible outcome. The shortest interview was 5 minutes; the longest was almost 20 minutes. The following questions were asked:

Question 6. How do you deal with security issues (such as hackers, viruses, fraud and Denial-of-services attacks)?

Question 7. How do you deal with customers' privacy and data protection issues?

Question 8. How do you deal with e-commerce legal issues?

Question 9. How do you deal with e-commerce intellectual property issues, such as name of the business, or copyright, designs, patents, trademarks (including domain names)?

Question 10. Do you have processes for dealing with e-commerce risky issues? What are they?

Question 11. Does the South African government provide enough information to support your business needs?

The results presented here include the "open" answers from the questionnaire (where they were provided), but are principally based on the interviews; both were based on the same questions. They are presented here question by question.

### **Deal with security risks**

None of the companies that were investigated have ever had security attacks such as hackers, viruses, fraud transactions and denial-of-service attacks. These companies have used some protection to mitigate these security risks. Basically, firewalls and anti-virus software are widely used, and the data supporting these protective systems (signature files and so on) is updated daily or weekly. One respondent mentioned using passwords and encryption to protect against security risks. Some companies rely upon their Internet service providers to recommend to them how to protect their business, or they rely on other companies that provide IT security services.

Professional network technicians, dedicated network administrators, technical teams, IT



departments and consultants are all evidently being employed to mitigate security attacks. Even though none of the companies has suffered security attacks; owner/managers still feel that the Internet is a vulnerable and unpredictable resource.

To avoid security breaches, they recommend continually checking the currency of data supporting the protective software; limiting downloads; avoiding unnecessary information transfer on the Internet and making sure security protection is in place within business processes. Two companies revealed that they downloaded software from the Internet to meet their needs, but they seem to be the exception rather than the rule.

### **Deal with customers' privacy and data protection issues**

Most of the respondents answered that they did not have to deal with this, because they did not put customer information at risk in any way. Some respondents had never even thought about protecting their clients' information; they had no intention of providing customer information to other companies or individuals to use, but they felt it was not necessary for their customers' privacy to be well protected. They trust their Internet server, and they believe that it can protect their sensitive data and business secrets. However, one female manager was concerned about internal risks deriving from mischievous or unreliable employees.

It is interesting to record some of the opinions actually expressed by respondents in interviews – there seem to be two opinions. One opinion is:

*"[it is] very difficult to completely protect our clients' privacy".*

Some companies are aware that they should protect their customers' information, and breach of privacy has happened in one company:

*"We don't divulge customer details, although one of our suppliers requested this information, told us they would not use this information, and then did so without written or approved permission".*

In that case a human role player – a supplier – was untrustworthy. Another opinion of course is that the Internet itself is untrustworthy, and one respondent explained that they move sensitive information to paper:

*"We don't have these problems, because we keep it off line".*

To address data protection risks, companies use encryption, avoid sharing information with other organisations, or outsource to a secure company that handles all security related data such as company information and credit card details. Other suggestions included displaying a disclaimer, negotiating confidentiality agreements, signing non-disclosure agreements, installing protection software and putting limits on server access levels. One company stated that:

*"None of our customers' information is required to run this type of business; however, should we conduct a survey, I would recommend it to be done by a professional company, so they absorb all the risks."*

### **Deal with e-commerce legal issues**

Almost all respondents indicated that they have not encountered any legal issues in conducting business via the Internet, and that legal issues do not really affect their business; however, some of them admitted that they do not know or are not familiar with e-commerce laws, and therefore their perceptions to this question are as such:

*"We don't have this problem; if there is something out of company, we don't know how to control the illegal things happening, it is a problem",*

*"We are always told to buy the legal software, but actually what we bought is illegal."*

But a few of them are aware of legal issues and are concerned about them. They seek legal advice, stick to strict policies and use disclaimers with regard to unverified communication.

Other owner/managers only realised that attention needed to be paid to legal issues when this question was asked, but of course – not having thought about it before – they had no considered opinion about them.

Opinions that were expressed by others were based on the presumption that there are no solutions within the company; it would be necessary to go outside:

*“Register with the appropriate authorities; there are legal firms and companies that can facilitate these proceedings on the business’s behalf.”*

*“Our service provider protects all our Internet (website), software and our computers, so if that happens, we will contact them first”*

Thus, obtaining help from consultants and seeking legal advice through legal advisers or lawyers is the way that they deal with legal risks.

### **Deal with e-commerce intellectual property issues**

This was the most difficult question for most of the owner/managers; from the questionnaires' short answers, most respondents perceived “not applicable” or “no comment”. In the interviews, this question had to be explained to the interviewees in order to get their true thoughts. Some answers included the following:

*“In terms of e-commerce we have no structure in place to protect these issues, we have not encountered any problems as yet.”*

*“I don't know if somebody can copy our name, but if they did, we just don't know how do we control it internationally. If there is a law, we will use it to protect our business.”*

*“Our name is a very good name ...I think we will definitely grow... I think our copyright should be protected, we need to pay attention to this, and our trademark as well. But otherwise, at this stage,*

*we don't have such a problem".*

*"It is difficult to protect...it is going to be unbelievable that most of the time you are going to work with that."*

*"You can't restrict people from using certain design you have done ...you can have a copyright at the bottom, but I mean, if they want to steal your design, they can do it. "*

Basically, their awareness of intellectual property issues is limited, for example, registering their company's name. But then they are not worried that their name may be used by others because they have registered it. They think their businesses are too small, intellectual property risks are of no general concern at this stage.

### **Processes for dealing with e-commerce risky issues**

Nearly all the respondents, both in the questionnaires and the interviews, admit that they don't know about risk management, and they don't know how to use management skills to benefit their businesses. Awareness of the need for risk management in the conduct of their businesses is low. Most of the answers to this question were "no", because of the low level of awareness.

One stated that

*"These problems have not occurred in our business; I know nothing about it."*

In managing e-commerce related risks, respondents stick to controlling security risks using protection software or back-up procedures; even after having been asked about the wider ranging e-commerce related risks, respondents still deem security to be the only risk that they need to deal with. Their actual experience tends to support this *laissez-faire* approach:

*"[We] have been using the Internet for more than six years already, nothing [risky] has happened".*

Regarding risk management more generally, some owners accept that it exists and is a part of doing business:

*"I do believe risks to a businessman are a part of the job we taking every single day...it is a part of our society...but how much risk you taking, belongs to the businessman".*

On technology-specific risks there was a range of comments:

*"We spend lots of money on software to protect ourselves internally and externally...we seating on the security side... This kind of risks we don't have any processes, but I do think it is going to be necessary, people are getting smarter, people are learning the ways of businesses, so there is a concern."*

*"People are doing things which they are not supposed to be doing; from a marketing point of my view we don't take advantage of new technology; we also have market risks, financial risks, we don't have formal ways to deal with them."*

*"No, I don't have a process to deal with it, if I need a system like that (e-commerce), I walk away from it"*

*"Currently we use service provider to tell us what kind of basic things we must or must not do...if we have problems, we will ask our consultant. We have installed so much software to protect our information, but unfortunately, I don't know what exactly they are, just put them there, but I know that they are the basic things that we have to have."*

One of the respondents explained that he has a programmer on standby who attends to problems when necessary.

In summary, it was interesting that so many respondents admitted that they had not previously

thought about some of these things, but they would have to start thinking about the questions addressed by this research. It is found that not many business owner/managers are aware of or know about risk management; few are willing to take risks and some of them specifically avoid facing risks.

### **South African government information support**

Only three companies had views about this question. They understood that the government provides some information intended to assist small businesses in their situation, but it was seen as not specific, not really sufficient and only partially helpful. Some respondents perceived this question as "not at all", "don't need", "don't know" or "not sure", but more perceived "no view". One respondent answered that they ...

*"... have not required or enquired for support".*

Respondents are not aware what the government has done for small businesses. As one company stated

*"[We are] not aware that there was information that the government provides".*

More owner/managers complained about the government services and assistance, expressing opinions such as:

*"Yes, they maybe do, but not enough, and the process is normally long and tedious"*

*"No, it doesn't, there aren't any laws government done related to certain risks. In South Africa, this is a growing thing; we learn everything from USA, Japan or those advanced places where they have gone through all those things. The SA government should provide the free Internet to the citizens, but most of them are still in the solutions of getting enough food."*

*"The SA government is a very racial type. From Jan 2001, the government asked if we had owed*

*them R20, it cost us R5000 to convince them... We are not really happy about the government, they don't have a big picture to help small businesses."*

*"If you try to get information about the Unemployment Act or about the Workman' Compensation Act, it is impossible, it is a nightmare. We need easy to access to some of the government departments, and e-mail them, but nothing ever happens."*

*"They just communicate for tax!"*

Some of the owner/managers have never tried to get help from the government; they are not interested. However, two travelling company owners perceived that the government helped them a lot. The answers to this question reveal that SMMEs lack trust in the ability of government to assist them. The government should be aware of these negative views in order to address performance in the development of SMMEs and e-commerce.

Generally it has been found that the level of knowledge and awareness about e-commerce in small businesses is still very low. Although it is necessary to avoid leading respondents in their answers to questions, due to their lack of knowledge some respondents had to be assisted with understanding what the questions were about, especially those concerning intellectual property and legal issues. Thus it has been found that not many SMME owner/managers understand e-commerce related risks, and they don't practise risk management in conducting their businesses.

#### **4.5 Chapter summary**

This chapter presents the basic research results according to the sequence of the questionnaire. The findings of the open questions and the interviews were merged as they addressed the same issues. Demographic factors have been examined and each question has been shown in detail, and the more significant results have been highlighted. The next chapter discusses these results and moves towards a conclusion by developing findings from the work.

## 5 Chapter Five: Research Findings and Discussions

### 5.1 Introduction

The findings in this chapter are based on the research results obtained. The key feature directly addresses the research questions shown in Appendix A and presented in Chapter 4. This discussion combines the field research results with a review of the pertinent literature in order to discover the effectiveness of the owner/managers' perceptions regarding the development of e-commerce and SMMEs.

The navigation model shown below (Figure 5.1, Research finding model) is based on the research objectives, which were presented in the research questionnaire design (see Figure 3.2), and the research emphases that were presented in the research conceptual model (see Figure 2.1). The research findings and discussion have use the model to offer readers a better understanding of this research framework:

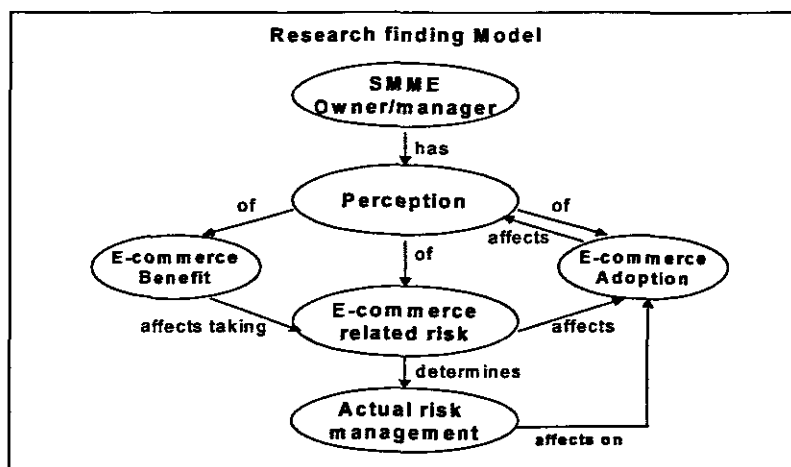


Figure 5.1: Research finding model

The model (Figure 5.1) contains some elements such as SMME owner/manager, perception, e-commerce benefit, e-commerce related risk, actual risk management and e-commerce adoption. Relating to the findings and discussions, the model eliminates redundant concepts and highlights some concepts in the conceptual model in order to focus on the relationships. The major relationships are:

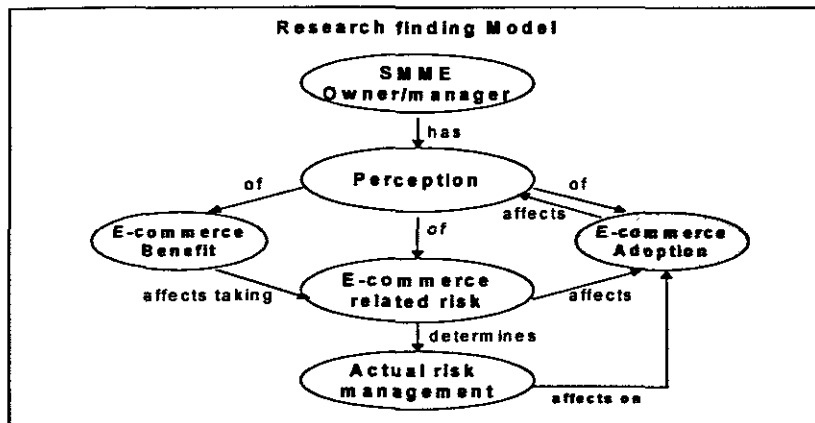


- SMME owner/manager has a perception of e-commerce adoption that affects his/her perception of e-commerce related risks. On the other hand, e-commerce adoption also affects the perception of e-commerce related risks.
- SMME owner/manager has a perception of e-commerce benefit that affects e-commerce adoption.
- The awareness of e-commerce benefit affects risk-taking according to the perceived e-commerce related risks, which also affects e-commerce adoption and development.
- SMME owner/manager has a perception of e-commerce related risks that affects e-commerce adoption.
- Determining SMME actual risk management performance from the perceived e-commerce related risks to discover the effect on e-commerce adoption and development.

The following discussions are organised according to the research finding model and the relationships to present the research findings.

## 5.2 E-commerce adoption

Developing e-commerce adoption within SMMEs has been promoted to be a target of both e-commerce and SMMEs' development in South Africa. This development has not been as fast as expected (as referenced in Chapter 2). The same situation has been found in this research study.



**Figure 5.2: E-commerce adoption**

The shaded area in Figure 5.2 matches Question 1 ("What are the SMMEs' current levels of e-commerce usage?") and Question 3 ("What are SMMEs' concerns when adopting/going to adopt e-commerce?") in the research questionnaire. The findings are drawn from the research results based on Chapter 4.

- **The SMMEs are at low levels of e-commerce adoption**

The research results show that some of the respondents do not really know about e-commerce. McKay and Marshall (2004:11) provided a stage model of e-commerce adoption and according to these stages, 94 percent of the respondents using e-mail are at stage three (see Chapter 2 section 2.3.2, stage one is waiting for other associated business to go online; stage two is searching for business information online; stage three is using e-mail and having website). Sixty eight percent who have their own websites are also at stage three. Less than 20 percent sell products on line and 18 percent of them who allow customers to order from their websites are at stage three.

The above shows SMMEs are at low levels of e-commerce adoption. It leads to owner/managers lacking knowledge and experience of e-commerce related risks; it certainly affects SMMEs' perceptions of e-commerce related risks and the way they manage them. Their concerns about the Internet service availability and transaction safety will hold them in this situation for a long time. A positive factor is that almost all of the respondents are using the Internet, which provides an important platform for e-commerce development (at least they are at stage one or two of e-commerce adoption, waiting to see whether other businesses obtain benefits online). Eighty percent of them will adopt or continually adopt e-commerce in the future, once e-commerce adoption barriers are broken down. In that case, businesses will be comfortable with e-commerce and the adoption will grow rapidly.

- **The owner/managers lack of trust in the Internet information and transactions**

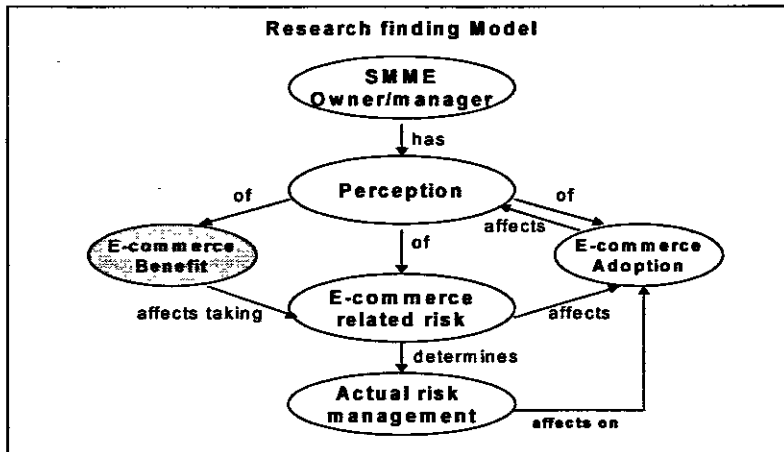
It is very interesting to note from responses to Question 1 and Question 2 that 96 percent of the respondents are using electronic banking, and only 44 percent accept credit cards for their customers' payments (the low level of credit card usage may be a reflection of credit card companies' policies regarding SMMEs). Elaborating on the low percentage of credit card

usage, interviewed owners and managers pointed out the unreliability of credit cards, i.e. the high rate of fraudulent transactions (one owner even mentioned that his wife, who works for a bank, checks all credit card transactions for his company). Answering Question 3 "What are SMMEs' concerns when adopting/going to adopt e-commerce?", respondents showed that their biggest concern was Internet services availability. All the above statements show a fear for safety that causes distrust of the Internet and e-commerce.

This research shows that most of the surveyed owner/managers do not really identify and manage e-commerce risks, as 46 percent of the respondents are concerned with potential security risks when adopting e-commerce; only 12 percent of them are concerned with avoiding or mitigating the potential risks. The challenge of "keep up with the technological progresses" further aggravates owner/managers' distrust of Internet security and directly influences e-commerce adoption by SMMEs".

Trust is a crucial element for business success (So & Sculli, 2002:505), which leads to a reduction of perceived risks (Larson, 1992:77). In this regard, the surveyed owner/managers often worry about their relationship with different partners. Are they reliable? Is the transaction tangible or intangible? The respondents confirmed that trust is a concern in e-commerce adoption, especially to online businesses. As risks lie concealed in information sharing, businesses consider carefully more reliable online business partners and information (So & Sculli, 2002:505).

### **5.3 Benefits from e-commerce adoption**



**Figure 5.3: Benefit from e-commerce**

Figure 5.3 above is related to Question 2 concerning benefit “What are the reasons for adopting or going to adopt e-commerce?” in the research questionnaire. Since the purpose of this research was to identify perceptions of e-commerce related risks, options in this question did not include all possible achievable benefits but only some of them. However, e-commerce benefits affect owner/managers’ perceptions of decision-making in the process of e-commerce adoption, so it is important to identify which benefits are realised by surveyed SMMEs.

- **Unclear benefits of e-commerce adoption**

The research results show that adoption of e-commerce is related to obtaining new customers and improving customer services. Ninety-four percentage of the respondents use e-mail to connect with their customers, but only 68 percent of them perceived reaping benefits from improving their customer services. Reducing costs as the derived benefit was perceived by 58 percent of surveyed companies. The benefit of improving interaction with partners was perceived by only 44 percent of all respondents. Raising productivity was perceived by 36 percent from interviewed owner/managers. The above perceived benefits are all derived from e-mail utilization, which leads to the conclusion that the surveyed owner/managers do not clearly understand what kind of benefits could be derived from adoption of e-commerce.

The electronic environment can benefit many smaller firms (Stockdale & Standing, 2004:301).

Regarding Question 1 ("What are the SMMEs' current levels of e-commerce usage?"), sixty eight percent of the respondents have websites for their businesses. However, only 34 percent of them considered that they have used the Internet for advertising (this 34% percentage could be even smaller as some of respondents may have advertised through other websites since they don't have their own). This shows that only half of the respondents with their own websites realize that the Internet can be used for advertising.

The above shows that many surveyed owner/managers are not clear about the benefits of e-commerce adoption, as has been reported by Stockdale and Standing (2004:301) state that the e-commerce adoption decision-maker always ignores e-commerce related opportunities. Thus the findings described above can serve as lessons from which SMMEs can learn.

Despite the fact that most of the respondents have qualifications higher than a diploma, the results still show that they lack e-commerce knowledge due to the above-mentioned reasons. However, it does not mean that people who have high qualifications in other fields know e-commerce sufficiently. This gives the researcher an indication that e-commerce benefits have not been well introduced to the surveyed SMMEs. The importance of revealing potential benefits from e-commerce adoption to SMME owner/managers is that it will affect their perceptions of adopting e-commerce. This is crucial because these owner/managers are decision makers regarding e-commerce adoption. Their decisions will considerably affect e-commerce development.

It can be said that poor awareness of the benefits of e-commerce adoption will keep SMMEs at low levels of e-commerce adoption. Thus, to develop e-commerce adoption within SMMEs, its potential benefits should be widely spread in order to incorporate e-commerce in their long-term strategies. Spreading awareness of e-commerce benefits will support businesses' long-term objectives (McKay & Marshal, 2004:17). Understanding the potential benefits can accelerate SMMEs into achieving e-commerce adoption stage four (online orders, inquiries, payments, and other services), or stage five (integrating business transactions within information systems or information technologies), and even stage six (extranet technologies

integrating business processes with partners).

Seeking to develop a strategy for participation in e-commerce requires an understanding of its potential benefits. SMMEs need to be guided towards e-commerce adoption and implementation. To achieve the above objectives, the government needs to play an important role in leading SMMEs to reap these benefits. Such assistance will likely increase e-commerce adoption (and performance) by these kinds of companies.

#### 5.4 Perceptions of e-commerce related risks

This element is the core of the research study, as shown in Figure 5.4.

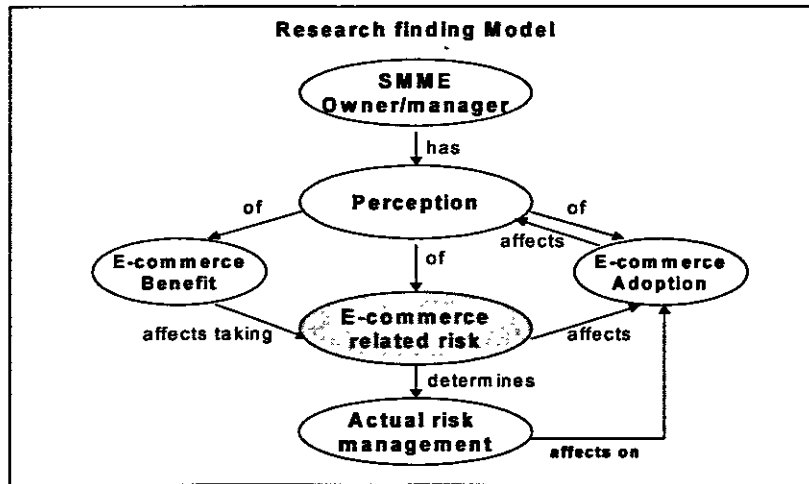


Figure 5.4: Perceptions of e-commerce related risks

This figure addressed Question 5 "What are SMMEs perceived e-commerce related risks?" in the questionnaire. The purpose of this question was to identify the owner/manager's perceptions of e-commerce related risks in general; the results revealed the gaps between the perceived e-commerce related risks and actual risks. Some summarised findings are revealed below:

- **Challenge of e-commerce related risks**

From the analyses of Questions 4 and 5, the respondents' perceptions of e-commerce related risks could be concluded as: all e-commerce related risks were challenging. It indicates that it

is difficult for SMMEs to benefit by adopting e-commerce. From the compared results of these two sets of statements, the respondents' perceptions were affected by their experiences, concerns and knowledge of e-commerce. More specifically, table 5.1 below shows the trend of their perceptions.

**Table 5.1: Trend in challenge of e-commerce related risks**

<b>E-commerce related risks</b>	<b>Current status of the respondents</b>	<b>Total and percentage of the total respondents</b>	<b>Total of "No View"</b>
Security risks	Experienced	22 (44%)	5 (10%)
Privacy data protection risks	Inexperienced	23 (46%)	4(8%)
Intellectual Property risks	Unconcerned	19 (38%)	16(32%)
E-commerce laws	Know	10 (20%)	29(58%)

As can be seen from the table, in the four categories of e-commerce related risks the challenge of "security risks" was perceived by the experienced respondents; "privacy data protection risks" were perceived by the inexperienced respondents. The challenge of intellectual property risks was perceived by unconcerned respondents and e-commerce law was perceived by the respondents who know it. However, it is interesting to note the trend of "no view" in Table 5.1: "the security risks" and "privacy data protection risk" have similar results as "no view" (8% - 10%), but there are big jumps to 32 percent and 58 percent of the total respondents on intellectual property risks and e-commerce laws.

- **Fear of entering into the Internet worldwide markets**

Association with some perceived "challenging" statements in Question 5 provides a clear picture of business owner/managers' concerns of becoming involved in the e-commerce environment. The factors below relate to business changes for entering into a new environment which will affect SMMEs' e-commerce adoption. From the total respondents, the perceived challenges were:

70% to "access in new market"

68% to "live up to company reputation"

64% to "participate in products competition"

64% to “participate in price competition”

Furthermore, to “adapt political & social changes in the wide marketplace” (52%), or to “avoid the Internet unfair competition” (54%), were also perceived as challenging. All these results show that the owner/managers were afraid of entering into the Internet worldwide markets. They were not ready to do so, but entering worldwide marketplaces is one of the benefits of e-commerce adoption. If SMMEs want to obtain the benefits from the Internet, it is important for them to know how to manage e-commerce related risks. A “strong mind” and “operating in a growing market” are some of the business success factors (Taylor & Murphy, 2004:286).

- **Avoiding security risks is a major challenge**

Based on the results in Chapter 4, security risks were the major concerns before and during e-commerce adoption. This is also a popular topic for discussion on adopting e-commerce and the Internet. In Question 3, identifying security risks was the fifth concern of adopting e-commerce, which was chosen by 46 percent of the respondents. In Question 4, the top risk that SMMEs face was virus attacks (see Table 4.6) - it has occurred and disturbs SMMEs, and it was chosen by 86 percent of the respondents. In Question 5, the top challenge was avoiding fraudulent transactions (see Table 4.7), which was chosen by 80 percent of the respondents; 68 percent of the respondents perceived that to avoid security attacks was challenging. Even fraud had never occurred in the respondents' experiences, and in Table 4.6 more than half of the respondents (54 percent) disagreed that Internet fraud affected their trust of e-commerce; however, as a top “challenge”, fraud could still be a barrier to trust for SMMEs to be involved in e-commerce properly.

- **Enhancing information privacy and data protection is a major challenge**

“Enhance information privacy or data protection” was chosen by 26 percent of the respondents (see Table 4.6), 74 percent of them perceived it as “challenging” (in Table 4.7). The results also show that 70 percent of the respondents are aware of the need to protect their customers' and suppliers' information, and some of them keep their partners' information and business data separate from the Internet in order to be safe. However, only 32 percent of



them have taken steps to protect their trade secrets (see Table 4.6). Information privacy and business data can be part of trade secrets; the respondents do not regard trade secrets to be as important as information privacy and business data, due to only 48 percent of the respondents perceiving "protecting trade secrets" to be challenging (In Table 4.7).

- **Poor awareness of intellectual property issues**

On average, in Table 4.7, 55 percent of the owner/managers chose Intellectual property issues as "challenging". The questionnaire and accompanying interviews revealed that they don't really know about intellectual property issues. Intellectual property is regarded as a current and future potential source of profit for business (Windmer, 2000). To build up a company's reputation, to attract long-term steady customers, and establish an advantageous position in competitive markets - these issues cannot be ignored by SMMEs. Paying attention to these issues will help SMMEs to grow. Utilisation of intellectual property law (to protect these issues) is not dependent on how small a business is, but how aware the owner/managers are. By not really thinking that they should pay attention to intellectual property issues, it possibly means that SMMEs don't have long-term development strategies. It, in turn, means that they are struggling to survive in market competition.

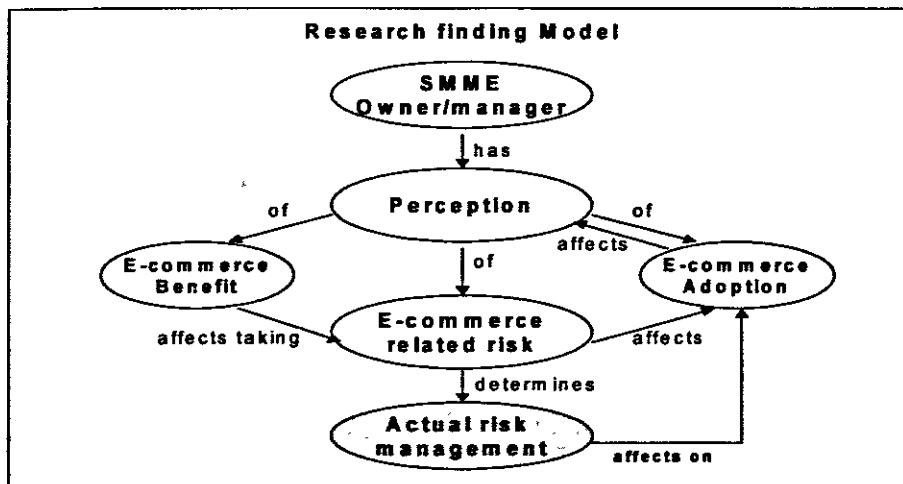
- **Less attention to e-commerce laws and legal issues**

The Internet provides a platform for all (businesses and individuals) to share online information. To protect privacy information, business databases and trade secrets, however, becomes extremely difficult. The analysed results (of the questionnaire) show that the respondents do not really know e-commerce laws (especially intellectual property laws). Some of them do not even realise that there are e-commerce law-related risks. Lack of attention to these risks can be dangerous for businesses. In another words, it can cause profit losses because the owner/managers don't know how to use e-commerce law to protect their businesses. Not knowing these laws can present another danger to SMMEs: they can commit crimes without being aware of e-commerce related laws and legal issues. They therefore violate the rights of other companies. This in turn, may affect other companies' trust in e-commerce and their adoption of e-commerce.

Thus, it can be said that SMME owner/managers are not aware of intellectual property and e-commerce law issues. However, these two categories are the major concerns of large businesses. For SMMEs, the point is do they really care about these issues at their early stage of growth? Does e-commerce actually provide a platform for SMMEs to benefit from intellectual property? The reason for considering these risks is that if businesses don't know e-commerce law, they obviously will not know their rights and obligations; if they are not clear about their rights and obligations, then they won't know when or whether they are breaking the law, or how to apply the law to protect their businesses. Small businesses need to comply with laws and legal issues in order to benefit in a fair trade competitive environment and to protect their rights by utilising e-commerce in the long-term.

### 5.5 Actual risk management

Question 4 "Which e-commerce related risks are SMMEs facing?" and Questions 6 to 11 "How do SMMEs deal with e-commerce related risks?" as well as the short questions in the questionnaires and interviews, relates to experiences of risks during and following e-commerce adoption. This aspect is illustrated by the shaded area in Figure 5.5:



**Figure 5.5: Actual risk management performance**

In response to statements in Question 4, 80 percent of the respondents *disagreed* that the Internet virtual environment was risky for their business. However, 50 percent of the

respondents expressed concern over online information reliability ("I am worried about online information reliability") and 60 percent deemed that online partners were not reliable. A further 68 percent of the respondents felt that "avoiding security attacks" was a challenging issue (this may be due to security risks which occurred such as viruses and spam).

The above results show up a contradiction. The overall perception is that the Internet is not risky, in contrast to the detailed perceptions of Internet risks. This result could be because the respondents regarded the Internet as a future application trend in the business environment and, consequently (in general) it should not be risky. According to this research, it is not true that the Internet is not risky. Therefore, regarding e-commerce adoption, the perceived detailed e-commerce related risks are more pertinent to their current circumstances than general one which is that the Internet virtual environment is not risky for their business.

- **Unaware of identifying, avoiding and mitigating e-commerce risks**

Regarding SMMEs' concerns when adopting/going to adopt e-commerce (Question 3), less than half of the respondents chose the option "identify the potential risks (such as security)". According to the results, this choice was the fifth most important factor for e-commerce adoption, the other four most important factors being:

"Internet services availability",

"Communicate with group of customers or suppliers",

"Business transactions safety" and

"Identify the potential benefits"

The concern of "avoiding and mitigating e-commerce potential risks" was chosen by only 6 out of 50 owner/managers.

This research identified that e-commerce related risks are not really regarded as an important concern by most of the owner/managers – avoiding and mitigating e-commerce related risks was almost ignored. The responses to the interviews confirm that most of the surveyed

owner/managers do not really know what kind of e-commerce related risks they could face. Some of them even avoid taking a chance of adopting e-commerce because of the risks. Currently, in managing e-commerce related risks, they only focus on security risks.

The responses from the interviews showed that most of the owner/managers do not know about risk management; in other words, they do not know how to use risk management skills as a tool to manage their businesses. However, as today's businesses are operating in dynamic marketplaces, risk management should be even more important if they want to pursue opportunities offered by such an environment. If the owner/managers do not know what general e-commerce related risks are, certainly they won't know how to manage these risks. However, it is even more dangerous if businesses don't know what kind of risks they could face, since losses or failure can occur at any time without warning. SMMEs typically do not have sufficient financial capital to support possible losses or failures. Thus identifying and managing risks is crucial to SMMEs.

- **Lack of assistance**

The results disclosed that the respondents' perceptions are that the government's help does not address the needs of SMME's. The South African government actively encourages e-commerce adoption by businesses. This is particularly true where SMMEs are concerned, since the government wants to increase the success rate of e-commerce adoption by these kinds of enterprises. However, analyses of the respondents' perceptions show their dissatisfaction with and distrust of the government's help. Actually, e-commerce adoption by SMMEs in Cape Town is still at an early stage. In comparison with some European countries, the majority of businesses in South Africa still prefer the traditional way of doing business. A determined intention to develop SMMEs and e-commerce, to break down barriers related to e-commerce adoption, to change owner/managers perceptions of e-commerce related risks, and to provide e-commerce knowledge (to assist their needs), is necessary. The South African government should consider how to develop their current operating systems to address this intention. Providing tedious academic reports cannot serve any purpose (as the respondents complained); it may in fact be a reason why governmental efforts are ignored by

the respondents.

Moreover, the interviews show that more owner/managers prefer to obtain help from experts, consultants or other companies. Although this can be a solution to their business needs, experts, consultants or other companies can however be unfamiliar with, or lack knowledge about, a with business environment and a complicated situation, so they may sometimes provide insufficient suggestions or solutions. Furthermore, from the interviews it is evident that some of the owner/managers believe that the Internet service providers can avoid e-commerce risks on their behalf.

These all show that SMMEs need assistance and guidance to reduce, avoid and mitigate e-commerce related risks during e-commerce adoption, operation and implementation. On the other hand, the fact that only 20 percent of the respondents believe that South African e-commerce laws can effectively protect online businesses, shows a lack of trust in the government's support, which makes it difficult for the government to achieve its macro development strategies such as decreasing the high failure rate of businesses and reducing the high unemployment rate. Even more difficult for the government is that when the respondents were asked what kind of information they needed, their answers were "don't know".

## **5.6 The perceptions affect on SMMEs development**

In this research study, most of the owner/managers were not really willing to take risks; they even avoided facing risks. It was identified in this research study that risk management skills of these SMME owner/managers are non-existent. However, pertinent literature discloses that successful businesses address certain success factors. Combining the recommendations of a number of experts (Fielden et al., 2000:296; Tilley & Tonge 2003:4; Hodgette & Kuratko, 2002:7; Jones, 2003:15), four principles can be identified: opportunity, competition, innovation and risk management.

- **Opportunity**

Operating a business is a continual process. However, this world is developing rapidly by using new technologies since the advent of computers. SMMEs are forced to search for more opportunities to survive or grow. Businesses will be eliminated through unmerciful selection or competition if they persist in retaining or being satisfied with their current status (without searching for new opportunities). E-commerce breaks down limitations of region and time and offers a worldwide marketplace for businesses, especially SMMEs. However, fear of fraudulent transaction, struggling with security issues, and difficulty in keeping up with new technology tends to prevent SMMEs from adopting e-commerce. This causes loss of business opportunities offered by the worldwide market.

- **Competition**

SMME owner/managers have to open their minds and be aware of the competitive marketplace. 70 percent of the surveyed owner/managers perceived that accessing new markets is a challenging task; price and product competition is also perceived as challenging. However, to access the preponderance of products or services, SMMEs need to use the Internet as a channel for obtaining advanced information in order to be competitive and successful. Losing opportunities offered by e-commerce makes these companies less competitive in the open marketplaces. It is even more risky for businesses to avoid facing risks. On the other hand, business managerial skills, which arise from risk management, guarantee the possibility of handling risks successfully and help businesses to thrive in competitive marketplaces. SMMEs should be aware of their need to select the right kind of knowledge and management skills in terms of keeping up with their business's environmental changes (Jones, 2005:16).

- **Innovation**

Innovation is a crucial factor that SMMEs have to comply with if they want to remain invincible in the worldwide marketplace. Innovation is not only present in unique products or high quality services but also in operating categories, forms, methods and other factors. The Internet is a great platform for all businesses. It provides opportunities for SMMEs to benefit by selling their special products, services or ideas in a worldwide market. The strong competition compels

businesses to be aware of retaining their place in the competitive markets. This research has elicited that not many SMMEs' owner/managers pay attention to innovation. From their responses it seems that not many owner/managers have, or care about, their intellectual property assets. For instance, trademark designs and trade secrets were deemed as unchallenging, and they do not worry about them.

- **Risk management**

Businesses must have the ability to analyse situations that offer opportunities. Risk management is an entire process, which provides an appropriate method to support business decision-making. However, this research found that most of the SMME owner/managers do not really know much about risk management. In the UK and USA, risk management has been remodelled as an enterprise risk management template, and has been widely used in the business (Archbold, 2005:31). In large businesses, risk management departments control businesses' vital processes. It is important to know that risk management can also benefit SMMEs. Taking opportunities, pursuing innovation and conducting risk management will reduce the failure rate of SMMEs.

### **Businesses need reliable social environment for adopting e-commerce**

An integrated environment to operate their business is crucial for SMMEs since they are not able to withstand profit losses. This is especially needed by small businesses. The integrated environment includes:

- ***Integrated judiciary system***– this will provide business with an integrated law system which offers protection of the business rights and also decreases business crime (e.g. fraudulent transaction). In such a case SMMEs will have more confidence to operate their businesses through the Internet.
- ***Safe and steady social environment*** – businesses need a safe and steady social investment environment since any unsteady elements will cause business losses and a high failure rate.

- ***Government's macro development leadership and control*** – focusing on what SMMEs really need according to their characteristics, which differ from large companies. Since SMMEs don't really have sufficient managerial skills and knowledge to operate their businesses, the government should play an important role by offering special policies to guide SMMEs with regard to investments, costs, business environment, related trade laws, introducing management skills or advanced technologies and so on – it is such information that can benefit SMMEs. The owner/managers' perceptions regarding government help can probably assist the government in changing its services to become more efficient. Pointing out problems and providing solutions is better than offering interminable reports.

## **5.7 Chapter summary**

In summary, this chapter interpreted the research results of SMME owner/managers perceptions regarding e-commerce related risks in the Cape Town area. The research findings and discussion were based on the navigation model. The discussion was also linked to the review of pertinent literature on the relationships of e-commerce related risks, e-commerce benefits, actual risk management and e-commerce adoption. This study has identified the owner/managers' perceptions on e-commerce related risks. It has been discovered that the respondents lack awareness of and skills in e-commerce related risks. This, in turn, restricts SMMEs in e-commerce development.



## **6 Chapter Six: Conclusion and Recommendations**

### **6.1 Introduction**

This is the last chapter in this research study; it gives an overview of the previous chapters, digests the research objectives, and provides the research results and research findings. It also guides further study and discovers the significance of this research study.

### **6.2 Conclusions**

Since small businesses and e-commerce are becoming more and more important; e-commerce related risk management has been receiving more and more attention in today's dynamic business environment. This research was aimed at understanding SMME owner/managers' perceptions of e-commerce related risks, which, in general, are necessary for SMMEs and e-commerce development.

A quantitative research method was chiefly used to investigate SMME owner/managers' perceptions of e-commerce related risks in the Cape Town area. To achieve the research objectives the study drew on data obtained from a sample of 50 questionnaires and 17 interviews of SMME owner/managers. The objectives of this study were:

- To review the academic literature (secondary data) in the field of e-commerce, to identify various sources of related risks and how these risks are managed.
- To determine and analyse SMME owner/managers' perceptions of e-commerce related risks, to identify the gaps between perceived e-commerce related risks and identified risks, and to identify how they deal with these perceived risks in Cape Town, South Africa.
- To determine how SMME owner/managers' perceptions of related risks affect e-commerce development.
- To guide small businesses in managing e-commerce related risks.

The achievements of these objectives are concluded separately:

### **6.2.1 Academic literature**

- A wide range of academic books as well as journals and articles indicates that this is already a mature field of study.
- Different methods for research were evident; some were based on widely established business models, others on new ideas.
- The sources were found to be plentiful for e-commerce, SMMEs and risk management. The treatment of perceptions of risk management focuses closely on security risk, but not on other related risks such as intellectual property risks, e-commerce laws and legal issues.
- The literature provides risk management processes for SMMEs to manage general risks. However, dealing with specific e-commerce related risks, may not be within the scope of these processes.

### **6.2.2 Perceptions of e-commerce related risks**

- E-commerce related risks were all perceived to be challenging in general, but once more focus was placed on security risks rather than other e-commerce related risks. Enhancing information privacy and data protection is another major challenge. There were a few perceptions on intellectual property risks, e-commerce legal risks and e-commerce law risks. In the early stages of e-commerce adoption, intellectual property risks and legal risks were not regarded by the respondents as affecting their businesses.
- SMMEs' current low levels of Internet usage and their unawareness of risk management resulted in their perceptions of e-commerce risks as low. From the identified risks, the perceived risks which SMMEs are facing are viruses, spam and the Internet information reliability. Emphatically, e-commerce intellectual property risks were unknown to the SMME owner/managers and were not paid attention to;

e-commerce laws and legal issues were also ignored.

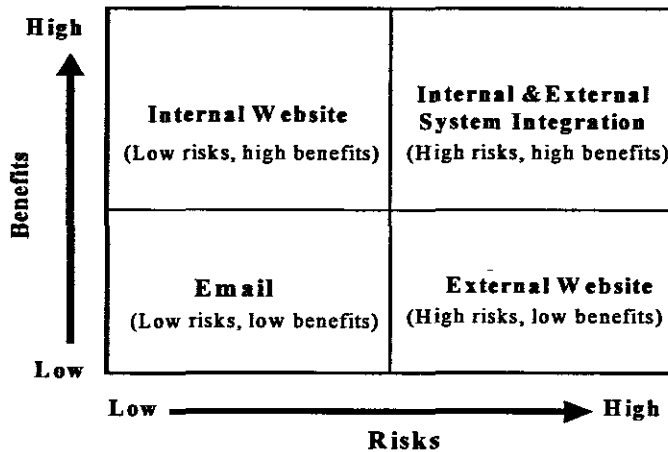
- Some owner/managers have only a small understanding of or capability to undertake, risk management. In managing e-commerce related risks, they prefer to rely on experts, advisors, consultants, their Internet service providers and professional companies.

### **6.2.3 Effects on e-commerce development**

- The owner/managers lack trust in the Internet information and transactions; they are unaware of the benefits of e-commerce adoption; and fear entering into the Internet worldwide markets. These current attitudes will keep these SMMEs at a low level of e-commerce adoption.
- When SMMEs choose to adopt e-commerce, they have a poor awareness of intellectual property issues and they pay little or no attention to e-commerce laws and legal issues. These attitudes can negatively affect a fair and legal Internet business environment.
- Despite the fact that there is some assistance from outside the companies such as advisors and consultants, the owner/managers are still unable to identify, avoid and mitigate e-commerce related risks, which will affect their long-term business strategies and also result in SMMEs' e-commerce development efforts becoming even more challenging.

### **6.2.4 Guidance for small businesses**

It is common practice in management thinking to measure two issues such as e-commerce benefit and risk against one another. As shown in Figure 6.1 with interesting results, a two-by-two-matrix addressed these issues. The researcher has not found any similar work done by anyone else, but it is possible that such work exists somewhere.



**Figure 6.1: E-commerce Benefits and Risks Matrix**

This matrix describes the relationship between e-commerce related risks and benefits. E-mail, website, internal website and internal & external system integration respectively represent the four most common e-commerce usages. According to the e-commerce stages and these four different elements' typical characteristics, the benefits and risks can be both high and low.

**Email** is an early stage of e-commerce adoption; SMMEs have the opportunity to communicate with their business partners through the Internet. Widely, the facility of the Internet saves business time and reduces communication costs. Even risks such as attack by spam and viruses through emails can happen easily; however, these risks can easily be avoided by software. To confirm business transactions, businesses still prefer using telephone and fax.

**Website** is identified as the second stage of e-commerce (or e-business) by most experts. On the other hand, lack of trust in online information and unknown partners, reduces the benefits of website usage. However, trust is a key to developing e-commerce, especially for online sales businesses. It has been found difficult to build up a company's reputation to achieve profits without trust. Moreover, some businesses don't update information daily and regularly (more in small businesses); some businesses actually just exist on a website without correct information – this destroys trust and increases risks.

Businesses can obtain further benefits such as advertising online, establishing a business reputation and introducing their products and services etc. However, businesses have to undertake the risk of higher costs, not only for the website but also the cost of avoiding security risks and protecting their website, where it is possible to lose their products design, original ideas and other intellectual property profits if they are unable to protect them. The researcher perceives that this is a dilemma stage for SMMEs, where their businesses have a limited investment in e-commerce; however, they have to accept the low benefits with high risks before they are able to reach other stages, and this is a situation that some SMMEs are presently facing.

**Internal website** is another stage of e-commerce usage. At this stage, businesses have steady online partners to aid grow and no longer struggle to attract customers, or maybe they possess the goodwill to be able to do so. Here, the ability to invest in information systems is a precondition to integrating intranet within business departments. The benefits at this stage appear evident as the information technologies enable the business procedures to work efficiently.

On the other hand, the system causes higher risks such as the information systems usability, staff ability, security risks, online transaction safety and so on. Here, businesses can be properly protected by their IT departments where they have one and IT experts to which they access, and can reduce and avoid risks. In comparison with the benefits, the risks at this stage are low due to the businesses having a greater ability to deal with these risks.

**Internal & external system integration** is the highest level of e-commerce adoption. Normally, businesses have long-term strategies to engage in e-commerce performance. The Internet is the key channel for businesses establishing long-term steady partnerships by sharing information and being a part of the supply chain. However, to do so involves higher risks, such as business operations changes, trouble from unreliable integrated information systems (due to technology limitation), data protection, or weak and ineffective control of the systems, policies or procedures. Although these risks are pestilent and difficult to control, the

high profits (long-term steady obtaining of profits) still attract businesses to reach for.

In addition to these points, determining business sizes and categories is necessary to identify possible risks and potential benefits, because the business requirements, purposes and situations will differ too. The e-commerce related risks and benefits can envelop a business's whole processes such as negotiating, purchasing, paying, selling, serving, etc. SMMEs are pressurised to grow in the dynamic business environment. Their opportunities and failures are implied in their risks, which depending very much on the owner/managers perceptions on risk-taking and their ability to handle risks. The purpose is to develop long-term business strategies, blaze a trail in achieving the added e-commerce benefits and optimise maximum profits.

### **6.3 Significances**

Overall, this research study identified the perceptions of SMME owner/managers of e-commerce related risks, and has highlighted the importance of risk management to SMMEs. Attention needs to be paid not only to e-commerce, but also its effects on to business performance. Management skill levels have to be improved in order to succeed. SMMEs owner/managers' are averse to risk, but this study provides evidences that risks need be managed, possibly with some adaptation for e-commerce specific risks. At the same time, this review of SMME owner/managers' perceptions makes what must be done to assist them and further development the use of e-commerce in the SMMEs.

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## APPENDICES

### Appendix A: Questionnaire

#### QUESTIONNAIRE

#### Perceptions of e-commerce use in small business

#### CAPE PENINSULA UNIVERSITY OF TECHNOLOGY

#### e- Innovation Academy

Ping Ping Yang CONDUCTING MASTERS DEGREE RESEARCH IN:

#### BUSINESS INFORMATION SYSTEMS

Today, more and more companies are doing business via the Internet (e-commerce). In order to encourage businesses using it successfully, some uncertain issues need to be addressed. This research is investigating Small, Medium and Micro Enterprises (SMMEs) owner/ managers' perceptions of these issues in Cape Town. It will take you about 15 minutes to complete.

*Your assistance is appreciated, the benefit of your helpful contribution will be recorded, analysed and reported as a part of research for developing South African small businesses. Detailed responses will be treated with the greatest confidentiality but a summary of the aggregated findings may be published in academic papers.*

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Telephone: 021-4691035

## Part one: the Internet and e-commerce issues

### 1. Your use of e-commerce. Please tick the statements below, choose all that apply.

- 1.1 We use e-mail to communicate with suppliers or customers. [    ]
- 1.2. We accept credit cards for customer payments. [    ]
- 1.3. Our company has its own website. [    ]
- 1.4. We sell products online. [    ]
- 1.5. The internet is a main channel between our suppliers and my company. [    ]
- 1.6. My company has an **intranet** that links to internal departments. [    ]
- 1.7. Customs can order products or services from our website. [    ]
- 1.8. My company has information systems link to customers or retailers. [    ]
- 1.9. We use electronic-banking. [    ]
- 1.10. We have advertising on the internet. [    ]
- 1.11. *None of the above applies to my company.* [    ]

### 2. The reasons for adopting/or going to adopt e-commerce. Please choose all that apply.

- 2.1 Reduce the costs.
- 2.2 Raising productivity.
- 2.3 Obtain new customers.
- 2.4 Improve customer services by using e-commerce.
- 2.5 Improve the interaction between partners and our company using e-commerce (e.g. Online order, product design navigation).
- 2.6 Integrate e-commerce into business management long term objectives.
- 2.7 Satisfy requirements of our suppliers.

### 3. From the issues listed below, please rank five top factors (from 1 to 5) you consider when using/or going to use the Internet for doing business.

- 3.1 Assess the cost of adopting e-commerce.
- 3.2 Return investment on adopting e-commerce.
- 3.3 Staff capabilities.
- 3.4 Information systems usability.
- 3.5 Internet service availability.
- 3.6 Evaluate added Brand value.
- 3.7 Identify the potential benefits.
- 3.8 Identify the potential risks (such as security).
- 3.9 communicate with group of customers or suppliers.
- 3.10 Business transactions safety.
- 3.11 Competitive pressure.
- 3.12 E-commerce law issues.
- 3.13 Avoiding or mitigating the potential risks.

## Part two: e-commerce external issues

Part two has two tables, which present statements relating to the companies that are using the Internet to do business; if you company is not using e-commerce, please indicate your views based on your experiences or expectations of e-commerce.

4. The table below are some factors that affect online businesses. Please rate each statement below to represent your opinion by ticking in the appropriate box.

Relating to e-commerce, I think	Strongly agree	Agree	Disagree	Strongly disagree	No view
4.1 The Internet virtual environment is risky for our business.					
4.2. The Internet security is a threat to our business.					
4.3. Spam is not a problem to a (my) company.					
4.4. The Internet services are steadily available for online transactions.					
4.5. Viruses attacked (our) computer systems.					
4.6. A third party is not allowed to review our partner's information that we have stored.					
4.7. (My) company incurred losses by unauthorized access.					
4.8. Theft of private information (in my company) is a problem.					
4.9. Unauthorized attacks make our customers deny having received goods or services.					
4.10. Unauthorized attacks make suppliers deny having received payment.					
4.11. Internet fraud affects my trust of using e-commerce.					
4.12. Copyright plagiarism does not affect (my) company at this stage.					
4.13. I don't mind that the name of my company is similar to other companies on the Internet somewhere in the world.					
4.14. I am worried that our product designs will be used by other companies.					
4.15. I am worried that our unique products will be imitated by other companies.					
4.16. I am worried that the design of our trademark will be used by other organizations.					
4.17. I know the SA law about e-commerce.					
4.18. South African e-commerce law can protect online businesses efficiently.					
4.19. I am worried about online information reliability.					
4.20. I am worried about online partners' reliability.					
4.21. We have defendable steps to protect our trade secrets.					
4.22. In the future I will adopt /continually adopt e-commerce within my business.					

Other Internet issues I have met/or known and I think are crucial:

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5. The table below indicates some general concerns associated with doing business through the Internet. These concerns will be considered to achieve the protection of online businesses; Please tick against any one of the options for each issues that represents your view.

Concerned issues	Very challenging	Challenging	Unchallenging	Very unchallenging	No view
5.1. Access in new markets.					
5.2. Adapt political & social changes in wide marketplace.					
5.3. Participate in price competition.					
5.4. Participate in products competition.					
5.5. Avoid security attacks.					
5.6. Comply legal issues with local trade laws.					
5.7. Comply legal issues with international trade laws.					
5.8. Protect trade secrets.					
5.9. Keep up with information technology progress.					
5.10. Avoid the Internet unfair competition.					
5.11. Protect the profits of inventions.					
5.12. Protect the profits of copyright.					
5.13. Protect the design of trademarks.					
5.14. Protect the profits of industrial designs.					
5.15. Protect the profits of original ideas.					
5.16. Protect patents including the protection of layout and design of integrated designs.					
5.17. Avoid the threat of company's name be used.					
5.18. Avoid internet fraudulent transactions.					
5.19. Enhance information privacy or data protection.					
5.20. Live up to company reputation.					
5.21. Use the e-commerce law to protect businesses.					
5.22. Needed assistance by government.					
5.23. Track network reliability.					

**Other Internet issues I think are crucial and challenging:**

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## Questions

1. How do you deal with security issues (Such as hackers, viruses, fraud and denial-of-services attacks)?

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2. How do you deal with customers' privacy and data protection issues?

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3. How do you deal with e-commerce legal issues?

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4. How do you deal with e-commerce Intellectual property issues, such as name of the business, or copyright, designs, patents, trademarks (including domain names)?

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5. Do you have processes for dealing with e-commerce risky issues? What are they?

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6. Does South African government provide enough information supporting your business needs?

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### Part three: Businesses category identification section

12. Name of company: \_\_\_\_\_

13. Category of your Business: \_\_\_\_\_

14. The business is: National  International  Both

15. Please *tick* the questions below about yourself.

15.1 Are you the: Owner  Owner and Manager  Manager

15.2 Your age: <20  20-30  31-40  41-50  >50

15.3 Gender: Female  Male

15.4. How long have you been an owner or manager?

0-4 years      5-9years      10-14 years      15-19 years      More than 20 years

15.5 What is your highest academic qualification?

School      Certificate      College or      First Degree or      Masters or Higher

16. What type is your business?

Retail      Wholesale      Manufactory      Service      Catering      Other (indicate)

                              \_\_\_\_\_

(Questions 16, 17 and 18 are only necessary to identify your business size)

17. How many people are employed in you company (full time)?

\_\_\_\_\_

18. What was last financial year annual turnover? (R)

0-150,000           

150,001-1,200,000           

1,200,001-6,000,000           

6,000,001-12,000,000           

More then 12,000,000

**19. What is your company gross asset value? (R)**

- |                     |                          |                          |
|---------------------|--------------------------|--------------------------|
| 0-99,999            | <input type="checkbox"/> | <input type="checkbox"/> |
| 100,000-249,999     | <input type="checkbox"/> | <input type="checkbox"/> |
| 250,000-1,199,999   | <input type="checkbox"/> | <input type="checkbox"/> |
| 1,200,000-2,999,999 | <input type="checkbox"/> | <input type="checkbox"/> |

**20. The company you are working for has existed for:**

- |                          |                          |                          |                          |                          |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Less than 1 year         | 1-2 years                | 3-5 years                | 6-10 years               | More than ten years      |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

**Thank you for completing this questionnaire!**

**If you wish to have the analysed results of this questionnaire when it is available please provide your e-mail address or other information here, you will be satisfied.**

**E-mail address:** \_\_\_\_\_

**Contact phone:** \_\_\_\_\_

## Appendix B: Correlation of Question 4, Question 5 and Demography

Crosstab

			The Internet virtual environment is risky for our business.			Total
			Agree	Disagree	No view	
Gender of Respondent	Female	Count	2	7	3	12
		% within Gender of Respondent	16.7%	58.3%	25.0%	100.0%
	Male	Count	4	32	1	37
		% within Gender of Respondent	10.8%	86.5%	2.7%	100.0%
Total		Count	6	39	4	49
		% within Gender of Respondent	12.2%	79.6%	8.2%	100.0%

Chi-Square

	Value	df	Asymp. (2-sided)
Pearson	6.675 <sup>a</sup>	2	.036
Likelihood	5.708	2	.058
Linear-by-Line Association	1.185	1	.276
N of Valid	49		

a. 4 cells (66.7%) have expected count less than minimum expected count

Crosstab

			The Internet security is a threat to our business.			Total
			Agree	Disagree	No view	
Gender of Respondent	Female	Count	4	6	2	12
		% within Gender of Respondent	33.3%	50.0%	16.7%	100.0%
	Male	Count	7	30	0	37
		% within Gender of Respondent	18.9%	81.1%	.0%	100.0%
Total		Count	11	36	2	49
		% within Gender of Respondent	22.4%	73.5%	4.1%	100.0%



## Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	8.197 <sup>a</sup>	2	.017
Likelihood Ratio	7.692	2	.021
Linear-by-Linear Association	.019	1	.889
N of Valid Cases	49		

a. 3 cells (50.0%) have expected count less than 5. The minimum expected count is .49.

## Crosstab

			A third party is not allowed to review our partner's information that we have stored.			Total
			Agree	Disagree	No view	
Time for Being An Owner Or manager	Up to 4 years	Count	13	4	2	19
		% within Time for Being An Owner Or manager	68.4%	21.1%	10.5%	100.0%
	5 - 14 years	Count	22	2	2	26
		% within Time for Being An Owner Or manager	84.6%	7.7%	7.7%	100.0%
	3	Count	0	3	2	5
		% within Time for Being An Owner Or manager	.0%	60.0%	40.0%	100.0%
Total		Count	35	9	6	50
		% within Time for Being An Owner Or manager	70.0%	18.0%	12.0%	100.0%

## Chi-Square

	Value	df	Asymp. (2-sided)
Pearson	14.53 <sup>a</sup>	4	.006
Likelihood	15.34	4	.004
Linear-by-Line Associatio	2.403	1	.121
N of Valid	50		

a. 7 cells (77.8%) have expected count less than minimum expected count

## Crosstab

			The Internet services are steadily available for online transactions.			Total
			Agree	Disagree	No view	
Highest Qualification	School	Count	5	3	1	9
		% within Highest Qualification	55.6%	33.3%	11.1%	100.0%
	University	Count	37	3	1	41
		% within Highest Qualification	90.2%	7.3%	2.4%	100.0%
Total		Count	42	6	2	50
		% within Highest Qualification	84.0%	12.0%	4.0%	100.0%

## Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.607 <sup>a</sup>	2	.037
Likelihood Ratio	5.387	2	.068
Linear-by-Linear Association	5.666	1	.017
N of Valid Cases	50		

a. 4 cells (66.7%) have expected count less than 5. The minimum expected count is .36.

## Crosstab

			Viruses can attack (our) computer systems.			Total
			Agree	Disagree	No view	
Highest Qualification	School	Count	5	3	1	9
		% within Highest Qualification	55.6%	33.3%	11.1%	100.0%
	University	Count	38	3	0	41
		% within Highest Qualification	92.7%	7.3%	.0%	100.0%
Total		Count	43	6	1	50
		% within Highest Qualification	86.0%	12.0%	2.0%	100.0%

## Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	9.901 <sup>a</sup>	2	.007
Likelihood Ratio	7.909	2	.019
Linear-by-Linear Association	9.650	1	.002
N of Valid Cases	50		

a. 4 cells (66.7%) have expected count less than 5. The minimum expected count is .18.

## Crosstab

			Copyright plagiarism does not affect (my) company at this stage.			Total
			Agree	Disagree	No view	
Highest Qualification	School	Count	2	3	4	9
		% within Highest Qualification	22.2%	33.3%	44.4%	100.0%
	University	Count	24	12	5	41
		% within Highest Qualification	58.5%	29.3%	12.2%	100.0%
Total		Count	26	15	9	50
		% within Highest Qualification	52.0%	30.0%	18.0%	100.0%

## Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.176 <sup>a</sup>	2	.046
Likelihood Ratio	5.660	2	.059
Linear-by-Linear Association	5.818	1	.016
N of Valid Cases	50		

a. 3 cells (50.0%) have expected count less than 5. The minimum expected count is 1.62.

## Crosstab

			I am worried about online information reliability.			Total
			Agree	Disagree	No view	
Highest Qualification	School	Count	2	3	4	9
		% within Highest Qualification	22.2%	33.3%	44.4%	100.0%
	University	Count	23	15	3	41
		% within Highest Qualification	56.1%	36.6%	7.3%	100.0%
Total		Count	25	18	7	50
		% within Highest Qualification	50.0%	36.0%	14.0%	100.0%

## Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	8.982 <sup>a</sup>	2	.011
Likelihood Ratio	7.420	2	.024
Linear-by-Linear Association	7.144	1	.008
N of Valid Cases	50		

a. 3 cells (50.0%) have expected count less than 5. The minimum expected count is 1.26.

## Crosstab

			We have defendable steps to protect our trade secrets.			Total
			Agree	Disagree	No view	
Highest Qualification	School	Count	1	1	7	9
		% within Highest Qualification	11.1%	11.1%	77.8%	100.0%
	University	Count	15	14	12	41
		% within Highest Qualification	36.6%	34.1%	29.3%	100.0%
Total		Count	16	15	19	50
		% within Highest Qualification	32.0%	30.0%	38.0%	100.0%

## Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	7.372 <sup>a</sup>	2	.025
Likelihood Ratio	7.302	2	.026
Linear-by-Linear Association	5.685	1	.017
N of Valid Cases	50		

a. 3 cells (50.0%) have expected count less than 5. The minimum expected count is 2.70.

Crosstab

			Use the e-commerce law to protect businesses.			Total
			Challenging	Unchallenging	No view	
Age of Respondent	20 - 30 years old	Count	5	0	2	7
		% within Age of Respondent	71.4%	.0%	28.6%	100.0%
	31 - 50 years old	Count	14	6	16	36
		% within Age of Respondent	38.9%	16.7%	44.4%	100.0%
	More than 50 years old	Count	6	0	0	6
		% within Age of Respondent	100.0%	.0%	.0%	100.0%
Total		Count	25	6	18	49
		% within Age of Respondent	51.0%	12.2%	36.7%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	9.511 <sup>a</sup>	4	.050
Likelihood Ratio	12.629	4	.013
Linear-by-Linear Association	.870	1	.351
N of Valid Cases	49		

a. 7 cells (77.8%) have expected count less than 5. The minimum expected count is .73.

Crosstab

			Live up to company reputation.			Total
			Challenging	Unchallenging	No view	
Gender of Respondent	Female	Count	6	6	0	12
		% within Gender of Respondent	50.0%	50.0%	.0%	100.0%
	Male	Count	27	6	4	37
		% within Gender of Respondent	73.0%	16.2%	10.8%	100.0%
Total		Count	33	12	4	49
		% within Gender of Respondent	67.3%	24.5%	8.2%	100.0%

## Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.230 <sup>a</sup>	2	.044
Likelihood Ratio	6.624	2	.036
Linear-by-Linear Association	.324	1	.569
N of Valid Cases	49		

a. 3 cells (50.0%) have expected count less than 5. The minimum expected count is .98.

## Crosstab

			Comply legal issues with local trade laws.			Total
			Challenging	Unchallenging	No view	
Highest Qualification	School	Count	2	1	6	9
		% within Highest Qualification	22.2%	11.1%	66.7%	100.0%
	University	Count	23	9	9	41
		% within Highest Qualification	56.1%	22.0%	22.0%	100.0%
Total		Count	25	10	15	50
		% within Highest Qualification	50.0%	20.0%	30.0%	100.0%

## Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	7.046 <sup>a</sup>	2	.030
Likelihood Ratio	6.509	2	.039
Linear-by-Linear Association	5.878	1	.015
N of Valid Cases	50		

a. 3 cells (50.0%) have expected count less than 5. The minimum expected count is 1.80.