E-COMMERCE ADOPTION BY SMMEs –
HOW TO OPTIMISE THE PROSPECTS OF SUCCESS

by

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ABSTRACT

The expansion of the Internet and increased use of Web-based technologies over the last decade have led to the development of many new online business applications. The expanded global business world, commonly termed the *new economy*, has propelled networking to form new relationships. : Traditional relationships between businesses and their customers on the one side, and between businesses and their supply chains on the other side are being challenged. In addition, new distribution channels using the Internet have emerged enabling businesses to reach a much wider audience than using traditional *brick-and mortar* models. However, commercial entities do query the maturity of the Internet and Web-based technologies at times and are often concerned to what extent this can add value to their businesses. There are unanswered questions such as how important are customer relations, what products or services should ideally be used and what are the security, fraud and trust issues pertaining to e-commerce adoption. Furthermore, some uncertainties have emerged that may have an impact on the success of e-commerce initiatives for example, bandwidth limitations, customer loyalty and legal requirements.

Over time existing business models have been adapted while new models have emerged for online business. These models however, do not offer sufficient structure from a holistic e-commerce adoption perspective. In addition, adopting e-commerce as an *add-on* feature to augment traditional business channels such as direct selling, marketing and supply chains does not offer business more value unless it becomes an integrated channel of their business.

Most developing countries are lagging behind building sufficient Internet infrastructures, although the growth rate of Internet use in Africa is amongst the highest in the world. Furthermore, the growth of the competitive online market, both internationally and locally, has increased the role of management in businesses making it more demanding and challenging. The underlying value of organisations is becoming less tangible and businesses will have to become more familiar at managing intangible value, therefore even adding greater challenges to conduct e-commerce in developing countries.

This research was embarked upon to determine how SMMEs could adopt e-commerce in the most beneficial way by investigating e-commerce related factors and elements of business systems, processes and procedures. The aim was to conduct research within the context of a real-world reality, where e-commerce is not always understood or widely accepted. SMMEs belong to a vibrant and growing sector in most economies around the world whereby SMMEs are often seen as a single group, but in effect they are heterogeneous with diverse needs and objectives. A multitude of factors need to be considered pertaining to e-commerce adoption, spanning from technical, business and external factors including cultural, political, legislative and environmental issues. These issues faced by would-be adopters, could be mitigated by providing guidelines aimed at reducing the risk of failure at the outset of e-commerce initiatives and to provide some degree of success.

An e-commerce adoption model was developed using in-depth literature studies and soliciting feedback from e-commerce SMMEs in South Africa. The model was structured as a three-tiered hierarchy, with a strategic level at the top, followed by an operational level and an implementation level at the bottom. The model was validated and refined by conducting in-depth interviews and discussions with the respondents to obtain feedback to reach consensus on the structure of the model. Furthermore, the e-commerce adoption factors contained within the ambit of the implementation level were analysed and ranked to determine to what extent they were valid and applicable to e-commerce adoption. Furthermore, 46 of the final 95 e-commerce adoption factors were identified as being the most applicable to SMMEs.

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TABLE OF CONTENTS

CASE STUDY C

Electricity dispensing: a case study of successful e-Commerce implementation

LIST OF TABLES

LIST OF FIGURES   PAGE

CHAPTER 1

1. INTRODUCTION

1.1 BACKGROUND

E-commerce is not yet extensively used in South Africa and more often than not, the financial and economic viability of the e-commerce phenomenon is questioned. Commercial entities often query the maturity of the Internet[1] and Web[2] technologies, and are concerned to what extent these new technologies can add value to their businesses. These entities sometimes opt for a short-term solution by creating static Web pages to at least have a Web presence. This short-term action may last until the feasibility of an e-commerce solution is more established, or until some external or business intervention necessitates a change. Business opportunities and other related business or environmental threats, are normally identified once businesses are faced with challenging e-commerce adoption decisions. Decisions have been influenced by authors such as MacGregor (2004:63-64) and others, warning that business ventures could fail if new business systems are not managed correctly. In the context of e-commerce, there are many unanswered questions with respect to the adoption of e-commerce initiatives (Braga 2005:544). Some unanswered questions include the following:

- How important are customer relations?
- What are the main product selection criteria?
- What is the impact of security and trust issues?
- Are fraud and privacy issues exasperated by e-commerce?
- What role do telecommunication regulatory policies play?
- To what extent do political issues govern e-commerce adoption?
- Does e-commerce require special legal matters or procedures?

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[1] A global network of networks enabling all kinds of computers to directly and transparently communicate and share services across the world (Internet Society Annual Report, 2003).

[2] Commonly refers to the World Wide Web, an Internet-based hypermedia initiative for global information sharing.

Boschma and Weltevreden (2005:2) and Reichheld and Schefter (2000:105–106) identified the following uncertainties that have an impact on the success of e-commerce initiatives:

- Bandwidth limitations
- Customer experience
- e-Loyalty
- Viral marketing
- Online maintenance
- Security issues.

These unanswered questions and uncertainties are not the only impeding aspects that slow e-commerce adoption. The reliance on Information and Communication Technology (ICT) infrastructure and systems, not bridging graphical distance, nor increasing communication channels and reliance on poor network availability also impede e-commerce adoption. In addition, these aspects may even act as barriers to successful e-commerce adoption. Literature reveals a number of e-commerce definitions (discussed in more detail in Chapter 3). However, in non-technical language, e-commerce simply refers to the process of conducting business online, spanning both Business-to-Consumer (B2C) and Business-to-Business (B2B) markets. Implementing e-commerce may lead to a major source of competitive advantage (Mustaffa & Beaumont, 2004:87). This is especially true for Small and Medium Enterprises (SMEs), as they are not a set of homogeneous businesses, but differ by attributes such as size, sector, background and location (Taylor & Murphy, 2004:281). The aspects discussed above point to the fact that there appears to be no fixed rules governing e-commerce adoption.

Literature reveals examples of success stories of e-commerce adoption and often reports on international and, to a lesser degree, on South African (local) studies.

Examples of International successful online businesses:

- Wal-Mart (http://www.walmart.com)
- Amazon.com (http://www.amazon.com)
- eBay (http://www.ebay.com)
- Ryan Air (http://ww.ryanair.com)
- Dell computers (http://www.dell.com)

- FedEx (http://www.fedex.com) and others.

Examples of South African successful online businesses:
- Kalahari (http://www.kalahari.net)
- Kulula.com (http://www.kulula.com)
- 1time (http://www.1time.co.za)
- Pick 'n Pay (http://www.pnp.co.za)
- Netflorist (http://www.netflorist.co.za) and others.

Business models have started playing a more prominent role in the *new economy*[3]. e-Commerce has evolved from rudimentary websites to more sophisticated web-based customer-service systems. In addition, the importance of adopting e-commerce governed by managerial and business requirements is highlighted in the literature. Using the Web as an *add-on* feature to augment traditional business channels such as direct selling, marketing and supply chains does not offer business more value unless it becomes an integrated channel of the business (Jones, Hecker & Holland, 2003:287–288). Over the past 25 years, banks and financial institutions involved in supplying credit cards have been using Electronic Data Interchange (EDI) systems as a means to facilitate direct electronic transactions between organisations (Ratnasingam, 2004:71). More recently, e-commerce kiosks have appeared dispensing vouchers such as travel and parking tickets, ultimately culminating in the deployment of Automated Teller Machines (ATMs) across the world connected via telecommunication links (Kinder, 2002:131).

Due to the expansion and popularisation of the Internet, organisations have started to incorporate the Internet and related web-technologies into their business operations and processes (Tribunella, 2001:1). However, it is evident that using the Internet in isolation reduces the chances of businesses achieving e-commerce success. As a result the Internet and web-related technologies are being integrated into business strategies, goals and strengths (Porter, 2001:62–63). In situations where e-commerce trading is being accepted into businesses, it consists mainly of integrating customers and suppliers. Furthermore, the ensuing

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[3]   A dynamic system of interactions between a nation's citizens, business and government that can capitalise upon online technology to achieve a social or economic good (Booz Allen Hamilton, 2002; cited by Simpson & Docherty 2004:317).

interactions constitute electronic markets and supply chains. The extent of this integration affects businesses as Daniel (2003:233) postulates, a hierarchy of e-commerce integration processes exists. This suggests that the extent of increasing benefits to businesses is directly linked to the level of integration.

Many small businesses are owner-managed and fall within the European Union definition of a micro-enterprise employing less than ten people (Daniel, 2003:234). SMEs play important roles in the economies of the world, for example the European Commission states that SMEs are the backbone of the European economy (Europa, 2003). Dixon, Thompson and McAllister (2002:6) report that SMEs in the United Kingdom (UK) produce 40 percent of the UK Gross Domestic Product (GDP), while SMEs account for at least 55 percent of the private sector workforce. The Australian government recognises that SMEs are the powerhouse of economic potential (National Office for the Information Economy, 2002). As small businesses play fundamental roles in building economies, governments are increasing their support of local small e-businesses (Simpson & Docherty, 2004:321). A slow uptake of e-commerce by SMEs is evident in the UK, for example; SMEs are ignorant about e-commerce benefits and, in addition, experience a severe skill-shortage in the field of e-commerce (Simpson & Docherty, 2004:319). Although SMEs consider their small size as of minor concern when competing with their larger counterparts in the context of e-commerce, larger companies appear to dominate the e-commerce space. This is due to large businesses owning or having access to advanced ICT resources and network infrastructures. These technologies play pivotal roles in facilitating e-commerce growth (Taylor & Murphy, 2004:281).

In South Africa, SMMEs[4] are businesses that employ fewer than 200 people, in a number of business sectors (South Africa, 2003:8). SMMEs are significant contributors to the national economy and the importance of small businesses is regularly emphasised; this is also evident in other parts of the world. Singh (2003:303) suggests however, that a well-trained workforce with appropriate knowledge and skills adopts e-commerce more readily. This highlights the importance of education and training to reduce overhead costs of many small online businesses.

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[4]   Small Medium and Micro Enterprises used in the South African context (South Africa, 2003).

1.2   THE e-COMMERCE ADOPTION ENVIRONMENT

There are many pitfalls related to the adoption of e-commerce. Firstly, adoption is not merely a matter of businesses signing up to Internet Service Providers (ISPs) and then commencing with online trading. Secondly, many potential barriers and risks are associated with e-commerce adoption, which in turn become pressing management issues. Thirdly, factors to be considered (and understood) span from technical, business, to external factors including cultural, political, legislative and environmental issues (Reichheld & Schefter, 2000:105–106; Klopper, 2002; Mohammed, Fisher, Jaworski & Cahill, 2002:204; Hoffman & Novak, 2000:179–180). These potential problems faced by aspirant adopters (suppliers and customers) could be mitigated by providing guidelines attempting to reduce the risk of failure at the outset of e-commerce initiatives. Researchers should address such issues with caution and should ideally progress in small steps, covering a limited number of aspects at a time. This should preferably be in single research studies. Researchers should therefore plan and manage e-commerce adoption research to suit their environment, available resources and have proper terms of reference set by their respective research establishments and sponsors.

Although the Internet and associated technologies present SMMEs with opportunities to compete globally with larger counterparts, they often grapple with entry-level e-commerce adoption issues. Furthermore, SMMEs may even be oblivious to the requirement to integrate the Internet and web-based technologies into their business strategies and processes (Browning & Anderson, 2004:1). A compelling view by Al-Qirim (2006:183-184) is that loss of control in business, heightens the fear and anxiety of small business owners.

This research was deemed necessary for a number of reasons:

- Firstly, after the dot com crash in 2001, Internet and web-based business generally slumped, although some success stories emerged. This caused confusion and uncertainty.
- Secondly, the Internet, web-technologies and cellular network expansion made it possible for users to start trading online, yet it appears that the

majority of suppliers were not ready, and even resisted this new mode of business.

- Thirdly, SMMEs in South Africa, are emerging with a desire to utilise the Internet for business.

- Fourthly, literature contains references to a plethora of models, strategies and frameworks all pertaining to Internet commerce, e-commerce and e-business. For example, Timmers (1998:4) states "... the term *business model* in the Internet era is used to describe the combination of product, service, and information flows along with a scheme for revenue generation". This is confirmed by Osterwalder, Pigneur and Tucci (2005:6), that although the term *business model* appeared for the first time in 1957 by "... [Bellman, Clark *et al.*, 1957]", and then again in 1960 by "...[Jones 1960]", it has risen to prominence during the late 1990s. Osterwalder *et al.* (2005:1) plotted the use of the term business model, coinciding with the steep rise of the National Association of Securities Dealers Automated Quoting (NASDAQ) stock market system of technology-based companies.

1.3   RESEARCH PROBLEM

From the literature, contributing factors found impeding online trading are the lack of knowledge of the Internet, unproven on-line trading benefits and e-commerce adoption uncertainties. Ahmed (2000:41–47) for example, alludes to the fact that an increasing number of small business owners adopting e-commerce are skilled in ICT. In these instances, adopting e-commerce does not pose much of a threat to owners of losing control of their businesses as they are able to maintain an intimate knowledge of their businesses, and at the same time, focus on ICT aspects. However, this does not imply that e-commerce adoption is only meant for IT-savvy business owners (Al-Qirim, 2006:3).

Although some SMMEs are aware of the opportunities the Internet and web-based applications offer, Taylor and Murphy (2004:288) find that although their levels of ICT engagement may be extensive, the importance of timing (or readiness) is not clearly understood. For businesses to achieve success in e-commerce initiatives, they may require extensive prior analysis, in order to explore and understand the full impact of e-commerce adoption. An important aspect not evident in literature pertains to the absence of suitable business

models needed for e-commerce practice. Furthermore, Porter (2001:62-63) states that Internet and web-related technologies are currently being integrated into business strategies, goals and strengths. It is evident hat many researchers concentrated mostly on external factors such as benefits, opportunities and others, stating that e-commerce evolved from a technology-driven environment. This researcher is of the opinion that general business issues are as important as the myriad of factors proposed by many researchers reported in literature. In support to this notion, Rodgers, Yen and Chou (2002:184) state "... every firm that seeks to be successful in the future is striving for the implementation of a successful e-business strategy". Although a strategy appears to be needed, linking such a strategy to a business model may be essential. The concept of e-business models is an integral part of this research. The outcome of this thesis proposes an e-commerce adoption model as an approach to e-commerce adoption.

Against the above background, the research problem for this research reads as follows:

> **Formalised adoption strategies are lacking to maximise**
> **SMME adoption of e-commerce.**

1.4 RESEARCH QUESTION AND OBJECTIVES

e-Commerce adoption encompasses a wide spectrum of business processes and configurations of technology resources, facilitating how they perform their tasks, interact with customers and how they conduct their business (Quaddus & Achjari, 2005:127). Few scientific approaches to e-commerce adoption are evident in literature; in contrast, many contributing factors to e-commerce adoption success (or failure) are available (Feindt, Jeffcoate & Chappell (2002:52-61). Some examples of success are: Critical Success Factors (CSFs), realised business benefits and advantages of utilising the Internet with its associated technologies.

While the adoption of e-commerce has been extensively debated over the past decade, this research deals specifically with e-commerce adoption within the context of SMMEs. The aim is to provide cost effective ways to reach global customers and to compete on even terms, with their larger counterparts. In doing

so, SMMEs need to maximise their chances of success (MacGregor and Vrazalic, 2005a:2). In the context of e-commerce adoption, literature reveals many reasons for SMMEs to adopt e-commerce. The reasons for non-adoption are partly due to businesses not being able to sustain strong inter-business links thereby forming an important part of the new economy. The maturing of the Web has led to an understanding of changing the way businesses communicate, how they trade (buy and sell) and share information with business suppliers, partners and staff. However, in this process, it is important always to keep in mind the danger of "...over-promise and under delivery" (Hartley & Worthington-Smith, 2003:3).

It is evident from the literature that various approaches to e-commerce adoption are available as well and many different adoption paths to follow. However, theory for a holistic approach specifically to e-commerce adoption by SMMEs is not readily available.

1.4.1 Research question

Authors such as Emory and Cooper (1995:77-79) and others, suggest that research questions should be further broken down into investigative or sub-questions. Against the background to the research problem stated above, the research question reads as follows:

What scientific approach can be utilised by SMMEs to maximise their success of e-commerce adoption?

The researcher formulated the following three research sub-questions, starting from a general nature moving to a more specific focus:

- What are the international and local trends in adopting e-commerce?
- Which mitigating factors emanated to facilitate e-commerce adoption by SMMEs?
- How would a scientifically-based model be created to formalise an approach to e-commerce adoption?

These research sub-questions were dealt with firstly by conducting in-depth literature reviews and formulating a number of working definitions. Secondly,

international and local trends of e-commerce adoption by small businesses were investigated that enabled this researcher to create mitigating factors for e-commerce adoption (refer Table 4.27 in Chapter 4). Finally, the development of an e-commerce adoption model was accomplished and validated specifically for the use by SMMEs in Chapters 5 and 6 respectively.

1.4.2 Research objectives

The key objectives of this research are formulated as follows:

- That the theoretical contributions formulated within the ambit of this thesis have a theoretical as well as practical application in solving real-world problems by benefiting the target SMMEs.

- That the impact of this research would culminate in a paradigm shift not only for SMMEs, but it would also have a broader application for similar organisations to become an accepted strategy for dynamic initiatives pertaining to socioeconomic and technology environments.

- The various formulated solution options in this thesis to be of such a nature that they not only solve the research problem, but also facilitate implementation from a practical implementation perspective.

1.5   RESEARCH DESIGN AND METHODOLOGY

This research falls within the ambit of the social world, not the physical and natural world. Furthermore, research in the social world is theoretical as opposed to empirical and based on the phenomenological paradigm. This is explained by Remenyi, Williams, Money and Swartz (2002:30-31) and it is defined by Babbie (2005:12), as "... social scientific theory which has to do with what is, not what should be". This approach is reflected in the analogy that social science allows for the development of theories about what is and why. Therefore theoretical research will be conducted associated with phenomenology to obtain a holistic understanding of the phenomenon under investigation using case study methodology.

The research process provides insight into how researchers plan to conduct their research. That is, from the early stages of the research (including the research proposal) to the final submission of the thesis. The fundamental stages in the research process common to all scientific based investigations, proposed for example, by Hussey and Hussey (1997) and Remenyi *et al.*, (2002) are summarised below: :

Hussey and Hussey (1997:15) propose six fundamental stages in the research process, namely:
- Identification of the research topic
- Definition of the research problem
- Determining how the research is going to be conducted
- Collection of the research data
- Analysis and interpretation of the research data
- Writing up of the dissertation or thesis.

Remenyi *et al.* (2002:64–65), explain the research process consisting of eight phases, namely:
- Reviewing the literature
- Formalising a research question
- Establishing the methodology
- Collecting evidence
- Analysing the evidence
- Developing conclusions
- Understanding the limitations of the research
- Producing management guidelines or recommendations.

The researcher followed eight similar research steps, to the research process steps discussed above, but two additional steps for this particular research design process were required:

a) Reviewing the literature - (Remenyi *et al.*, 2002:64-65)
b) Definition of the research problem – (Hussey and Hussey, 1997:15)
c) Determining how the research is going to be conducted – Hussey and Hussey, 1997:15)

d) Developing an e-commerce adoption model – (Required for this research)

e) Collecting evidence – (Remenyi *et al.*, 2002:64-65)

f) Analysis and interpretation of the research data – (Hussey and Hussey, 1997:15)

g) Model validation and refinement – (Required for this research)

h) Producing management guidelines or recommendations – (Remenyi *et al.*, 2002:64-65).

1.5.1 Case study research

Some of the more salient aspects of case study research described by Yin (2003b:5) which specifically pertain to this research are listed below:

- A case study is an empirical enquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not evident.

- Case study research aims not only to explore certain phenomena, but also to understand them in a particular context.

- *How* and *why* questions are explanatory, and likely to be used in case study research.

- A case study illuminates a decision or set of decisions—why they were taken, how they were implemented, and with what result.

- The case study as a research strategy comprises an all-encompassing method including logic of design, incorporation of specific approaches to data collection and data analysis. In this sense, the case study is neither a data collection tactic nor a design feature alone, but a comprehensive research strategy.

- Case study research uses multiple methods for collecting data, which may be both qualitative and quantitative.

- A case study is typically used when contextual conditions are the subject of research.

According to Hussey and Hussey (1997:66) case studies are often described as explanatory research used in areas where there are few theories or a deficient body of knowledge as in the case of SMME e-commerce adoption.

- **Descriptive case studies** – The objective is restricted to describing current practice. Emory and Cooper (1995:11), in describing the essence and importance of descriptive research, point out that, "... the very essence of description is to name the properties of things: You may do more, but you cannot do less and still have description. The more adequate the description, the greater is the likelihood that the units derived from the description will be useful in subsequent theory building".

- **Illustrative case studies** – Such research attempts to illustrate new and possibly innovative practices adopted by particular companies.

- **Experimental case studies** – These normally examine the difficulties in implementing new procedures and techniques in an organisation and evaluating the benefits. Experimental case studies are usually set up to control important variables. The quantification of data is more often than not a priority, where the aim is either theoretical inference or the practical evaluation of an intervention (Hammersley, Gomm and Foster, 2004:4). Experimental research therefore falls within the positivistic paradigm and is not applicable to this research.

- **Explanatory case studies** – Existing theory is used to understand and explain what is happening. Yin (2003a:6-9) provides insight into the rationale behind using exploratory case studies which require fieldwork and data collection to be undertaken prior to the final definition of the research questions and hypothesis. In addition, the goal tends to be more towards discovering theory by observing a social phenomenon in its raw form. This approach tends to have a closer affiliation to grounded theory and is not appropriate to this research study.

- **Research design components** – Yin (1984:20–27) emphasises the following five components of a research design, which are specifically characteristic of case studies, and close to the research activities required within the ambit of this thesis:

  - **Study questions** – The case study strategy is the most likely approach and appropriate to deal with *how* and *why* questions. This

calls for the initial task being to clarify precisely the nature of the study questions.

- **Study propositions** – Study propositions direct the attention towards something to be examined within the scope of the study. For greater clarity, the proposition points to the reason for the study. :

- **Unit of analysis** – Should the case study involve a specific person under investigation, for example, a person with identifiable feature characteristics, the individual being studied is the primary unit of analysis. The tentative definition of the unit of analysis relates to the way of formulating the initial research questions.

- **Linking data to propositions** – A number of ways are open to link data to propositions. An approach suggested by Yin (1984:20-27) which is that of pattern matching whereby several pieces of information from the same case may be related to some theoretical proposition.

- **Criteria for interpreting findings** – If the different *patterns* are sufficiently contrasting, the findings can be interpreted in terms of comparing at least two rival propositions.

Within the context of the qualitative paradigm, this research study uses a descriptive case study research approach, although also using certain elements of methodological triangulation in instances where the case study method falls short of the research requirements. Case study research and methodological triangulation call for closer scrutiny.

1.5.2 Methodological triangulation

The concept of mixed methodologies (also known as methodological triangulation) representing a taxonomy of research approaches, can be applied to a diverse range of research studies. Methodological triangulation refers to research where both quantitative and qualitative research approaches for data collection is used. This culminates in diverse data collection techniques which

can be juxtaposed for example questionnaires, interviews, surveys and field studies. Therefore, this approach is popular in research pertaining to business and management studies, making it appropriate to adopt for this research.

1.5.3 The demand for a qualitative research strategy

Although a number of research strategies can be applied in similar research projects, the concepts of objectivity, reliability and others, inherited from the empirical analytical paradigm, are proposed for the research undertaken in this thesis. These concepts are defined by Emory and Cooper (1995:156) as follows:

- **Practicality** – This is concerned with a wide range of factors of economy, convenience and interpretability.

- **Validity** – This refers to the extent to which a test measures what we actually wish to measure. Yin (2003a:35–37) identifies three subsets to the concept validity, namely: construct validity, internal validity and external validity.

- **Reliability** – This has to do with the accuracy and precision of a measurement procedure.

1.5.4   Data collection design and methodology

The data collection design and methodology guides how the data is to be collected and analysed. This is further covered in Chapter 2. However, the understanding of the following aspects is essential:

- **Unit of analysis** – Hussey and Hussey (1997:123) refer to the unit of analysis as an individual, event, an object, a body of individuals, relationships and aggregates. In this research study, SMMEs adopting e-commerce are the unit of analysis. The phenomenon under investigation is how SMMEs adopted e-commerce. How they need to adopt e-commerce, in the light of a scientific approach versus a natural progression, to a next-step of a business operation, is the fundamental

aim of this research. In the process of adopting e-commence, SMMEs can thereby expand their business operation in the process.

- **Identification of variables** – This is the attribute of the entity chosen as the unit of analysis (Hussey and Hussey, 1997:141-143). In this phenomenological research, a qualitative phenomenon refers to a non-numerical attribute of an individual or object. These are entities such as adoption strategies, reasons for e-commerce adoption and others.

- **The sample and sample type** – Hussey and Hussey (1997:144–147) postulate that a sample is made up of some of the members of a population called the target population, which refers to a body of people or to any other collection of items under consideration for the purpose of the research. The sampling frame is the list or any other record of the population from which all the sampling units (samples) are drawn. In this thesis, no samples are used but a number of case studies are selected to conduct in-depth interviews.

  - **The data collection method** – A number of methods such as critical incident techniques, diaries, focus groups, interviews and others are available for collection of qualitative and quantitative data. The most applicable method for this research identified by Hussey and Hussey (1997:151) is interviews:

  - **Interviews** – This method of asking questions to selected participants can be utilised in a phenomenological approach using unstructured *open-ended* questions or in a positivistic approach using structured *closed* questions. In this research, the former approach where respondent's answers were personal responses or opinions stated in their own words and based on their own experience of e-commerce adoption, was preferred.

1.6   RESEARCH ASSUMPTIONS

Although the approach to data analysis may draw on analysis procedures such as content analysis, correspondence analysis or hermeneutics (Remenyi, Williams, Money & Swartz, 1998), based on the findings of the case studies conducted, certain assumptions are evident.   In this research the following assumptions are identified:

- The SMMEs participating in the research study are competent and capable of giving unbiased views

- SMMEs in the Western Cape and others in South Africa, like their counterparts in the rest of the world, play a significant role in the local economy.

1.7   RESEARCH CONSTRAINTS

According to Hussey and Hussey (1997:129) limitations identify weaknesses in the research, while de-limitations explain how the scope of the research study was focussed on only one particular area or entity, as opposed to a wider or holistic approach.

1.7.1   Limitations

This study focuses on e-commerce, a subset of e-business although it is often found in the literature that these two terms are used interchangeably causing confusion.   However this research has focussed from the outset only on e-commerce aspects, and specifically in relation to SMMEs.   The UK Online Annual Report (2002) supports discussion on the difference between e-commerce and e-business in terms of business benefits.   The extent of organisational change and sophistication, of which e-commerce is adopted, is contained in e-business (Simpson & Docherty (2004:315).   Furthermore, Rodgers *et al.* (2002:184) conclude that e-business "... allows for the extended organisation to be connected." This interconnects all employees, customers/clients, suppliers, and other stakeholders, regardless of geographical region.

1.7.2 De-limitations

This research focuses on SMMEs operating mainly in the Western Cape Province of South Africa, although the scope of trading activities of the selected SMMEs selected may expand nationally and/or internationally. The Western Cape is the second largest province in South Africa and is an ideal region in which to conduct this research.

The creation of a theoretical e-commerce adoption model provides a scientific approach to adopt e-commerce. Although the model could be used for larger businesses, the focus was limited to SMMEs where factors most applicable to SMMEs are identified in the model.

1.8   CHAPTER AND CONTENT OUTLINE

Chapter 2 – Research methodology and design: A comprehensive case study protocol and research design process was developed by the researcher to govern the research process, specifically using a multiple-case study design approach and using qualitative data methods. Furthermore, the rationale for selecting case studies was explored and a protocol governing evidence collection and analysis of case studies was formalised. The design approach aimed at producing replication logic from the evidence collected, rather than sampling logic. The researcher developed a case study protocol to minimise bias with collection of evidence from respondents. This also facilitated triangulation. The first part of a two-phased data collection process provides evidence to assist the researcher in the finalisation of the research sub-questions one, two and three in chapters 3 to 5, respectively. The second part of the data collection phase was used to validate and refine the model in Chapter 6.

Chapter 3 – e-Commerce adoption: The underlying concepts of e-commerce and e-commerce adoption trends were explored by referring to the literature. The relationship between e-commerce and e-business was defined, as well as the use of Internet and web-based technologies in business. Working definitions for e-commerce, e-business and e-commerce adoption were developed. The role of e-commerce adoption trends by SMMEs within the ambit of international, African developing countries and South Africa was explored. This chapter serves to support and answer sub-question one mainly from literature, but also using

evidence from case studies conducted by the researcher. In Chapter 4, research sub-question two dealing with mitigating factors for e-commerce adoption is concluded.

Chapter 4 – Mitigating factors for e-commerce adoption: The literature was used to explore and reveal various opinions that were analysed and used to support mitigating factors for e-commerce adoption. In order to accomplish this, e-commerce adoption by SMMEs was investigated firstly, from an international and African developing country perspective and secondly, from a South African perspective. Examples of international and South African case studies were explored. The findings of this chapter serve to answer sub-question two, and further provide a base for Chapter 5, dealing with research sub-question three.

Chapter 5 – Developing an e-commerce adoption model: Research sub-question 3 forms the basis of this chapter with the emphasis of the research on the development of an e-commerce adoption model. An overview of business models, frameworks and strategies was provided, followed thereafter by the development of a three-tiered framework for developing the model. The framework was based on research by Razi, Tarn and Siddiqui (2004:239) and Osterwalder (2004:148). The framework provided the structure of the scientifically designed model for SMMEs and was expanded using a holistic approach pertaining to e-commerce adoption. Elements such as customers, products, technology, management and marketing were contained in the model. Evidence obtained from local case studies conducted in Chapter 6 served to validate and refine the model.

Chapter 6 – Validation of the proposed e-commerce adoption model: The structure of the e-commerce adoption model consisting of three levels was validated by obtaining feedback from respondents using eight of ten selected case studies. Thereafter, the validation of the implementation (bottom) level of the model was conducted in two phases. Firstly, the e-commerce adoption factors were analysed to improve and refine them, according to feedback obtained from respondents. Thereafter, the factors grouped into eight propositions were ranked and interpreted to determine to what extent they would be applicable and relevant to be incorporated into the final e-commerce adoption model. The final model consisted of 95 e-commerce adoption factors, of which

46 factors were highlighted as being the most applicable to SMMEs. These are depicted in Figure 6.9.

Chapter 7 – Summary, conclusions and future research: Conclusions were drawn relating to the main aspects of e-commerce adoption in the light of the reported case study findings pertaining to the e-commerce adoption model. An overall summary was provided to link the research topic, research and sub-questions to the e-commerce adoption model. An overview of using the e-commerce adoption model was provided, as well as future research directions pertaining to e-commerce adoption.

Appendix A – Case studies A to E: Five South African case studies were conducted using interviews based on the design approach given in Chapter 2. The feedback obtained was used in the e-commerce adoption definitions developed in Chapter 3. Furthermore the literature was augmented leading to the e-commerce adoption model developed in Chapter 5. The report format was based on the design layout discussed in Chapter 2.

Appendix B – Interview discussion document: Based on the definition of a model by Silverman (2005:97-100), the concepts of models and frameworks were discussed with respondents. Furthermore, the aim was to solicit feedback to validate the three-level hierarchy diagram that formed the basic structure of the proposed e-commerce adoption model.

Appendix C – Validation interview feedback: Eight research propositions developed by this researcher consisting initially of 105 e-commerce adoption factors and were discussed with respondents. The aim was to obtain feedback in order to refine the model. This feedback formed the basis for the validation and refinement process of the model. This led to the finalisation of the e-commerce adoption model within the ambit of Chapter 6.

1.9   SIGNIFICANCE OF THE RESEARCH

According to Sarkar and El Sawy (2003:1), countries recognising the importance of e-commerce readiness should develop strategies to exploit their unique capabilities, resources and geographic positions. Rodgers *et al.* (2002:185)

base this partly on the premise that as Information Technology (IT) has had a significant impact on the business world reducing business processes and operations from days to seconds, where expanded connectivity between businesses is the next wave in the technological revolution created by the Internet.

The expansion of the technological wave provides the platform to undertake in-depth research on SMMEs to develop strategies in order for them to play a significant role in the economy when adopting e-commerce. Many SMMEs are uncertain if e-commerce is suitable or relevant to them, if their market sector warrants a move to e-commerce or if their products or services would be suitable for e-commerce (for example either too *low tech* or too *high tech*). The development of an e-commerce adoption model provides an approach to eliminate an uninformed way of entering the e-commerce arena and possibly to avoid being set-up for failure.

1.10 CONCLUSION

This chapter provides the background to e-commerce adoption and refers to the perception that e-commerce is widely adopted, yet there exists concern over the viability of e-commerce adoption. The uncertainties that have an impact on the success of e-commerce initiatives were explored from literature. It was found that trends of e-commerce adoption by SMMEs needed to be investigated from an international, an African developing country and a South African perspective. In addition, several definitions supporting the underlying concepts of e-commerce were required and formulated. An overview of the research process was explored and the merits of case study research and the methodology used was explained. The research problem was stated and a research question and three research sub-questions were formulated underpinning the entire research initiative.

CHAPTER 2

2. RESEARCH METHODOLOGY AND DESIGN

2.1 INTRODUCTION

The focus of this research is on the adoption of e-commerce by SMMEs in South Africa, emanating from the research problem discussed in Chapter 1. Furthermore, the research problem alludes to the fact that formalised adoption strategies are lacking for SMMEs to maximise e-commerce adoption. Therefore, research sub-question three[1] poses the challenge to develop a scientifically based e-commerce adoption model. The scope and extent of the sub-questions includes e-commerce adoption barriers, trends and mitigating factors to facilitate e-commerce adoption. The nature and extent of the research sub-questions therefore calls for the research design and methodology to be finalised early in the research process. The need stems from the fact that each sub-question not only relies on literature, but also requires feedback from SMME respondents to assist the researcher building up to formalising a model for e-commerce adoption.

Not only is the development of the proposed model required, but also the validation and refinement of the model being essential activities of this research in order to produce a final e-commerce adoption model. Silverman (2005:97–100) for example, identifies a model as an overall framework for how we look at reality. The requirements of such a model, should ideally support small businesses in practice, yet be adaptable to a wider spectrum of businesses, both small and large. Furthermore, to fulfil such requirements, the developed model must provide model-characteristics of flexibility and adaptability. Therefore, the model should ideally consist of fixed core elements and other adaptable elements to suit various configurations of SMME requirements.

The research design and methodology for this study consists of two parts. The first part deals with the underlying theory of selecting cases, collecting and

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[1] How would a scientifically based model be created to formalise an approach to e-commerce adoption?

analysing data and then applied to the sub-questions. This is described in sections 2.4 to 2.7. The second part focuses on the development of an e-commerce adoption model and described in section 2.8. In Chapter 5 a detailed description of the model development is given. Although there are a number of research methodologies and designs available, it is fundamental for any research to produce results to identify the research questions, what data would be relevant, what evidence would be required and how to analyse the findings (De Vos 2001:73; Mouton 2001:143; Struwig & Stead 2004:75). The research process for this study includes understanding how SMMEs adopted e-commerce, what problems they faced, what mistakes they made and challenges they faced, as well as other related aspects. In order to facilitate these parameters, a post-positivism research design appeared to be best suited. Furthermore, a multiple-case study strategy was considered to be most appropriate for this research, although "... using case studies for research purposes remains one of the most challenging of all social science endeavours" (Yin 2003a:1). The researcher needed to manage case study design aspects such as bias in case study research, case study protocol, exploring examples of case studies in literature and selecting the number of cases.

2.2   QUALITATIVE RESEARCH

According to Strauss and Corbin (1998:11), qualitative research is a research mechanism to assist researchers finding evidence inaccessible by statistical procedures or other means of quantification. In such cases, hermeneutic approaches are preferable to analyse findings (Remenyi, Williams, Money & Swartz, 1998:288). Denzin and Lincoln (2005:xiv), highlight the role of the qualitative community by stating "...The qualitative research community... are groups of globally dispersed persons who are attempting to implement interpretive approaches to assist them and others make sense of events or conditions that define daily life". Qualitative enquiry provides in-depth understanding of business and management research issues and reveals insight into the social and management aspects of research subjects they encounter. The nature of this type of methodology requires extensive and in-depth analysis (Van Maanen, 1988:xi[2] in Denzin & Lincoln 2005:19).

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[2]   Van Maanen, J. 1988. *Tales of the field: on writing ethnography.* Chicago: University of Chicago Press.

analysing data and then applied to the sub-questions. This is described in sections 2.4 to 2.7. The second part focuses on the development of an e-commerce adoption model and described in section 2.8. In Chapter 5 a detailed description of the model development is given. Although there are a number of research methodologies and designs available, it is fundamental for any research to produce results to identify the research questions, what data would be relevant, what evidence would be required and how to analyse the findings (De Vos 2001:73; Mouton 2001:143; Struwig & Stead 2004:75). The research process for this study includes understanding how SMMEs adopted e-commerce, what problems they faced, what mistakes they made and challenges they faced, as well as other related aspects. In order to facilitate these parameters, a post-positivism research design appeared to be best suited. Furthermore, a multiple-case study strategy was considered to be most appropriate for this research, although "... using case studies for research purposes remains one of the most challenging of all social science endeavours" (Yin 2003a:1). The researcher needed to manage case study design aspects such as bias in case study research, case study protocol, exploring examples of case studies in literature and selecting the number of cases.

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Furthermore, qualitative research is preferred when the phenomenon under investigation is identified, described and explanations are generated. It is an alternative method to quantitative explanations of testing and control (Crabtree & Miller, 1992[3] cited by Dubelaar, Sohal & Savic, 2005:1254). The next section deals with the research design.

2.3 RESEARCH DESIGN

Research design is a plan that guides an investigator in the process of collecting, analysing, and interpreting observations. According to Yin (2003a:20), at the most elementary level, "... the design is the logical sequence that connects the empirical data to a study's initial research questions and, ultimately, to its conclusions". Fetterman (1989:8) observes that research design is usually an idealised roadmap to support the investigator how to conceptualise each design step's position, following from the previous step to build knowledge and understanding in the process.

Silverman (2005:99) states that a concept, theory and hypothesis feed directly into a methodology, which is a general approach to explore a research problem. This is graphically depicted in Figure 2.1. In addition, Figure 2.1 depicts the relationship between these elements. Furthermore, a feedback path provides the facility to modify hypotheses during the process of collecting evidence. During the collection of empirical evidence, an array of business aspects would possibly be uncovered, from business strategic issues to customers, products and the environment.

2.4 CASE STUDY RESEARCH

Where the phenomenon under investigation is not readily distinguishable from its context, *how and why* type questions are preferable to attempt to understand the phenomenon. Yin (2003a:13) states that case study research is an empirical inquiry that investigates a contemporary phenomenon within a real life context. Tellis (1997:3) alludes to the interactive nature of case studies and states the

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[3]   Crabtree, B.F. & Miller, W.L. 1992. *Doing qualitative research.* Newbury Park, CA: Sage.

need to use multi-perspective analysis, where the researcher is able to consider the relevant groups of participants. Therefore, the strength of case study methodology comes from establishing a good rapport with research subjects leading to in-depth insight. Furthermore, interaction between groups also provides valuable in-depth knowledge. In order to conduct case study research, a rich theoretical framework is required (Yin, 2003a:47). The term *rich* refers to a well-defined theoretical framework that must state the conditions under which a particular phenomenon is likely to occur.
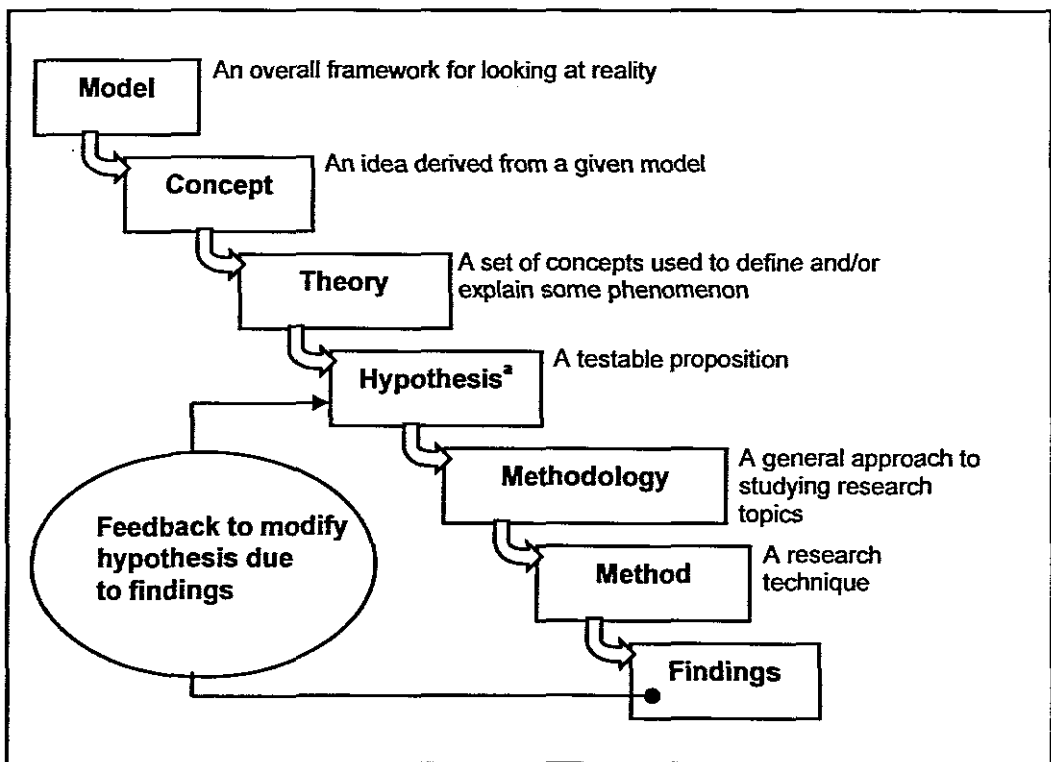
a   There are various kinds of hypotheses used in research e.g. a hypothesis used in statistical research. In this qualitative research, the hypothesis takes on the form of eight propositions.

Figure 2.1 Levels of analysis (adapted from Silverman, 2005:97-100)

At the same time, the conditions under which the particular phenomenon is unlikely to be found, need to be identified. Yin (2003a:48) further states that the theoretical framework later becomes the vehicle for generalising to other new cases, used similarly in cross-experiment designs. Researchers must be aware of these factors and should aim to use multiple sources of information collection (evidence) to improve the reliability of information obtained.

According to Yin (2003a:46) multiple-case designs have distinct advantages (and disadvantages) in comparison to single-case designs. Evidence from multiple cases is often considered more compelling and the "... overall study is therefore regarded as being more robust" (Herriott & Firestone, 1983:14). Yin (2003a:47) draws attention to the fact that multiple-case studies can require extensive time and resources beyond the means of a single research or independent researcher. In this case, initial selection of the number of case studies may have to be increased in the event of findings being contradictory. This includes the event if no conclusions can be reached from the analysis.

2.5   CASE STUDY DESIGN

This researcher interpreted the five components of a case study proposed by Yin (2003a:21) as depicted in Figure 2.2. These components assist in understanding the stages of a case study process by defining the inter-relationship between the five components. The arrows indicate that the logic flow follows a top-down as well as a bottom-up approach.

b   Propositions can take on different forms. Miles and Huberman (1994:75) refers to propositions as "... connected sets of statements, reflecting the findings and conclusions of the study".

Figure 2.2 Case study design component relationship

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| b | Propositions can take on different forms. Miles and Huberman (1994:75) refers to propositions as "... connected sets of statements, reflecting the findings and conclusions of the study".

Figure 2.2 Case study design component relationship

Case study research does not comprise a set of sequential steps, i.e. from step 1 to step 5, but rather that it is an evolving process and it is often necessary to refine or change propositions as the investigation progresses. The feedback arrow in Figure 2.2 provides for adapting the methodology based on new findings, thereby indicating the dynamic characteristic of case studies. This approach is unlike experiments that start and end with no deviations in the process. Figure 2.2 highlights the prominence of the unit of analysis in a case study. The unit of analysis allows researchers the option of feeding evidence back into the process in an organised way via the propositions that may require modification. The above does not imply that the unit of analysis is undefined or open-ended, but rather, it maintains a narrow focus.

2.5.1 Number of cases

Yin (2003a:47) states that there is no rule or formula to determine the number of cases in case study research. The logic underlying the use of multiple-case studies indicates that the researcher should select each case with care in order for it either, to predict similar results (a literal replication) or to predict contrasting results for predictable reasons (a theoretical replication). Yin (2003a:47) further states that there are similarities between multiple-case studies and conducting the same number of experiments on related topics. Therefore, two to three cases would be literal replications, whereas a few additional cases, possibly four to six, may pursue two different patterns of theoretical replications. If during the research process the findings of five to ten case studies all emerge as predicted, then on aggregate, compelling support for the initial set of propositions, fewer cases would have sufficed. However, if contradictions occur when the cases are analysed, the initial propositions must be revised and re-tested with additional cases. The process would then need to be repeated. This technique is not new and is similar to the logic used by scientists who have to deal with findings of contradictory experiments.

2.5.2 Case study protocol

Case study protocol consists of the instrument (interview schedule or question sheet) as well as the procedures involved in conducting research.

a) Field protocol

The field protocol used in a case study describes the activities relating to fieldwork. The following *protocol activities* were developed by the researcher and used for all the case studies, and they are adapted from Lubbe (1996:68), Lubbe (2003:9) and Remenyi *et al.* (1998:172-173).

- Initial telephonic contact with each SMME and in most instances resulted in the contact person becoming the trusted intermediary.

- A number of respondents were identified in consultation with the trusted intermediary in each of the SMMEs, and each respondent was approached to be interviewed. This process complied with the stipulation of collecting evidence from multiple sources.

- In some of the smaller SMMEs, only the owner-managers were interviewed.

- In larger SMMEs, at least two of the respondents were at senior management level and further interviews with staff were possible.

- Available documentary evidence was collected from SMMEs for example; website information, advertisements, brochures, press reports and business or company documents such as, system block diagrams and management structure charts.

- All interviews were tape recorded, by prior arrangement with management.

- Face-to face interviews were conducted at respondents' offices.

- In some instances, two businesses or interviews were visited per outing.

- Only one letter of non-disclosure was required and it was signed by the researcher.

b) Interview structure

The interview structure adopted for this research consisted of two parts:

- **Part 1** – Demographic Information about the interviewee and the organisation (see Appendix A).

- **Part 2** – An *interview topic guide* created by the researcher to assist in selecting discussion points to guide the case study interviews; the sequence of selecting these items was random to ensure that the

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discussions during interviews were free flowing and encouraged open conversation. The interview topic guide structure is summarised below:

- **Organisation**
  - Strategic objectives
  - Reasons for adopting e-commerce in business

- **Internal**
  - Human resources
  - Impact of e-commerce
  - Customer demand and service
  - Reduced transaction costs
  - Critical success factors

- **External**
  - Competition
  - Partnerships

- **E-commerce adoption**
  - Operational issues of e-commerce
  - Adoption of ICT systems

- **Environment**
  - Technical
  - Market.

2.5.3   Bias in case study research

Babbie and Mouton (2006:238) point out that case study research is not always free from bias, as interviewers and interviewees may not remain objective during the interview process. This could result in evidence not being totally bias-free. Three contributing bias-related problems, often manifesting during the evidence collection phase, were identified:

- Difficulty by individuals (interviewees) remembering and giving accurate information.
- Unwillingness of individuals to disclose information.

- Concern about the consequences of breaching trust and confidentiality after revealing information.

These problems can be minimised by ensuring triangulation is applied by obtaining evidence from multiple sources, thus ensuring that views are not obtained from only one source or respondent (Remenyi, *et al.*, 1998:126; Yin, 2003a:97).

> "In qualitative research, issues of validity and reliability ride high on the skills of the researcher. Essentially *a person* – more or less fallibly – is observing, interviewing, and recording, while modifying the observation, interviewing and recording devices from one field trip to the next" (Miles & Huberman,1994:38).

Miles and Huberman (1994:38) place further emphasis on the qualitative *make-up* of the researcher. For them, a good qualitative researcher needs:

- To be familiar with the phenomenon and the setting under study
- A strong conceptual interest
- To use a multidisciplinary approach, as opposed to narrow grounding or focus in a single discipline
- To posess good investigative skills, mainly to ward off premature closure.

In support of the above, the experience of this researcher is in the fields of engineering, IT and business. His working environment has been multidisciplinary covering ICT, entrepreneurship, business and engineering for more than 20 years. Recent research activities have been in e-commerce, m-commerce, research methodology utilising ICT, providing the background to embark on this research.

2.5.4 Research design process

The researcher formulated a 7-step *Research design process* for this research, as depicted in Figure 2.3. The aim of this research design procedure was to achieve the over-riding goal of this research, which was to develop an e-commerce adoption model. For this, an organised and scientific process was required. This was accomplished by using knowledge gained from e-commerce

models from literature, conducting e-commerce studies, attending research workshops, conducting various pilot studies, delivering conference papers and writing journal articles.

The research design procedures:

Step 1 – In-depth literature review

Step 2 – Formulating the research questions and sub-questions

Step 3 – Conduct case studies to collect evidence from respondents

Step 4 – Returning to literature to finalise research question one and two

Step 5 – Develop an e-commerce adoption model, in support of research sub-question three

Step 6 – Validating and refining the e-commerce adoption model by soliciting feedback from respondents

Step 7 – Refining the e-commerce adoption model.

The arrows in Figure 2.3 indicate the flow of knowledge gained by the researcher as the research process evolved with new aspects emerging, from both literature and feedback obtained from SMME respondents.
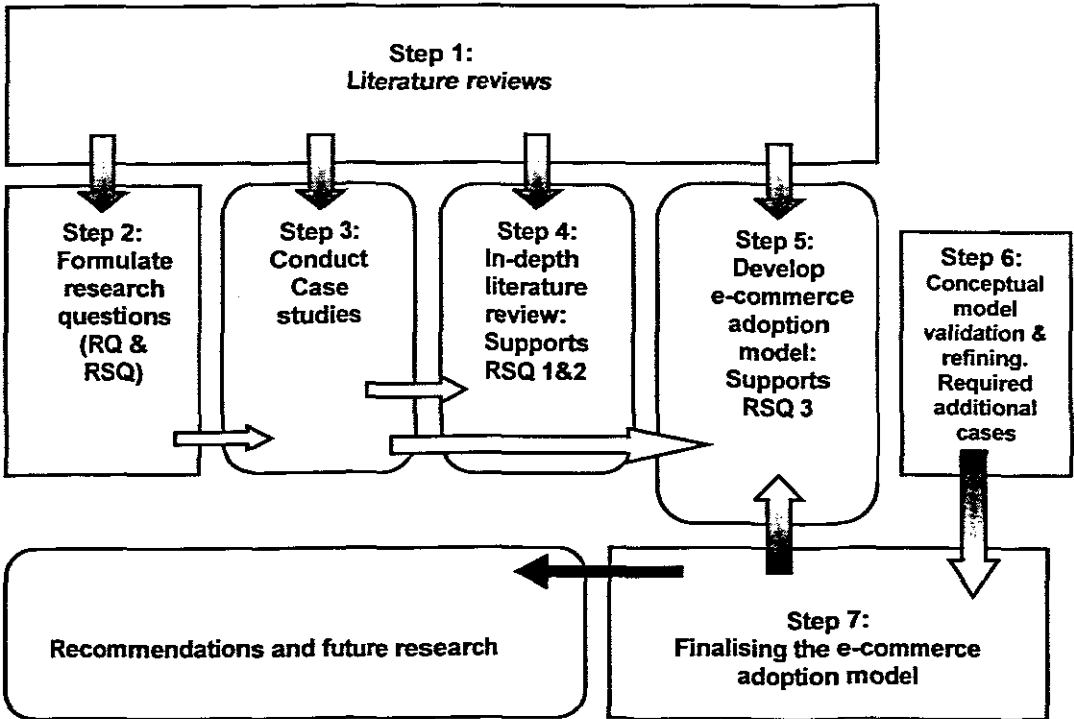
Key: RQ – Research question / RSQ – Research sub-question

Figure 2.3 Research design process

In section 2.7.2, two interview phases with associated feedback are discussed and identified in Step 3 and Step 6 respectively (refer to Figure 2.3). The interviews in phase one, focused on formulating and supporting research sub-questions one to three, whereas in phase two, the focus was on validating and refining the e-commerce model to be developed in Chapter 5.

2.6 FIELD WORK GUIDELINES

Fieldwork was governed by a combination of the design aspects discussed in this chapter so far. Conducting fieldwork requires careful planning in order to make the evidence collected meaningful, manageable and relevant when the analysis is embarked upon. The essence of case study research is to have proposed interview protocols, but also to have an open-minded approach to check if the research is on the right track during the interviewing and collecting phase. Miles and Huberman (1994:50-51) emphasise that extracting evidence occurs from "... various levels of details" and a mountain of evidence therefore becomes a near impossibility – the accuracy of interpretation such a situation may even become problematic.

Before the interviews could commence, a thorough understanding of the way in which the evidence needed to be analysed and reported was required. There are two fundamental methods of analysing this research's evidence: coding the results and creating themes.

2.6.1 Interview topic coding approach

The emphasis of qualitative research using in-depth interviews and collecting data (evidence) from other sources, requires detailed analysis, both "... early analysis", and after the interviews were concluded (Miles & Huberman, 1994:50). The early analysis assists the researcher to cycle back and forth, considering the evidence collected and generating strategies for collecting new evidence. In analysing the evidence collected form the case studies, there are different ways of analysing the evidence collected: manually, semi-automated (word processor/electronic spreadsheet) or using specialised computer software. In all of these methods, some from of coding is required to keep track of the plethora of

data. There are many different types of codes and Miles and Huberman (1994:55-57) define three classes of codes:

- **Descriptive** – These require little interpretation as this is a phenomenon linked to a segment of text.

- **Interpretive** – These codes are similar to descriptive codes but are extended to another level, to distinguish between various options (categories) of a particular phenomenon.

- **Pattern** – These are more explanatory where patterns or themes start emerging.

Creating codes is an important aspect and Miles and Huberman (1994:57) recommend a provisional or *start list* prior to any fieldwork. It is important to realise that a start list approach, is in contradiction to the *grounded approach* advocated by Glaser and Strauss (1967:233). Miles and Huberman (1994:59) give an example of a start list consisting of various categories, using a *master code*, *sub-codes* and a *key-code* to link the property to the original research question from which it was derived. This example described an innovation system implemented into a school. In this research, such a start list could originate from a conceptual framework, a list of research questions, a hypothesis, a problem area and/or key variables that the researcher has brought to the study.

Alternately, a list of initial themes could be identified and all evidence collected could then be categorised according to these themes. The possibility exists to expand these themes depending on the cause of events highlighted during the analysis of the data. This would finally manifest in the form of headings used in the case study reports. The approach to interpret the evidence for case studies in a purely qualitative way is often thematic. This would require that as the case study progresses, the initial chosen themes are expanded and strengthened or weakened (in the case of themes found to be of diminishing consequence).

According to Miles and Huberman (1994:51), direct tape recordings of field events must be processed and transcribed and "... this text may be reduced and simplified considerably from the raw events". Furthermore, in the view expressed

by Miles and Huberman (1994:51), research focuses on words as the basic medium and they assume that the words involved have been "... refined from raw notes or tape recordings into text that is clear to the reader or analyst". The case study protocol (section 2.5.2) is the proposed way of making initial contact with the case subjects, confirming appointments, obtaining necessary permission and giving explanations about the aim of the research.

2.6.2 Format of case study reports

According to Yin (2003a:143), the case study investigator should consider the target audiences of the reports and therefore endeavour to satisfy their particular needs; examples of typical audiences are academics, non-specialists, funding agencies, practitioners, policymakers and others. In the case of academic audiences for example, the connections between the cases, the findings and previous theory or research are likely to be important, whereas with non-specialists, portraying some real life situation and the possible implications and actions are likely to be more important. Furthermore, Yin (2003a:141) suggests that high-quality and interesting case studies should be conducted and report formats and layouts should reflect this.

2.7 CONDUCTING THE RESEARCH

Conducting this research followed the design process depicted in Figure 2.3, within the framework of Chapter 1. The Western Cape accommodates closely to 10 percent of South Africa's population, however, it contributes approximately 15 percent of national output and attracts over 16 percent of foreign direct investment destined for South Africa (Wesgro, 2006). The requirements for selecting cases for this research were for the SMMEs to be recent e-commerce start-up businesses and operating predominantly in the Western Cape. As a large number of SMMEs operate in the Western Cape of South Africa, these businesses are either small one-person operations possibly extending to a few family members or larger businesses employing up to 200 employees.

The aim was to target recent start-up SMMEs with less than 200 employees and all conducting e-commerce. The researcher assumed that it would be unlikely for an SMME to transform its operation to the B2B space in a short space of time, or

soon after the business start-up phase. However, a large SMME would be more likely to transform and operate in the B2C and B2B spaces. In the latter case, some businesses may even border on SME status with a larger turnover, a bigger asset base and more than two hundred employees (South Africa, 2003). The researcher identified these types of businesses as borderline cases. In situations where businesses were in a transitional phases, not yet falling into the SME category, a special motivation may be needed for selecting such a business. Referring to (Yin, 2003a:47), "... every case selected should serve a specific purpose within the overall scope and requirements of the research study".

2.7.1 Examples of case study research

During Step 1 of the research design process (Figure 2.3), the researcher explored examples of case studies used as a research strategy from literature. Of these, the researcher identified ten case study examples relating to e-commerce, given in Table 2.1. The headings were summarised under; Topic of the research studies, Method followed and number of Cases used. These examples served as a guide firstly, to explore the design principles surrounding the reported case studies conducted by the respective researchers and secondly, to determine the approximate number of cases conducted.

Table 2.1 Examples of case studies

#	Researchers	Topic	Method	Cases
1	Aldin, Brehmer & Johansson (2004:45)	Business development with electronic commerce: refinement and repositioning	Semi-structured interviews	3
2	Al-Mashari (2002:182)	Electronic commerce: a comparative study of organisational experiences	Close investigation	8
3	Barnes , Hinton & Mieczkowska (2004:137)	E-commerce in the old economy: three case study examples	Semi-structured interviews and open ended questions	3
4	Doolin, McQueen & Watton (2003:17)	Internet strategies for established retailers: Five case studies from New Zealand	Semi-structured interviews structured around the strategic approach of company	5
5	Dubelaar, Sohal & Savic	Benefits, impediments and critical success factors in B2C e-business	Purposive sample of managers responsible for e-business operations,	8

			method close-up detailed observation	
6	Elliot & Loebbecke (2000:51)	Interactive, inter-organisational *innovations in electronic commerce*	Qualitative, exploratory approach and interpretive *in nature*	4 mini-cases
7	Fairchild, Ribbers & Nooteboom (2004:69)	A success factor model for electronic markets	Tested 17 factors from a model – Questionnaires and open ended questions	4
8	Hughes (2002:253)	Marketing principles in the application of e-commerce	Pilot case followed by In-depth interviews	4
9	Jones, Hecker & Holland (2003:29)	Small firm Internet adoption: opportunities forgone, a journey not begun	In-depth interviews	5
10	Kinder (2002:131)	Emerging e-commerce business models: an analysis of case studies from West Lothian, Scotland	In-depth exploratory interviews	4

These examples served as valuable background to assist this researcher in the process of developing the research design.

2.7.2 Interviews conducted

Interviews were conducted in two phases:

- **First phase** – These interviews aimed to obtain evidence from five local case studies to support research questions one, two and three, depicted in Figure 2.3, Step 3. The researcher analysed this evidence in chapters 3 to 5, respectively.

- **Second phase** – These interviews were required to solicit feedback from respondents to validate and refine the e-commerce adoption model depicted in Figure 2.3, Step 6. The cases used in the first phase and five additional new cases were included for this phase. The researcher was able to analyse this evidence during the model validation and refinement process in Chapter 6.

2.7.3 Selecting cases

The researcher identified 35 small businesses to participate in this research by scanning local business directories, following up on email contacts, newspaper advertisements and by word-of mouth. These businesses were all recent start-ups and conducted online trading. The researcher made initial telephonic contact with all these businesses to identify a trusted intermediary and to ascertain if the businesses would be willing to participate in the research. At first, many of the businesses were reluctant to participate and needed careful explanation as to the reasons and possible benefits of participating in this research. Two businesses declined to participate in any research activity. The researcher found that some businesses were not offering e-commerce facilities while others were only hosting websites. A number of businesses did not actually exist. This reduced the number of businesses to 22 that were willing to participate in this research.

Interviews were scheduled and semi-structured interviews conducted with all the senior managers or owner-managers. All interviews were tape-recorded. The researcher used the *interview topic guide* given in section 2.5.2 (b), Part 2, to govern the semi-structured interviews. This served as a reminder of the planned discussion points rather than as a method for controlling or restricting respondents. Interviewees were encouraged to talk freely and at length within the topic areas, as suggested by (Hughes, 2002:253). After the recordings were transcribed and analysed, the researcher came to the realisation that no coding should be used (as discussed in section 2.6.1), due to the number of codes that this method would generate (hundreds). The researcher was aware of the fact that 22 businesses were too many for in-depth case studies and had to be reduced to a smaller number, between four and six to support the suggestion by Yin (2003a:47) about the number of possible cases to be used (section 2.5.1).

From the first phase in-depth interviews and subsequent analysis of the 22 businesses, it emerged that many of these businesses were struggling to survive, others were changing their business focus, while others had not made the transition to conduct e-commerce, although their respective websites indicated online trading and four were unwilling to continue with the research. In Table 2.2, the researcher provided six primary reasons why some businesses were eliminated.

Table 2.2 Reasons for eliminating cases

#	Reason	Number
1	Struggling small *one-man business*	2
2	Changed business focus	3
3	Not trading online	3
4	Not an SMME, a division of a large organisation	3
5	Not willing to continue to participate in the research	4
6	Not willing to share, concerned about competition	1

Six case studies remained to participate in the first phase of interviews (refer section 2.7.2). After more interviews, the researcher had to eliminate one business after it became evident that the business could not be classified as a SMME. The five remaining case studies were visited between three and four times. In total, about 43 in-depth interviews and 3 telephonic interviews were conducted. These interviews spanned a period of a year, from April 2004 to April 2005. Some criteria of the five cases are summarised in Table 2.3.

Table 2.3 Selected case study sector category

#	Case Name	Market Sector[a]	History	Staff[b]	Turn-over[c] (Rand)
1	Case study A	Transport, Storage and Communications	New entrant	<200	<26M
2	Case study B	Catering, Accommodation and other trade	Previously Brick-and mortar	<20	<13M
3	Case study C	Electricity, Gas and Water	Previously Brick-and mortar	<100	<13M
4	Case study D	Wholesale, Trade, Commercial Agents and Allied Services	Previously Mail order, then Brick-and mortar	<15	<64M
5	Case study E	Wholesale, Trade, Commercial Agents and Allied Services	New entrant	<10	<64M

[a,b,c] These headings originate in the small business amendment act category of SMMEs (South Africa, 2003). The turnover figures in each category of market sector, originate from the act, and are not determined by the SMMEs interviewed.

During the process of conducting the case studies, interviews were tape-recorded, transcribed and the data analysed. The researcher continued to group text under specific themes and headings in order to facilitate analysis and later cross-case comparison, as explained by Miles and Huberman (1994:86-89).

The SMMEs under investigation raised some concern about confidentiality and in all instances, the subjects wanted to remain anonymous and therefore pseudonyms are used throughout the research (Case study A through E). The evidence obtained from these cases was used to conclude research sub-questions one and two (Figure 2.3, Step 4) and to support sub-question three and the process required to develop an e-commerce adoption model.

The next section introduces the concept of models in preparation for the detailed model development in Chapter 5, depicted by Figure 2.3, Step 5.

2.8 DEVELOPMENT OF AN e-COMMERCE ADOPTION MODEL

Morecroft, Lane and Viita (1991:114) highlight for example, the importance of retaining flexibility in model creation and mention specifically, room for discussion, interpretation and new ideas as important aspects to consider, within the boundaries defined by a model. However, Morecroft *et al.* (1991:114) acknowledge that a model *gradually tightens* as the focus narrows onto a particular problem area. Osterwalder *et al.* (2005:9) found the ontology of a model to be a set of expressions which are intended to denote aspects of the modeled object. Such a model is constructed to enable discussion within an ideal logical framework, which in this research would be within the realm of e-commerce adoption.

The aim of developing the model was to represent the e-commerce adoption phenomenon and to convey the concept of logical objects such as elements, relationships and business processes, underpinned by theory. In addition, it was deemed necessary that the e-commerce adoption model is able to be implemented and useable in practice. Osterwalder (2004:147) asserts that an important aspect to consider with reference to business model development is the alignment of business strategy and a business process model, contributing to the successful operation of a business. Referring to the reseach question and sub-questions discussed in Chapter 1, the researcher was of the opinion that an e-commerce adoption model required for successful e-commerce adoption by SMMEs, would need to satisfy general business strategies, embrace and promote e-commerce adoption factors.

2.9   CONCLUSION

The requirements and reasons for the chosen design and methodology approach for this research was discussed. Qualitative research methods within the ambit of case studies were explored. Examples of case studies from e-commerce related studies were investigated to assist the researcher with the case study selection process. The design approach aimed to produce replication logic from the evidence collected, rather than sampling logic. The researcher developed a case study protocol to minimise bias in data collection. The protocol served to guide the overall research process of evidence collection, recording and planning the analysis of the data, also facilitating triangulation of data.

The formulation of the research sub-questions, called for early evidence collection. The first phase of in-depth interviews conducted with the selected case studies was described. This information obtained will then be used in addition to literature, dealing with research sub-questions one, two and three to be covered in chapters 3, 4 and 5, respectively. In Chapter 6 the second phase of interviews with respondents is planned to solicit feedback. The aim was to validate, refine and to finalise the e-commerce adoption model.

CHAPTER 3

3.   e-COMMERCE ADOPTION

3.1 INTRODUCTION

The focus of this chapter is to investigate SMME e-commerce adoption trends. This emanates from research sub-question one[1] and it is explored from an international (non-African continent), African developing country and local (South African) perspective. Firstly, the terms e-commerce, e-business and e-commerce adoption are investigated, culminating in the formulation of working definitions for each of these terms. Secondly, e-commerce adoption is further explored using literature within the context of six international and four African developing countries. In the case of South Africa, local SMME case studies were conducted by the researcher.

3.2 THE ROLE OF THE INTERNET IN BUSINESS

Over the last decade, the importance of gaining information and knowledge by business for their activities has become evident. Globalisation is well developed and competition between businesses has existed for many years where organisations, for example, source materials to manufacture goods in many different locations (Ahmed, 2000:44-45). Competitiveness between enterprises in a modern economy is governed by the ability to utilise Information and Communications Technology (ICT). Furthermore, bridging the gap between customers and businesses (or suppliers) has become an important issue. It forms an improved distribution channel fostering increased competition in open electronic marketplaces (Ahmed, 2000:44-45). Competitiveness has led to speciality products, often an improvement over traditional ones and *cost only* related products, both of which fuel competition between online businesses (Braga, 2005:544; Dubelaar, Sohal & Savic, 2005:1260). These competitive elements appear mostly in large firms, as small firms are often unable or reluctant to use and deploy ICT extensively (MacGregor & Vrazalic, 2005a:6).

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[1]   What are the international and local trends in adopting e-commerce?

Czuchry, Yasin and Sallmann (2004:717) state "...The explosive evolution and revolution of the Internet and related technologies gave birth to the term e-commerce and later made e-business a familiar term". It comes as no surprise that modern-day leaders and managers enthused by ICT's capability have been successful in using ICT to reap financial rewards and have often achieved dominance in the commercial world, for example:

> Welch[2], stated " ... I don't think there's been anything more important or more widespread.....Where does the Internet rank in priority? It's No. 1, 2, 3 and 4" (Hoque, 2000:3). The management style of Jack Welch utilising the Internet and web-based technology has been a great success in the case of the General Electric Company.

> Under Gerstner's[3], leadership, the turnaround from the near bankruptcy of IBM happened in only a few years and, in the process, unveiling the term e-business for the first time in November 1996 (Gerstner, 2000:173).

The transformation from traditional businesses to electronic businesses was inevitable due to the rapid advancement of technology and the increasing availability of web-based applications. Daniel and Myers (2000:9) refer to this as "... levelling the playing field", whereby existing or traditional SMEs can compete with larger businesses, provided that they transform their businesses appropriately. However, for businesses to be part of this transformation process, requires moving through many changes. For example:

- Business processes
- Technology changes
- Adoption initiatives.

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[2]   Chief Executive Officer of General Electric 1991-2001: Named "Manager of the Century" by Fortune 500 magazine in 1999.

[3]   Chief Executive Officer of IBM and Chairman of the board of IBM 1993–2002.

3.3 DEFINING e-COMMERCE, e-BUSINESS AND e-COMMERCE ADOPTION

The terms *e-commerce* and *e-business* are often used interchangeably and sometimes cause confusion. Barnes *et al.*, (2004:607) state for example, "... these terms are used more or less interchangeably", and citing a contrasting view, Chaffey (2002)[4] seeks "... to distinguish between the terms e-commerce and e-business". The indiscriminate way of using these two terms is largely context driven. It has become popular practice to add an e-prefix to entities in an attempt to indicate that those entities are used either in an online or in a web-based environment. Examples are: e-project management, e-marketplaces, e-procurement and e-operations amongst others.

Working definitions for e-commerce and e-business needed to be formulated to avoid any confusion caused by using these terms interchangeably. The researcher tabulated definitions describing these terms by conducting in-depth literature reviews. Common keywords or descriptive phrases found embedded in the definitions from literature were used to identify various categories (refer to tables 3.1 and 3.3). In a similar way, e-commerce adoption was dealt with and categorised in Table 3.4.

3.3.1 e-Commerce defined

The methodology used to define e-commerce was to explore existing literature, which resulted in definitions summarised in chronological order. These are presented in Table 3.1 according to the selected keywords and/or descriptive phrases.

Fourteen descriptive definitions describing e-commerce were grouped into four keyword categories. The categories were chosen according to the frequency of the keywords or the overriding descriptive phrases appearing in the e-commerce definitions and the definitions were tabled in chronological order. Although not an exhaustive list of definitions, the following categories of keywords and the corresponding frequency of occurrences in the definitions (in parentheses) were identified:

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[4] Chaffey, D. 2002. *e-Business and e-commerce management.* Harlow: Pearson.

- Technology (6 definitions)
- Relationships (4 definitions)
- Transactions (3 definitions)
- Disruptive innovation (1 definition).

Table 3.1 e-Commerce definitions

#	Author	E-commerce definition
Technology		
1	Keogh and Evans (1998:338)	• The development of IT advanced at a fast rate affecting business and find "… the relevance and importance of the high **technology** small firm" giving instant access to international markets as well as opening windows for potential **improved local market expansion**
2	Chester and Rukesh (1998)	• E-commerce is a sub-set of e-business and covers both intra- and inter-organisational **electronic** messaging and information management
3	Ahmed (2000:41)	• E-commerce is therefore "…a general term applied to the use of computer and **telecommunications technologies** to support trading in goods and services". It is defined as "any form of **business transaction** in which the parties **interact electronically** rather than by physical exchanges or direct contact"
4	Dixon, Thompson and McAllister (2002:9)	• According to the Report for small business service research programme to "… set the target for the UK to have the most extensive and competitive **broadband** market in the G7 by 2005" • The UK Government stresses that unless compelling **broadband** content and e-commerce applications are available, speed of progress will be slow
5	Shen, Hawley and Dickerson (2004:2)	• eCcommerce is not a new concept - an example of the earlier commercial application of computer networks is **Electronic** Data Interchange (EDI) • The high cost relative to the volume of information used by small companies and that each EDI system was different due to non-standardisation, Internet and **web-technologies** overcame these problems with **standardised interfaces** and defined communication protocols
6	Stockdale and Standing (2004:301–302)	• The increased role of ICT and **web-based technology** led to an increase in applications such as e-commerce and e-marketplaces
Relationships		
7	Zwass (1996:3)	• Sharing of business information, maintaining business **relationships** and conducting **business transactions** by means of telecommunications

8	Poon and Swatman (1999:9)	• Encompasses the sharing of business information, maintaining business **relationships** and **conducting business transactions** by means of **Internet-based technology**
9	Damanpour (2001:18)	• e-Business/e-Commerce is any *net* business activity that transforms **internal and external relationships** to create value and exploit market opportunities driven by new rules of the connected economy
10	Lal (2004:506)	• *Application of ICTs in all business processes such as office automation, financial transactions, production processes, coordination with other plants,* **customer relationship management**, *supply chain management and management of* **distribution channels** *- in these examples of e-commerce applications, relationships need to be formed between various entities*
Transactions		
11	Greenstein and Feinman (2000:2)	• The use of electronic **transaction** media (telecommunications) to engage in the exchange, including **buying and selling, of products and services** requiring transportation, either physically or digitally, from location to location
12	Laudon and Traver (2003)[5] cited by Adham and Ahmed (2005:1176)	• As transactions that occur when there is an exchange of value, *which means* **transactional** *websites must be* equipped with **Internet-based technology** that has at least the capability of accepting payments online
13	Braga (2005:543)	• E-commerce networks can play a role in one or more of these steps - Braga considers ".... e-commerce to take place whenever a commercial **transaction** is **conducted online**, even if its realisation requires physical delivery of the product"
Disruptive innovation		
14	MacGregor and Vrazalic (2005a:2)	• Unlike previous technological initiatives, e-commerce is a **disruptive innovation** that is radically **changing the way firms do business** - the reason for this view is that previous innovations often sought to minimise dependency on other organisations, whereas e-commerce has forced organisations to reassess their boundaries and to focus their attention **interorganisationally rather than organisationally**

Each of the four identified categories in Table 3.1 was further reviewed by analysing additional sources from literature and they are described in sections (a) to (d) below:

a)   Technology (Table 3.1, definitions 1–6)

The use of modern Internet-based ICT enables information to be stored, retrieved and disseminated in almost limitless quantities across the globe, rapidly and

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[5]   Laudon, K.C. & Traver, C.G. 2003. e-*Commerce: business, technology, society.* Boston, MA: Addison Wesley.

cheaply (Barnes *et al.*, 2004:607). To illustrate to what extent Internet usage has expanded, particularly over the past five years, the Internet World Statistics (2005:1-3) is summarised according to the percentage usage growth, depicted in Table 3.2.

Table 3.2 Population and Internet Usage Statistics: Comparison of Africa to International regions (adapted from Internet World Statistics, 2005:1-3)

POPULATION AND INTERNET USAGE PERCENTAGE COMPARISON OF AFRICA TO WORLD REGIONS					
Region	Total estimated population in 2006	Population as % of World (%)	Total Internet Users	Usage % of World (%)	Usage % growth (2000-2005)
Middle-East	190,084,161	2.9	18,203,500	1.8	454.2
Africa	915,210,928	14.1	23,649,000	2.3	423.9
Latin America	553,908,632	8.5	79,962,809	7.8	342.5
Asia	3 667,774,066	56.4	364,270,713	35.6	218.7
Europe	897,289,020	12.4	291,600,898	28.5	177.5
Oceania/ Australia	33,956,977	0.5	17,872,707	1.7	134.6
North America	331,473,276	5.1	277,303,680	22.2	110.3
World Total	**6,499,697,060**	**100.0**	**1,022,863,307**	**100.0**	**183.4**

Table 3.2 reflects an increased Internet usage of 423.9 percent for Africa, compared to a total world growth of 183.4 percent for the reported period 2000–2005.

b) Relationships (Table 3.1, definitions 7-10)

According to Day and Bens (2005:161), the impact of the expansion of Internet connectivity can either be viewed as a threat or as an opportunity to a business. This depends on whether it disrupts or facilitates customer relationships. Dubelaar *et al.* (2005:1253) provide examples of threats and opportunities.

Examples of threats:

- Perception that the Internet is an opportunity
- Potential separation of E-business division from the core business
- Lack of in-house technical skills.

Examples of opportunities:

- Complements existing business strategies
- Strengthens companies' position in the market
- Gives first-mover advantage
- Offers low risk innovation
- Increases customer interaction.

In both of these examples (threats and opportunities), e-commerce and its connectivity should be viewed as enhancing dialogue between customers, leading to improved service delivery to retain customers by reducing defections of customers to competitors (Daniel & Myers 2000:9-20).

c) Transactions (Table 3.1, definitions 11-13)

e-Commerce is associated specifically with electronic transactions in which something of value is exchanged for monetary value. Day and Bens (2005:164) identify three factors brought about by Internet connectivity that affect business activity:

- **Ability of relationship leaders to leverage the Internet to extend their lead** – Businesses that already excel at managing customer-relationships are best equipped to capitalise on the opportunities that Internet connectivity offers. This translates to businesses that are able to anticipate, at an early stage, how to use the Internet. Furthermore, how to connect to customers, how to exploit the use of the Internet faster and who could easily implement such initiatives.

- **Modest transformative impact of new market models** – At the peak of the dot com boom in 2000, it was believed that anything was possible and that the old (or traditional) rules for reaching and serving markets were no longer valid. Various "... pronouncements about the possibilities for *reverse auctions, open exchanges, buying-groups, infomediaries and name-your-own price models captured the collective imagination*" (Day & Bens, 2005:164). It was relatively easy to convince new entrants to e-commerce to participate in online markets. No one had much experience and it all sounded credible and a real business opportunity.

- **Viewpoints of the Internet on business channels** - Two opposing viewpoints are revealed on how businesses consider the impact of the Internet on their distribution channels. One viewpoint supports the notion that the Internet was initially accepted as another channel to reach existing customers. Furthermore, it was a possible way to find new customers and a solution to the question of how to synchronise proliferating channels. Opposing this viewpoint was the fear that the Internet would encourage disintermediation and incite more channel conflict.

d) Disruptive innovation (Table 3.1, definition 14)

According to Lee (2001:349) sustaining innovations are those technologies or processes that foster improved product performances or business operations. However, disruptive technologies are those that initially tend to degrade performance, but promise long-term potential. Attributes available from e-commerce adoption in terms of e-commerce innovation are: new products and services, new markets, customer loyalty, market leadership, optimised business processes and enhanced human capital harnessing technology (Lee, 2001:350). Rogers (1995) Diffusion of Innovation Theory is regularly used in the context of adoption of technology, as it has proved to be a robust theory despite the fact that the theory is over forty years old.

3.3.2 e-Commerce working definition

The methodology used to formulate this working definition consisted firstly, of an extensive literature review on e-commerce definitions and categorised in Table 3.1, consisting four categories (technology, relationships, transactions and disruptive innovation). Secondly, each category was further investigated using only the keywords or descriptive phrases. Thirdly, the most relevant keywords or phrases from each category were selected to be included in the working definition. Finally the e-commerce working definition was formulated by considering the keywords and descriptive themes presented in sections (a) to (d) below:

a) Technology

Fast rate of advanced technology, small firms can compete in international markets, e-commerce sub-set of e-business, telecommunication technologies support trading in goods and services, use of broadband, standardised open standard.

b) Relationships

Maintaining business relationships, business processes, office automation, production processes, transactions by means of Internet-based technology, transforms internal/external relationships to create value, exploit market opportunities by rules of the connected economy, customer relationship management, supply chain management, management of distribution channels.

c) Transactions

Buying and selling of products and services requiring physical or digital transportation between locations, exchange of value and/or Internet-based technology to accept payments online.

d) Disruptive innovation

Changing the way businesses conduct business, interorganisationally (external) rather than organisationally (internal).

From the foregoing discussions on e-commerce and the interpretation of the various definitions obtained from literature, a working definition of e-commerce is stated as:

> **e-Commerce:** *Conducting electronic transactions within the dynamics of inter-organisational business processes, where small firms compete with larger counterparts, fostering internal and external relationships for physical or digital products or services using telecommunication technologies and classified as an innovative yet disruptive technology.*

3.3.3   e-Business defined

The terms e-business and e-commerce are often used interchangeably (as discussed in section 3.3) however, it is important to define e-business to understand how it relates to e-commerce used in this research. The differences need to be stated and each term treated separately. e-Business is viewed by Cagliano, Caniato and Spina (2003:1143) as:

> "...The increasing importance and role of web-technologies to support company operations (e-business) is widely acknowledged both by practitioners (e-business reports have been published by all of the more important consulting firms – such as Forrester Group, Gartner Group, Morgan Stanley, KPMG, Accenture etc.)". Furthermore, Evans and Wurster (1999:84) and Skjoett-Larsen (2000:383-384) support the above findings. Gerstner (2000:175) noted "... the e in e-business came to stand for easy. Easy money. Easy success. Easy life. When you strip it down to bare metal, e-business is just business. And real business is serious work".

Investigation into literature revealed ten e-business definitions. These definitions were grouped, similarly to the manner of defining e-commerce into four keyword categories (discussed in section 3.3.2); according to the frequency of keywords or overriding descriptive phrases appearing in the e-business definitions. Each keyword was categorised and the definitions ordered chronologically and depicted in Table 3.3.

Although this is not an exhaustive list of definitions, the following categories of keywords and the corresponding frequency of occurrences in the definitions (in parenthesis) were identified:

- Business value (6 definitions)

- Relationships (1 definition)

- Management (1 definition)

- Channel marketing (2 definitions).

Table 3.3 e-Business definitions

#	Author	E-business definition
Business value		
1	Wigand (1997:5)[6] cited by Krell and Gale (2005:117)	• The seamless application of information and communications technology from its **point of origin to its end-point** along the **entire value chain of business processes**...conducted electronically and designed to enable accomplishment of a business goal
2	Searle (2001)[7] cited by Simpson and Docherty (2004:315)	• There is a difference between e-commerce and e-business in terms of business benefits, extent of **organisational change** and sophistication in that e-commerce is part of e-business
3	Fillis, Johansson and Wagner (2004b:350)	• e-Business offers the opportunity to **increase market share** and longer-term profitability, as well as providing a fairer environment where **businesses of all sizes can compete more equally** in the marketplace, then the reason behind why many smaller firms have yet to embrace both the technology and the new business practice must be better understood
4	Lal (2005:183)	• ICT in general, and e-business in particular, lead to **reduction in co-ordination costs** and engenders efficient electronic markets
5	Drew (2003:81)	• In B2B e-commerce [Sic. B2B e-commerce meaning e-business] the development of large online marketplaces and auctions potentially enhances the **power of large firms to squeeze the margins of smaller suppliers**
6	Lal (2005:183)	• In (OECD 2000) study, e-business is defined as "...the sale or purchase of goods and services, **whether between business, households, individuals, governments and other pubic or private organisations, conducted over computer mediated networks**"
Relationships		
7	Gerstner (2000:172)	• A vocabulary was needed to help the industry, customers and even IBM employees to understand transcending access to digital information and online commerce - **reshapes every kind of relationship** and interaction among businesses and people
Management		

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6 Wigand, R.T. 1997. Electronic commerce definition, theory and context. *The Information Society*, 13(1):1-16.
http://www.indiana.edu/~tisj/readers/abstracts/13/13-1%20Wigand.html[2 June 2006].

7 Searle, J. 2001. UK online for business. http://www.ukonlineforbusiness.gov.uk [24 November 2004].

8	Lowson and Burgess (2003:154)	• Management of the **internal and external systems, resources and technologies** that create and deliver the firm's primary products and/or services
	Channel marketing	
9	Louvieris and Oppewal (2004:262)	• The importance of socio-technical model of **channel management** may be a key aspect for the success of the Internet-based e-Business company in the computer mediated e-Business environment
10	Lal (2004:506)	• It is about business innovation, about serving new and changing markets • Through e-business, companies seek to **reshape the way they go to markets** and the manner in which customers buy products and services

Each of the four identified categories in Table 3.3, were reviewed by analysing additional sources from literature and they are described in sections (a) to (e) below.

a) Business value (Table 3.3, definitions 1-6)

It is evident that e-business offers the opportunity to increase the market share of a business and to secure long-term profitability where both smaller and larger businesses can compete equally. There is a danger of increasing inter-business competition due to closing the gap between customers and suppliers via the Web. However, the increased connectivity may add more business value to businesses when connected to a network of customers and other businesses, to ultimately, serve each business' customers more efficiently.

b) Relationships (Table 3.3, definition 7)

Customers and suppliers are moving closer and the emphasis has changed to building relationships between businesses, manufacturers and customers. Hoque (2000:7) elaborates by stating that electronic enabled commerce "... is built not just on transactions but on building, sustaining and improving relationships, both existing and potential" (Hoque, 2000:7). For large multi-nationals and small businesses alike, the e-business world still needs sound business procedures necessary for sustainability.

51

c) Management (Table 3.3, definition 8)

Technologies and business resources have to be well-managed in order to fulfil management's role to supply products with acceptable quality to customers within an acceptable time frame, yet still make a profit. Beckinsale, Levy and Powell (2006:362) found that when a start-up business emerges, the management skill resides in the owner – at least for a while. When an e-business emerges, managers need to be employed to manage the increased complexity of the ensuing changes in organisational structure.

d) Channel marketing (Table 3.3, definitions 9-10)

The expansion of the Internet by enabling a set of web-based applications is opening up new channels of marketing to businesses as more businesses and people get connected to the Internet. Although technology plays a major role, business processes, applications have to be used to provide the correct message to consumers. According to Mohammed *et al.* (2002:4) "... Internet marketing is the process of building and maintaining customer relationships through online activities to facilitate the exchange of ideas, products and services that satisfy the goals of both parties".

e) Categorising e-business

Rozwell, Spieler, Scardino and Ross (2000:3) state that e-business is divided into three categories:
- Business within Business (Intra-Company)
- Business-to-Consumer (B2C)
- Business-to-Business (B2B).

Furthermore, Rozwell *et al.* (2000:3-4) state the latter two categories are used most frequently.

B2C – Within this context, the focus is mainly on revenue generation but Rohm, Kashyap, Brashear and Milne (2004:372) qualify this by stating "...the transfer of goods and services to the individual customer".

c) Management (Table 3.3, definition 8)

Technologies and business resources have to be well-managed in order to fulfil management's role to supply products with acceptable quality to customers within an acceptable time frame, yet still make a profit. Beckinsale, Levy and Powell (2006:362) found that when a start-up business emerges, the management skill resides in the owner – at least for a while. When an e-business emerges, managers need to be employed to manage the increased complexity of the ensuing changes in organisational structure.

d) Channel marketing (Table 3.3, definitions 9-10)

The expansion of the Internet by enabling a set of web-based applications is opening up new channels of marketing to businesses as more businesses and people get connected to the Internet. Although technology plays a major role, business processes, applications have to be used to provide the correct message to consumers. According to Mohammed *et al.* (2002:4) "... Internet marketing is the process of building and maintaining customer relationships through online activities to facilitate the exchange of ideas, products and services that satisfy the goals of both parties".

e) Categorising e-business

Rozwell, Spieler, Scardino and Ross (2000:3) state that e-business is divided into three categories:

- Business within Business (Intra-Company)
- Business-to-Consumer (B2C)
- Business-to-Business (B2B).

Furthermore, Rozwell *et al.* (2000:3-4) state the latter two categories are used most frequently.

B2C – Within this context, the focus is mainly on revenue generation but Rohm, Kashyap, Brashear and Milne (2004:372) qualify this by stating "...the transfer of goods and services to the individual customer".

B2B – Within this context, the focus is primarily on delivering operational gains with trading partners and supply chain participants. Rozwell *et al.* (2000:3) further state that "... these paths are most often distinct within enterprises, but enterprises that integrate B2B and B2C technology infrastructures will gain competitive advantage over enterprises that manage the technologies separately". Rohm *et al.* (2004:372) state "...B2B e-commerce refers to the procurement, logistics and administrative processes that occur between firms".

Two other categories highlighted by Rayport and Jaworski (2001:21) are Consumer to Consumer (C2C) and Consumer to Business (C2B). These two categories are not within the scope of this research and therefore are not discussed. As far as the involvement of Governments with electronic transactions are concerned, a number of additional categories are defined: G2C, G2B, G2G and G2E (Ndou, 2004:22). The new terms are: *G* (Government) and *E* (Employees). However, in the context of e-Government studies and applications, the *C* normally refers to Citizens and not to Consumers as is customary in business. These terms also fall outside the scope of this research and are therefore not discussed further.

3.3.4 e-Business working definition

The methodology used to formulate this working definition consisted firstly, of an extensive literature review on e-business which revealed ten definitions. Four categories were created under which the definitions were categorised according to keywords or descriptive phrases of each definition. The categories described in Table 3.3 are (business value, relationships, management and channel marketing).

Secondly, each category was investigated again using only the keywords or descriptive phrases. Thirdly, the most relevant keywords or phrases from each category were selected to feature in the working definition. Finally, the e-business working definition was formulated by considering the keywords and descriptive themes presented in sections (a) to (d) below:

a) Business value

Seamless application of ICT along value chain, accomplish business goal, different business benefits to e-commerce, market share increase,

businesses of all sizes compete more equally, new business practice to be better understood, reduction in coordination costs, efficient electronic markets, large firms squeeze small firm margins in auction and online marketplaces, sale or purchase between: businesses, households, individuals, governments, public or private organisations, over networks.

b) Relationships

Access to digital information and online commerce reshape every kind of interaction among businesses and people.

c) Management

Focus on internal and external systems, resources and technologies delivering primary products/services.

d) Channel marketing

Channel management, business innovation, serving new and changing markets, reshape the way going to markets, manner customers buy products and services.

From the foregoing discussions on e-business and the interpretation of the various definitions obtained from literature, a working definition of e-business is stated as:

e-Business: *Increases market share by reducing coordination costs along the value chain buying and selling products and services to business, households, individuals, governments, public or private organisations, and in the process reshaping businesses, as far as internal and external systems utilising channel marketing for innovative business practice utilising telecommunication networks.*

3.3.5   e-Commerce adoption defined

The OED (2003:22) defines the term *adopt* as:
> "... **take** (person) into a *relationship* he did not previously occupy; take (**idea** etc.) from some one else; **choose**".

54

Although this definition is clearly embedded in the social realm, the three words *take, idea* and *choose* are all relevant to e-commerce adoption. By way of an example, e-commerce (the entity) is chosen, taken or adopted into a business. The adoption happens irrespective of whether the adoption is into a new business, or it transforms an existing business into an *electronic business.* Furthermore, the word *relationship* is of paramount importance as the concept of relationships, in this context, is synonymous with fostering good customer relationships. Investigation into the literature focusing on e-commerce adoption, revealed a number of e-commerce adoption definitions.

Six descriptive definitions were grouped into two keyword categories. These categories were chosen according to the frequency of keywords or overriding descriptive phrases appearing in the e-commerce adoption definitions. Each keyword category was ordered chronologically and they are described in Table 3.4.

The following two categories of keywords and the corresponding frequency of occurrences in the definitions (in parenthesis) were identified:

- Causes – what led to e-commerce adoption (3 definitions)
- Effects – the result of e-commerce adoption (3 definitions).

a) Causes for e-commerce adoption (Table 3.4, definitions, 1–4)

The decision to adopt e-commerce may initially be a difficult choice for SMMEs. Although e-commerce adoption promises some advantages such as cost saving, reaching customers, gaining market share and having a competitive advantage, certain processes, expenses or other actions or motions have to be undertaken before these advantages can be realised. MacGregor (2004:61) argues it is evident that in order for small businesses to compete with their larger counterparts in the e-commerce environment, many are starting to collaborate in networks and this may be a new concept for some businesses. According to Tagliavini, Ravarini and Antonelli (2000:292), e-commerce adoption changes detected in organisations are manifested mainly in the internal transformation of relationships. Often this causes changes to a company's value chain where suppliers have to start negotiating more with retailers. The danger is that

relationships with customers may become more remote and impersonal (Reynolds, 1997[8] cited by Tagliavini *et al.*, 2000:292).

b) Effects of e-commerce adoption (Table 3.4, definitions, 5–7)

The use of the Internet for conducting e-commerce, changes the way companies operate and it has an effect on how business owners, managers or shareholders have to change the direction of their businesses. This argument is based on aspects such as cost of change, lack of sufficient knowledge and uncertainty of the merits of adoption. Businesses rarely want to be changed *inside out* unless it is for a good reason.

Table 3.4 e-Commerce adoption definitions

#	Author	E-commerce adoption
	Causes - for e-commerce adoption	
1	MacGregor and Vrazalic (2005b:514)	• E-commerce adoption is a **cost effective way to reach global customers** and to **compete on even terms with larger counterparts**
2	Castleman (2004:34) refers to a report produced by APEC(1999:12)	• Adoption of e-commerce has been advocated as a way of **reducing transaction costs**, gaining market share, streamlining business processes, achieving **competitive advantage** and **improving relationships** with business partners for improved business performance
3	O'Keefe, O'Connor and Kung (1998:630) cite Lambkin, 1988)[9]	• **Early adopters** of IT (e-commerce) can gain an **advantage** in the same way that early entrants into a market can gain an advantage
4	Fillis, Johannson and Wagner (2004a:182)	• The implications for non-adoption of e-business may vary where **product opportunities** may be lost due to late market entry when firms eventually decide to embrace the new technology, where often new types of products and services would already have entered the market
	Effects - of e-commerce adoption	
5	Damanpour (2001:16)	• Adopting the Internet's connectivity aspect for business has **changed the way companies communicate internally and externally** • **Internally**, how they buy and sell on the Web and share information. **External** communication activity increases efforts to understand **customers, suppliers, business partners and competitors**

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[8] Reynolds, J. 1997. *The Internet as a strategic resource: evidence from the European retail sector: managing IT as a strategic resource*. New York: McGraw-Hill.

[9] Lambkin, M. 1988. Order of entry and performance in new markets. *Strategic Management Journal*, 9(special issue):127-140.

| 6 | Ratnasingham (2004:76) | • Businesses are often too small and therefore unable to provide the financial resources to retain the appropriate **skill levels of staff** needed to implement or oversee e-commerce initiatives |
| 7 | Quaddus and Achjari (2005:127-129) | • E-commerce adoption encompasses a **wide spectrum of business processes** and **configuration of technology resources** to facilitate how business managers perform their tasks, **interact with customers** and conduct their business |

Tagliavini *et al.* (2000:290) find that lack of knowledge about the advantages e-commerce may offer organisations is an obstacle to e-commerce adoption. Furthermore, this lack of knowledge may be the reason why many small businesses do not get properly started or eventually fail. In either case, they are not able to benefit from online trading opportunities.

According to Levy and Powell (2003:175-176), SMEs have a lack of technical skills to manage the implementation of e-commerce systems as they tend to employ generalists rather than specialist. Furthermore, SMEs outsource most of their ICT matters. However, it has been known that a lack of technical skills compromises an organisation's ability to take advantage of the benefits and opportunities associated with e-commerce adoption (Chau & Turner, 2002:4).

3.3.6 e-Commerce adoption working definition

The methodology used to formulate this working definition was firstly, by conducting an extensive literature review on e-commerce adoption which revealed six definitions. Two categories were created under which the definitions were categorised according to each definition's keyword or descriptive phrase. This resulted in a cause/effect scenario. Put simply, some definitions concentrated on *causes* (providing reasons) to adopt e-commerce and others, focused on the *effects* (or outcome) of e-commerce adoption and these categories are depicted in Table 3.4. Secondly, each category was further investigated by using only keywords or descriptive phrases. Thirdly, the most relevant keywords or phrases from each category were selected to feature in the working definition.

Finally, the e-commerce adoption working definition was formulated by considering the two keywords and descriptive themes presented in (a) and (b) below:

a) Causes – keyword populated
cost effective to reach global customers, small businesses to compete on even terms with larger firms, reducing transaction costs, gaining market share, streamlining business processes, competitive advantage, improved relationships with business partners, improved business performance, early adoption gain business advantage, lost opportunities if slow to adopt.

b) Effects – keyword populated
changes the way firms communicate internally and externally, how they buy and sell, how they share information, understanding: customers, suppliers, business partners and competitors, non – adoption by small firms due to lacking financial resources, cannot retain skills level of staff, wide spectrum of business processes, configuration of technology resources, interact with customers.

From the foregoing discussions on e-commerce adoption and the interpretation of the various definitions obtained from literature, a working definition of e-commerce adoption is stated as follows:

e-Commerce adoption: *Cost effective way to reach global players, gaining market share, streamlining a wide spectrum of business processes and technology for competitive advantage utilising telecommunication networks, improving relationships, advantageous to early adopters, willing to change and improve communication - internally and externally, ensuring sufficient resources and skilled-staff.*

3.4 e-COMMERCE ADOPTION TRENDS

This section focuses on trends of e-commerce adoption from an international and African country perspective. It is evident that the gap between developed and developing countries pertaining to ICT is large in Africa. Furthermore, research

sub-question one was formulated to explore e-commerce adoption trends and reads as follows:

What are the international and local trends in adopting e-commerce?

Businesses all over the world became aware of a number of advantages associated with e-business by achieving competitive advantage in areas such as globalisation, deregulation, technology change and forging societal relationships. This assisted the expansion of e-commerce adoption while businesses started changing their ways of conducting business (Gertsner, 2000:172). Fillis, Johansson and Wagner (2003:338) proposed that inhibiting factors were evident and suggested that the motivation and interest of small business owner-managers were important key-factors in understanding attitudinal barriers when faced with technology adoption decisions. The importance of considering human factors in e-commerce adoption, highlighted by Ratnasingham (2004:71-75), came as a result of top management's lack of commitment to adopt e-commerce, resulting in becoming inhibiting factors. Senior management did not always have the strategic vision required to initiate adoption of e-commerce and associated ICT investments.

Fillis, *et al.* (2003:342) further found that the global e-commerce phenomenon could be viewed as a strategic weapon for smaller firms to gain a competitive advantage in global market places over their larger counterparts. For some firms who had already adopted e-commerce, access to international markets became available. According to Porter (2001:62-63), using the Internet in isolation reduces the chances of businesses achieving e-commerce success. Porter's findings were confirmed by Daniel (2003:233) who suggested Internet and web-related technologies were being increasingly integrated into business strategies, goals and strengths. Grimshaw, Breu and Myers (2000:129) conferred that the extent of such integration affected the benefits to businesses. Increased levels of integration resulted directly in increased benefits to businesses. In the case of dealing with trends in international and local e-commerce adoption issues, the starting point was the working definition of e-commerce adoption, developed earlier in this chapter.

Although no less than twenty factors were included to formulate this working definition, the two main themes that emanated were: *causes* – the reasons why e-commerce was adopted and *effects* – the implications of e-commerce adoption. These two themes were used as the guiding criteria in exploring the literature for both International and local e-commerce adoption initiatives.

3.4.1   International e-commerce adoption trends

From 1997, a trend emerged whereby Internet-based businesses started to move away from storefronts, content websites, search engines, shopping malls and incentive-and web-presence based sites, to more sophisticated e-commerce websites and many firms started developing their own websites. However, some businesses resisted this trend and preferred to keep their focus on more traditional methods to conduct business (Chasten & Baker,1998:250; Fillis *et al.*, 2003:336-337). e-Commerce was initially used as a means firstly, to assist businesses accelerate marketing, buying and selling and secondly, to provide services to customers (Thatcher & Foster 2003:1) and thirdly, to forge stronger links between suppliers and customers to "... jointly optimise channel performance across the industry value chain" (Lee, Pak & Lee, 2003:350). From the literature explored, it is evident that adoption factors such as critical success factors, realised business benefits and a number of advantages became apparent as a result of using the Internet and associated web-based technologies (Feindt *et al.*, 2002:52-61). However, these factors influenced business decision-makers either for or against, the adoption of e-commerce.

To deal with the trends of e-commerce adoption from an international perspective, two routes were identified. The first route identified representative (or appropriate) international countries, and the second route identified African developing countries. African countries form an important part of the economy in Africa, even in terms of online trading and thus they could not be excluded. In each of these two routes, a number of international and African countries were identified and used for in-depth analysis. Literature pertaining to each selected country was used to summarise and tabulate the causes and effects of e-commerce adoption.

3.4.2   Country selection

Countries for this research were selected based on the combination of three indices: e-Readiness Rankings (2005), Internet World Statistics (2005) and Networked Readiness Index (2006). From these indices, the top 20 countries in the world were selected and depicted in Table 3.5.

Table 3.5   Combined indices presenting the twenty top ranked countries (Source: adapted from e-Readiness Rankings, 2005; Internet World Statistics, 2005; Networked Readiness Index, 2006)

Rank	e-Readiness Rankings	Frequency (matches)	Internet World Statistics	Networked Readiness Index
	Index #1		Index #2	Index #3
1	Denmark	2	USA	USA
2	USA	3	China	Singapore
3	Sweden	2	Japan	Denmark
4	Switzerland	2	India	Iceland
5	UK	3	Germany	Finland
6	Hong Kong	2	UK	Canada
7	Finland	2	Rep. Korea	Taiwan
8	Netherlands	3	Italy	Sweden
9	Norway	2	France	Switzerland
10	Australia	3	Brazil	UK
11	Singapore	2	Russia	Hong Kong
12	Canada	3	Canada	Netherlands
13	Germany	3	Indonesia	Norway
14	Austria	2	Spain	Rep. Korea
15	Ireland	2	Mexico	Australia
16	New Zealand	1	Australia	Japan
17	Belgium	1	Taiwan	Germany
18	Rep. Korea	2	Netherlands	Austria
19	France	2	Poland	Israel
20	Israel	2	Turkey	Ireland

Note: Bold typeface country names indicate matches in all three indexes (Index #1, #2 and #3).

Country selection process – For each country presented in Table 3.5, Index #1 (e-Readiness Rankings) was used as the starting point and the frequency of matches across all three indices determined, creating the Frequency column. The countries satisfying all three criteria were found to be in the top ten countries listed and more likely to represent e-commerce adoption readiness. These were the USA, UK, Netherlands, Australia, Canada and Germany. However, due to the fact that the selected countries were all Western or European countries, the

researcher decided to include Singapore, the only Eastern country, although only supporting two matches.

The three indices (e-Readiness Ranking, Internet World Statistics and Networked Readiness Index) each contain their own merits of ranking, with varying degrees of acceptability or appropriateness. However, after further investigation, the e-Readiness Ranking was chosen as the primary index and the remaining two indices as secondary indices. This decision was based on the fact that the e-Readiness Rankings has been in operation for many years, it has been refined over time and it includes many elements making up the readiness factor.

Each of these indices is briefly discussed below:

- **e-Readiness Ranking** – Since 2000, the Economist Intelligence Unit (http://www.eiu.com/) has published annual e-Readiness Rankings for the world's largest economies (e-Readiness Rankings, 2005). A country's *e-Readiness* is a collection of factors that indicates how amenable a market is to Internet-based opportunities, and this is used as a measure of its e-business environment. The Economist Intelligence Unit developed the e-Readiness Rankings together with IBM's Institute for Business Value. Many of the initial criteria were re-weighted over time to reflect the accuracy in determining e-readiness, including broadband access and mobile penetration. New metrics have also been added, such as innovation and the penetration of public-access wireless hotspots. According to Mutula and van Brakel (2006:404) "... The concept of e-readiness *originated as a result of an attempt to provide a unified framework to evaluate the breadth and depth of the digital divide between developed and developing countries...*". This is useful in providing a road map for government to establish strong policy and legislative structures that would increase its population's information awareness. In turn, this assists governments and investors to make informed ICT investment decisions tailored to a country's specific needs.

- **Internet World Statistics** – The Internet World Statistics (2005) provides data from various reliable sources to create an Index, updated regularly - available for use in studies. User information is obtained from data

published by Nielsen-NetRatings (2004), International Telecommunication Union, 2002) and other trustworthy research sources.

- **Networked Readiness Index** – The Networked Readiness Index (2006) measures the propensity for countries to leverage the opportunities offered by ICT for development and increased competitiveness. It also establishes a broad international framework mapping out the enabling factors of such a capacity.

3.4.2.1   United States of America (USA)

a) **Causes** – The USA has been the world leader in developing and using computer technology for use in government, universities and industry. The importance of military spending on this front is well-known (Flamm, 1988[10] cited by Kenney, 2003:2). The USA became the world's leader in adopting computers for commercial or private use, and as is the case in many *countries where one national champion company provides computing power,* research and possibly telecommunications equipment. This is made possible by the awarding of large subsidies by some governments. In the USA, this was no different, where IBM became a global colossus and dominant in many technology areas. Later, IBM became largely ineffective as the evolution of the computer sector in the USA was characterised by repeated waves of new computing and data communications industry entrants whose innovations were more capable and more cost effective than those of the previously dominant vendors (Kenney, 2003:2; Gerstner, 2000:117-135).

During the commercialisation of the Internet, characteristics of the USA's political economy contributed to the head-start that USA firms enjoyed and to their ability to grow rapidly, although some failed after the 2000 National Association of Securities Dealers Automated Quotations (NASDAQ) system decline. Most importantly, through the NASDAQ exchange, massive capital *markets were created in which thousands of technology-based firms* successfully took listings. This practice allowed early-stage investors to adopt a portfolio strategy, diversifying risks across several investments. It also created a viable refinancing mechanism for Venture capitalists (Kenney, 2003:3). Venture capital has played a central role in the rapid formation of

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[10]   Flamm, K. 1988. *Creating the computer.* Washington, D.C: Brookings Institution.

new dedicated Internet firms that were established to define and occupy the new economic space. With respect to the Internet there were three outstanding, advantageous and unique telecommunications infrastructure features comprising the USA national system of innovation.

They were:

- unique telecommunications infrastructure
- active government in funding university research
- a capable set of private sector institutions dedicated to funding (including venture capital) new high-technology enterprises.

The USA had an extensive research-based university system with a number of world-class engineering and science departments that were among the largest and best funded in the world. This was complemented by a large number of global-class corporate research laboratories, led by firms such as AT&T/Lucent's Bell Laboratories, IBM's Yorktown Heights and San Jose Laboratories and Xerox's Palo Alto Research Center, to name a few. Prominent institutions were thus able to create a large pool of engineers and scientists. In addition to the available expertise and knowledge base, the ease of adoption of the Internet and the Web was enhanced by the diffusion of personal computers, at work using Local Area Networks (LANs) particularly in institutional environments (Von Burg 2001[11] in Kenney, 2003:3) and modems for home PCs (Jimeniz & Greenstein, 1998[12] in Kenney, 2003:3).

b) **Effects** – The first major start-up business attracting Venture capital was a firm dedicated to exploiting the WWW – Netscape. Netscape was established in April 1994, by *Jim Clark*, the founder of Silicon Graphics Inc. and *Marc Andreessen*, the leader of the team that created Mosaic (Cusumano & Yoffie, 1998[13] cited by Kenney, 2003:10). USA based global portals such as Yahoo!, Excite, Altavista and Infoseek successfully penetrated foreign markets and, by November 2000, Yahoo! was dominant in 23 overseas operations.

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[11] Von Burg, U. 2001. *The birth of the local networking industry*. Stanford, Calif.: Stanford University Press.

[12] Jimeniz, E. & Greenstein, S. 1998. *The emerging Internet retailing market as a nested diffusion process*. Manuscript, Department of Management and Strategy, North-Western University, Chicago, IL.

[13] Cusumano, M. & Yoffie, D. 1998. *Thinking beyond lean: how multi-project management is transforming Toyota and other companies*. New York: Free Press.

Another group of websites were those involved in consumer-to-consumer (C2C) e-commerce. Because C2C sites were not based on direct sales, their profits came from other revenue sources such as advertising, commissions, referral fees and so on. The premier example is the auction site e-Bay, which was established in September 1995 and grew rapidly to be the largest C2C auction site on the Internet (Kenney, 2003:13).

Many firms, including Wal-Mart, Ford and General Motors, operated sophisticated EDI (Electronic Data Interchange) systems with a core group of suppliers and customers, in addition to internal company communication processes. FedEx and Dell Computers, for example, began integrating the Internet into their operations as early as 1995. Many firms started recognising the possibilities posed by the Internet from 1997. The brick-and mortar retail industry was especially slow in responding to establishing websites after 1998, in contrast to the acceptance of catalogue-based firms such as REI, Eddie Bauer and Land's End, moving more rapidly. The response of manufacturers was more variable with some success cases, for example, Cisco and Intel began online customer service in 1995 and 1996, respectively (Kenney, 2003:13).

3.4.2.2 United Kingdom (UK)

a) **Causes** – The UK reached their government's target of 1.5 million SMEs connected to the Internet by 2001, although it lagged in connectivity behind countries such as Sweden and Germany. By 2002, only about 1percent of SMEs were connected via Broadband. In the UK, SMEs were generally ignorant about e-commerce benefits (Dixon et al., 2002:1). In addition, they experienced severe skills-shortages in the field of e-commerce and tended to be reluctant to adopt e-commerce, although aware that embracing technology into their strategies that could result in a competitive advantage for their businesses (Rohm et al.,2004:372). Although SMEs considered their small size not inferior when competing with larger counterparts in e-commerce, larger companies appeared to dominate the e-commerce space where their ICT and network infrastructures played pivotal roles in facilitating e-commerce growth (Taylor & Murphy, 2004:281; Rohm et al., 2004:372-373).

b) Effects – According to Daniel, Wilson and Myers (2002:253-254), "... 49 percent of SMEs in the UK are connected to the Internet and a further 20 percent intend to be connected in the near future". Although these findings pointed to rapid Internet adoption, research reported gaps when seeking to understand how SMEs were adopting e-commerce. Four distinct *clusters* were identified by Daniel *et al.* (2002:253) in a UK study. These clusters were termed the levels or stages of e-commerce adoption by SMEs. The extensive results (Daniel *et al.*, 2002:260-264) are summarised as:

- **First stage – Developing**

  - email communication systems for customers and suppliers (87%)
  information about company products and services (85%)
  information about company itself (77%)
  Web advertising and branding (77%)

- **Second stage – Communicators**

  extensive use of email with customers and suppliers (90%)
  finding of business information (78%)
  communication between employees (57%)
  electronic exchange of documents and designs with customers and suppliers (56%)
  company, or product and service information (73%, 59% respectively)

- **Third stage – Web presence**

  extensive use of email with customers and suppliers (95%)
  use of the Web for external information (81%)
  communication between employees (63%)
  company, or product and service information (98%, 89% respectively)
  receiving online orders (24%)

- **Fourth stage – Transactors**

  receiving online orders (62%)
  after-sales service (62%)
  undertaking recruitment (44%)
  receiving online payments (7%)

ordering and payment of inventory purchasing (7%)

delivering digital goods (6%).

The United Kingdom Department of Trade and Industry (DTI) launched UK Online for Business that evolved out of the Information Society Initiative. The aim was to assist business on a nationwide e-business initiative focussed on raising SME awareness and understanding and incorporating e-business into their businesses. UK Online for Business was a joint private-public sector initiative to promote e-business to SMEs, consisting of a wider government-industry partnership between all government departments and other organisations. However, UK Online is now superseded by the Department for Business, Enterprises and Regulatory Reform (http://www.berr.gov.uk).

Dubelaar *et al.* (2005:1257) reported on eight case studies conducted in the UK to determine e-commerce adoption practices, in particular the following factors:

- Benefits expected and benefits derived from e-business adoption
- Major impediments to successful e-business adoption
- Major critical success factors in e-business adoption.

Tables 3.6 to 3.8 depict the findings of the factors benefits and benefits derived, impediments and critical success factors.

Firstly, the research findings revealed that the majority of companies derived benefits that were oriented on satisfying customers, increasing company growth and to a lesser extent, processing effectiveness as indicated in Table 3.6.

Table 3.6 Benefits derived from B2C adoption of eight UK companies (Source: Dubelaar *et al.*, 2005:1257)

#	Percentage Benefits derived from e-commerce adoption	%
1	**Process effectiveness**	
	Ordering process automation	25.0
	Integration of online and offline business	12.5
	Improved inventory management	12.5
	Average	**16.7**
2	**Growth**	
	Moderate to high sales	37.5
	Increased learning about online business	12.5
	Generation of additional income	37.5
	Value creation through new Internet channel	37.5

	Average		31.3
3	Customer oriented		
	Winning new customers		50.0
	Internet based trading		50.0
	Clients increasingly using web medium		50.0
	Average		50.0
	Total average		32.7

Secondly, online business aspects produced more impediments than offline operations. Poor performance measures exist for online business as well as technical and integration issues. Capital investment does not seem to be a major factor, ranked lowest of the impediments. This is depicted in Table 3.7.

Table 3.7 Impediments of B2C adoption of eight UK companies
(Source: Dubelaar et al., 2005:1258)

#	Percentage Impediments from e-commerce adoption	%
1	Lack of capital investment	12.5
2	Lack of employee commitment	12.5
3	Lack of in-house technical expertise	25.0
4	Low level of integration between offline and online business operations	25.0
5	Poor performance measurement	50.0
6	Absence of fully integrated online experience	37.5
7	Inadequate response to market changes	37.5
8	Problems with website speed, system capacity and integration with backend system	37.5
9	Limited customer knowledge	25.0
	Average	29.2

Finally, strong customer focus, clearly defined performance measures and a clear link between value proposition and measures are evident. Incremental development process of online trading presents Critical Success Factors (CSFs) as well as monitoring of competitors. These are depicted in Table 3.8.

Table 3.8 CSFs of B2C adoption of eight UK companies
(Source: Dubelaar et al., 2005:1261)

#	Percentage Critical Success Factors from e-commerce adoption	%
1	Strong customer focus	100.0
2	Clearly defined performance measures	63.0
3	Articulation of value proposition	37.5
4	Link between measures and value proposition	12.5
5	Incremental development process	12.5
6	Monitoring competitor activity	12.5
7	Internal process management	25.0

8	Building trust	12.5
	Average	**34.4**

The UK government's UK Online Report (2002) set the target for the UK to have the most extensive and competitive Broadband market in the G7 by 2005. Whilst the strategic importance of the wide availability of inexpensive bandwidth was universally acknowledged, the reality is that Broadband in Britain has grown less swiftly than either businesses, consumers or the government anticipated. Broadband availability in the UK was behind world-leading levels (67 percent for all UK technologies) in July 2002, against 90 percent in Germany and Sweden and 80 percent in Canada (Jutla, 2004:3).

3.4.2.3 The Netherlands

a) **Causes** – In 2000, the Dutch government embarked on a central campaign, using the slogan "... Nederland gaat digitaal" (The Netherlands go digital) with the intention to modernise and change many aspects of the Dutch society. The goal was to proactively stimulate the use of ICT in all layers of the Dutch society, by the ordinary citizen, by the government, in education and healthcare or by companies (Iacob, Boekhoudt & Ebeling, 2004:2). The main supporters behind this large-scale and ambitious program were five ministries (Economic Affaires; Education, Culture and Sciences; Justice; Transport, Public Works and Water Management; and Interior Affairs). Their coordinating and financing role was directed toward specific targets in their areas of responsibility.

- The Ministry of Interior Affairs took care of the diffusion of ICT in the relationship between the citizen and the state and in society in general. For instance, the city halls of the big cities received support in opening digital offices and in providing services for citizens online, as well.

- The Ministry of Justice coordinated the development of a legal framework to regulate the use of the Internet for communication and business activities (including e-commerce).

- Plans were also made for the development of a solid electronic communication infrastructure under the supervision of the Ministry of Transport, Public Works and Water Management.

- The Ministry of Education, Culture and Sciences coordinated the diffusion of ICT in the educational system.

At the time this program started, almost half of the SMEs in the Netherlands and thus were not even connected to the Internet, and therefore they became the primary target of this campaign. For many years, Dutch SMEs were one of The Netherlands' main economic strengths and one of the most important sources of wealth creation and employment. No less than 99 percent of private enterprise in The Netherlands consisted of medium and small-scale businesses. They provided employment for 2.3 million people (60 percent of the Dutch labour force) and accounted for 52 percent of the national income generated in the private sector (Iacob *et al.*, 2004:1).

b) **Effects** – According to Walczuch, van Braven and Lundgren (2000:567) in 2000, only 7 percent of Dutch SMEs used the Internet to pay for services and conduct e-commerce. Of 944 businesses approached in the study, 97 percent used email or had email addresses. Table 3.9 indicates a ranked list of Web applications used.

A follow-up program from the *The Netherlands go digital* initiative was launched for the period 2002–2005 called, "Het MKB in De Digitale Delta" (The SMEs in the Digital Delta). The target group was companies with less than 100 employees and the goals were clear; by the end of the program, two-thirds of the SMEs should be present on the Internet with at least a *shop window* website and two-thirds of the SMEs should be conducting business transactions via the Internet (Iacob *et al.*, 2004:2-3).

Table 3.9   Website applications used by Dutch SMEs (Source: Walczuch *et al.*, 2000:563)

Business Application	Percentage usage
E-mail and e-mail addresses	97
Provision of rational information	90
Promotion of company details and/or products	86
Online ordering	31

Customer service	21
Searching for suppliers	10
Online payments	7
Built-in security	7
Job vacancies	3
Intranet – Information for personnel	0
Extranet	0

3.4.2.4 Australia

a) **Causes** – Pease and Rowe (2003:2) found that for businesses to participate in e-commerce in Australia "... transformation of internal systems and subsequently influences cost, responsiveness to customers, customisation of offerings and the potential emergence of new products and services". Later it was found that although SMEs formed a critical part in the Australian economy, only large businesses had shown advances in adopting ICT, while the same was not found for smaller firms. These SMEs were reluctant to adopt e-commerce for a variety of reasons (Bode & Burn, 2002; Knol & Stroeken (2001:228)[14] cited by Pease and Rowe (2003a:4). Reasons cited for this reluctance of adoption were lack of time, lack of awareness and lack of business opportunities.

Pease and Rowe (2003a:2) identified a number of factors limiting the adoption of e-commerce in Australia:

- e-Commerce was seen as a distraction from core business
- There were significant perceived costs and risks associated with e-commerce
- There was a lack of strategic vision
- There was a lack of realisation of value/benefits from e-commerce to individual SMEs.

b) **Effects** – e-Commerce is now well established in many sectors in Australia. For example, in the financial sector, brokers adopted screen based trading within two days of its introduction (Mustaffa & Beaumont, 2004:86). Furthermore, supermarkets have implemented Internet based order and delivery services. Other sectors include shares markets, theatre tickets and

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[14] Knol, W.H.C. & Stroeken, J.H.M. 2001. The diffusion and adoption of information technology in small and medium sized enterprises through IT scenarios. *Technology Analyst and Strategic Management,* 13(2):227-246.

71

newspaper advertisements and there is evidence that consumers ordered significant volumes of goods via the Internet (Mustaffa & Beaumont, 2002:86).

According to Marzbani, Wong, Holmes, Chick, Ghassemi, and Moore (1998)[15] cited by Mustaffa and Beaumont (2002:86), it is estimated that in 1998, A$1.6 trillion worth of electronic transactions were conducted in Australia. From this, A$55 billion was derived from the B2C segment where 11 percent of all businesses claimed to have a web presence and from these businesses, 35 percent claimed that the Internet was significant to their business operations. This was determined by means of a survey conducted by Yellow Pages (1998:1). The lessons from the Australian experiences, according to Mustaffa and Beaumont, (2004:86) are that "... E-commerce will affect most firms' products and services, supply chains, geographical scope, customer relationships and internal structures". However, they warn that one problem the Australian government needs to address is the prevention of monopolies in the delivery (fulfilment) process of e-commerce.

They found the following reasons for rejecting e-commerce:

- Not suited to the business
- Need for personal contact
- Payment and security issues
- Clients are locals
- Advantages of e-commerce
- Competitive advantage
- Reduced selling costs.

3.4.2.5   Canada

a) **Causes** – The Canadian government has explicitly stated that e-business is part of its innovation strategy. E-commerce has grown rapidly in Canada over the last fifteen years with a value of C$28 billion in 2004, although this represents only a small proportion of the total Canadian economy. However, from a connectivity point of view, 82 percent of larger firms are connected to the Internet (Noce & Peters, 2005:3). However, despite the high Internet

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[15]   Marzbani, R., Wong, C., Holmes, M., Chick, H.,Ghassemi, K. & Moore, P. 1998. *Electronic commerce in Australia.* Canberra: Department of Industry, Science and Tourism. http://www.isr.gov.au/infoind/stats/ecomstat.pdf [30 October 2007].

penetration level, only 34 percent of firms had websites and only 26 percent had interactive websites supporting e-commerce applications. Since the mid-nineties, the banking sector and third parties have responded to barrier issues such as expense of credit card processing fees and now offer inexpensive online credit card processing services to merchants. By 2003, as a result of the combined efforts of government and the private sector, approximately 630 000 of Canada's SMEs were trading online (Jutla, 2004:3).

A major government role is the building and maintaining of infrastructure. In Canada, 60 percent of economic output comes from the SME sector, which is also responsible for 80 percent of national employment, and offers 85 percent of new jobs (Jutla, 2004:1).

Results of the combined efforts of government and the private sector show that approximately 630,000 of Canada's one million businesses are online. Small and medium enterprises employ six out of ten working Canadians. The majority of Canadian businesses are very small, 97 percent of the one million Canadian businesses have less than 50 employees. A positive e-business climate includes access to venture capital, incentives regarding tax issues, human performance rewards and SME incentives for e-business practices. On a national level, SMEs are asking for leadership, consistency and signs of commitment to policy, regardless of political party, from the local, provincial and federal governments who have a tendency to take different approaches to tax regulations, setting standards (e.g. security standards) and building infrastructure and systems (Jutla, 2004:11-13).

b) **Effects** – A trend has emerged in Canada that smaller firms lag behind their larger counterparts as far as e-commerce adoption is concerned. Noce and Peters (2005:7) identified ten barriers to e-commerce adoption in Canada. These barriers have been summarised into two primary barriers:

- **Goods and services do not lend themselves to Internet transactions** – Some business sectors have improved their e-commerce adoption level. For example, in 2000, 56 percent of firms did not engage in e-commerce indicating that their product/service was unsuited, whereas by 2003, this figure had dropped to 44 percent, indicating possibly a greater awareness or understanding of the types of

products or service more suited to e-commerce trade. According to Noce and Peters (2005:6), it appears that the nature of product/service barriers differs according to firm size and it is evident that the smaller businesses are starting to adopt e-commerce more readily, being more flexible and easier to effect change in.

- **Firms prefer to use current business model** – Small firms tend to maintain their current business model more than larger firms. However, there is no consistency in small firms always lagging, as some of the other barriers (ten barriers mentioned above) affect small and large firms differently.

3.4.2.6   Germany

a) **Causes** – The German economy is strong from evidence based on the financing and growth of new economy businesses and evident that IT became the fastest growing segment of the German economy from the 1980s. It has now become the largest new employment generator. Whereas few entrepreneurial start-ups existed up to the early 1990s, many technology start-up businesses have since been founded, most with Venture capital, to the point where many technology firms have successfully taken initial public offerings on various stock markets (Casper, 2003:3-4). Furthermore, Germany's IT sector, driven in recent years by the Internet, is the third largest in the world, behind the United States and Japan and the largest in Europe. This market grew by over 10 percent per annum during the late 1990s, slowing down to around 5 percent in 2001.

Germany has a high concentration of Internet connected households (refer to Table 3.5 – Germany is ranked 5th for Internet usage) using ISDN technology. this is a direct result of early investments in digital technologies by Deutsche Telekom's (DT) public predecessor, the Deutsche Bundespost, channelling large research and development grants to Siemens during the mid 1980s. The goal was to create international acceptance of switching technologies for Siemens, integrating voice and data. However, this had a negative impact on current efforts to role-out Broadband, required for e-commerce (Casper, 2003:4).

74

e-Commerce adoption has been hampered, to some extent, by the dominance of large German business and government policies. For example, Siemens' initial proprietary systems later had to adopt international standards surrounding ISDN (Integrated Signal Digital Networking), but could not gain a strong foothold in the Internet networking technologies arena (Cawson *et al.*, 1990[16] cited by Casper, 2003:4). Siemens was reduced to being a weaker player in high-capacity digital networking technologies including wireless equipment, only recently recovering through purchasing several US-based companies and emerging as a competitor in Internet-based switching technologies. Siemens also developed competencies in IP-driven (Internet Protocol) network equipment markets (Gilder 2000[17] cited by Casper, 2003:4).

During the mid 1990s, a number of e-commerce software start-up firms such as Intershop, Internolix and Openshop emerged as the most successful group of German entrepreneurial start-ups to exploit Internet markets by developing customisable software modules designed to assist firms to organise e-commerce reported by Casper (2003:20-21), involving:

- Creation and updating of a kernel of e-commerce applications
- Inventory tracking
- Accounting systems
- Order completion
- The creation of visible web-interfaces for customers.

b) Effects – A number of start-up German software firms later gravitated to segments with relatively low technological intensity due to the generally, unchanging structure of the German labour market and the lack of technological drivers required by large businesses. Start-up businesses could not easily *hire and fire* personnel, creating limitations to German Internet firms, in that they could not easily engage in projects in which human resource competencies were required to move quickly. German firms generally anticipated that most engineers opted for long employment periods.

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[16] Cawson, A., Morgan, K., Webber, D., Holmes, P. & Stevens, A. 1990. *Hostile brothers: competition and closure in the European electronics industry.* Oxford: Clarendon Press.

[17] Gilder, G. 2000. *Telecosm: how infinite bandwidth will revolutionise our world.* New York: Free Press.

According to Bertschek and Fryges (2002:6), from a stratified sample of about 11 000 German firms with at least five employees, Table 3.10 was constructed and ranked in order of usage.

Table 3.10 Activities of German firms using the Internet
(Source: Bertschek & Fryges, 2002:6)

#	Business Activity	Usage %
1	Information/communication	51
2	Electronic banking	44
3	Customer services	27
4	Advertising/marketing	22
5	B2B	12
6	Ordering products and services	12
7	B2C	9
8	Recruitment	8

B2C in Table 3.10 is listed in seventh place, with a low usage percentage of 9 percent. This indicates that not much attention was given to customers participating directly in e-commerce by 2002.

Bertschek and Fryges (2002:8) further found that the industry sectors using the Internet were:

- Computer and telecommunication services – 26.5%
- ICT sector – 21.7%
- Electrical engineering – 15.6%
- Wholesale trade – 13.5%
- Technical services – 13.4%
- Transport and post – 12.5%
- Motor manufacturing – 12.4%
- Other services, trade, financial services, all less than 12% right down to consumer goods at 6%.

According to Unden (2004:4), Gartner Research had previously given a cautionary rating for Deutsche Telekom (DT's) financial situation, but it has since been changed to promising, as revenue has grown by 4.4 percent in 2004 to 28.4 billion Euros, and net income up by 64.5 percent to 1.8 billion Euros. It is encouraging that from 2005, DT focused on three segments: broadband/fixed line, mobile and business providing the necessary infrastructure for large scale e-commerce adoption.

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3.4.2.7   Singapore

a) **Causes** – The roots of e-commerce in Singapore go back as far as the 1980s, before the Internet, when the Singapore government played an active role in the diffusion and development of the information and communication industry. In 1992 the National Computer Board of Singapore laid the foundation for island-wide connectivity via a Broadband national information infrastructure over a closed EDI network. The Electronic Hotbed Program was launched in 1996 and it was aimed at developing e-commerce legal and technical infrastructures and services (Poh-Kam & Ping, 2004:3).

In 2000, the Government of Singapore launched the *IT2000* Master plan "... to make Singapore the IT Mega-Hub of the Asia Pacific region. Singapore aimed to be the hub not only for existing technologies, but also for expanding into new areas, especially e-commerce" (World Employment Report, 2001). The target was to have 50 percent of all businesses trading online by 2003. The Singapore IT2000 Master plan proposed five critical success factors:

- **Jump-start Singapore as an e-commerce hub** – This was made possible by the strong existing infrastructure to support the required growth of e-commerce in the region. For example, Singapore was ranked first in terms of e-business readiness and fourth in the use of e-commerce for business (Global Competitiveness Report. 2006.). In addition, Singapore was ranked third in the world just after the United States and Sweden.

- **Encourage business to use e-commerce strategically** – Several government initiatives were launched for SMEs. Firstly, came the provision of financial assistance via a number of financing initiatives and secondly, came the encouragement and provision of opportunities for businesses to form online business communities.

- **Develop an internationally linked e-commerce infrastructure** – This was considered to be vital for the provision of infrastructure to facilitate an efficient mode of settlement of Internet transactions for businesses and between businesses. In addition, the adoption of the global Secure Electronic Transaction (SET) standard, backed by the Network for

Electronic Transfers (Nets) linking local banks and credit-card merchants occurred.

- **Harmonise cross-border laws and policies** – This was to foster confidence in the Singapore legal system to ensure secure and safe processing of e-commerce transactions. In addition, the Singapore Electronic Transaction Act was passed in 1998.

- **Promote usage of e-commerce by the public and business** – This was to create an e-commerce savvy culture by launching mass education programmes for public and business to adopt e-commerce (World Employment Report, 2001:2-3).

b) **Effects** – Major changes took place in Singapore to deregulate the telecommunications industry, culminating in the amalgamation of the National Computer Board and the Telecommunications Authority, forming the InfoComm Authority. A single monopoly, Singapore Telecoms has also emerged. These changes facilitate businesses expansion using the Internet for business. Table 3.11 was constructed to depict e-commerce activity, ranked in order of usage. A number of factors such as economic development, regulatory environment, cultural and social considerations and Internet access cost affect Internet adoption worldwide. Initial Internet adoption occurred in developed areas, such as North America, Western Europe and East Asia, which have a high gross domestic product per capita and a high level of industrialisation. However, high-capacity broadband adoption and mobile adoption have grown fastest in East Asian markets, such as Singapore and others, where central government in Singapore for example, invested in technologies (such as fibre-optic infrastructure) and have caused a leapfrog effect. North American markets are beginning to resemble a legacy market in areas such as third-generation (3G) mobile and enhanced television. However, some catch-up in North American markets will eventually occur (Abrams, 2005:2).

As regards e-commerce, by 2001 at least 19 000 SMEs were involved in e-commerce activities in Singapore (Poh-Kam & Ping, 2004:4). Of these, 21

percent of SMEs had some form of e-commerce capability and 50 percent conducted online business transactions.

**Table 3.11 Activities of Singapore SMEs using the Internet
(Source: Poh-Kam & Ping, 2004:7-8)**

#	SME Activity	Usage (%)
1	Electronic export	38
2	Chemicals	17
3	Transport and equipment	14
4	Wholesale	12

From the industry sector point of view, the following was reported:

- Manufacturing – 22.1%
- Retail/wholesale – 15.6%
- Banking/and other financial services – 11.0%.

3.4.3 Summary of e-commerce adoption trends in International countries

Investigating the causes and effects of e-commerce adoption trends in international countries concentrated firstly, on the provision of infrastructure to enable e-commerce, and secondly, on the existence of SMEs in their respective economies with varying degrees of acceptance e-commerce. In Table 3.12, the causes of e-commerce adoption in the selected International countries are depicted. Causes were summarised under two headings: Government or Industry intervention to enable ICT and SME sector status.

Table 3.12 Causes for e-commerce adoption: International trends

#	Causes for E-commerce Adoption
	USA
1	**Government or Industry intervention to enable ICT:** Active government in funding university research Expansive telecommunication infrastructure Private sector institutions dedicated to funding (including venture capital) for new high-technology enterprises **SME sector status:** Sufficient Venture capital assists many start-ups Tend to integrate e-commerce into business systems
	UK

2	**Government or Industry intervention to enable ICT:**
	Government targeted 1.5 million SMEs to be on Internet by 2002
	Continued interaction between government and industry to create growth online projects (e.g. UK Online)
	SME sector status:
	Large companies appear to dominate SMEs in online trading
	Customer, followed by growth and then process oriented
	Most important impediments are poor performance measures
Netherlands	
3	***Government or Industry intervention to enable ICT:***
	Proactively stimulated the use of ICT in all the layers of the Dutch society:
	Ordinary citizen
	Government in education and healthcare
	Companies
	SME sector status:
	Plays a major part in the Dutch economy
	Email highest used application – online ordering around 30%
Australia	
4	**Government or Industry intervention to enable ICT:**
	Mainly large businesses have shown advances in adopting ICT
	Slow adoption of e-commerce due to lack of:
	Time
	Awareness
	Business opportunities
	SME sector status:
	Form a critical part in the Australian economy
	Tend to be reluctant to embrace e-commerce
Canada	
5	**Government or Industry intervention to enable ICT:**
	Government has explicitly stated that e-business is part of its innovation strategy
	82 percent of larger firms are connected to the Internet
	34 percent of firms had websites
	26 percent had interactive websites supporting e-commerce applications.
	SME sector status:
	Tend to query the applicability of products and services
	Tends to use current business models
	97% of the one million Canadian businesses have less than 50 employees
Germany	
6	**Government or Industry intervention to enable ICT:**
	Deutsche Telekom's (DT) public predecessor, the Deutsche Bundespost channelled large research and development grants to Siemens during the mid 1980s
	The goal was to create International acceptance of switching technologies for Siemens using ISDN technology to integrate voice and data
	SME sector status:
	Many technology start-up businesses have been founded since the 1990, most with Venture capital
	Many technology firms have successfully taken initial public offerings on various stock markets
Singapore	
7	**Government or Industry intervention to enable ICT:**
	Governments *IT2000* Master plan and *Electronic Hotbed Program*
	Jump-start Singapore as an e-commerce hub
	Encourage business to use e-commerce strategically

	Develop an internationally linked e-commerce infrastructure
	Harmonise cross-border laws ands policies
	Promote usage of e-commerce by the public and business
	SME sector status:
	By 2001, at least 19 000 SMEs were getting involved in e-commerce and more than 50% were transacting online

In Table 3.13, the effects of e-commerce adoption in selected international countries are depicted. The effects are summarised under three headings: Impact, Advantages and Disadvantages respectively.

Table 3.13 Effects of e-commerce adoption: International trends

#	Effects of e-commerce Adoption
	USA
1	**Impact:** Political economy contributed to the head start that USA firms enjoyed and their ability to grow rapidly massive capital markets in which thousands of technology-based firms have successfully taken listings **Advantages:** SMEs did not consider their small size a barrier when competing with larger counterparts in e-commerce Great expansion of SMEs embracing online trading **Disadvantages:** Larger companies dominate the e-commerce space using their ICT and network infrastructures playing pivotal roles in facilitating e-commerce
	UK
2	**Impact:** Four stages identified, Developing, Communicators, Web presence and Transactors Various online initiatives available to benefit SMEs **Advantages:** Government reached online targets much sooner **Disadvantages:** Tend to use existing business models Skill shortages were identified Broadband levels still remains below some other G7 countries
	Netherlands
3	**Impact:** Successful government policies that modernised and changed many aspects of Dutch society **Advantages:** Society benefited, receiving support in opening digital offices and services provided online for citizens By the end of various programs, two-thirds of the SMEs were connected to the Internet with at least a website of which two-thirds were conducting e-commerce **Disadvantages:** None detected
	Australia
4	**Impact:** Financial sector brokers adopted screen-based trading within two days of its introduction

	Supermarkets have implemented Internet based order and delivery services Electronic Share trading established Online theatre ticket sales Electronic news and advertisements. 11 % have web presence 35 % significant to their business operations **Advantages:** Expanded geographical coverage Competitive advantage Reduced selling costs **Disadvantages:** Not suited to the business Need for personal contact Payment and security issues Clients are locals
Canada
5	**Impact:** Smaller firms lag behind larger counterparts as far as e-commerce adoption is concerned, but no consistency in this Nature of product/service barrier differs according to firm size 56% of firms did not engage in e-commerce indicating that their product/service was unsuited, whereas this was down to 44% by 2003 **Advantages:** Smaller businesses are starting to adopt e-commerce more readily being more flexible and easier to effect change in **Disadvantages:** Not all goods and services lend themselves to Internet transactions 56% of firms did not engage in e-commerce indicating that their product/service was unsuited
Germany

6	**Impact:**
	Industries were strengthened by e-commerce adoption, such as the following top three:
	    Information/communication (51%)
	    Electronic banking (44%)
	    Customer services (27%)
	Advantages:
	Large companies, Government and Telecommunication business views changed to compete on a global scale
	Disadvantages:
	Requirements for e-commerce labour issues, highlighted Germany's unchanging structure of the German labour market as being too rigid and insufficiently flexible

Singapore

7	**Impact:**
	Deregulated the telecommunications industry assisted with exports
	High-capacity broadband adoption and mobile adoption have grown in Singapore - central government investment in technologies (such as fibre-optic infrastructure) have supported a *leapfrog* effect
	Advantages:
	Increase in:
	    Manufacturing (22.1%)
	    Retail/wholesale(15.6%)
	    Banking/and other financial services (11.0%)
	Disadvantages:
	None detected

3.4.4   e-Commerce adoption trends in African countries

Developing countries, including those in Africa, have become more detached from the global economy, mainly due to a lack of sustainable and appropriate ICT strategies and poor telecommunications infrastructure.

> "... The fading of the industrial revolution into the dawn of the information revolution has transformed the world economy into a truly global one. The emergence of this new sector has started to create a wider gap between the information-rich and the information-poor countries, creating a wider gap between developing and more developed economies" (Kah, 2004:273).

Although Internet usage is expanding around the world and as far as developing countries are concerned, "... the route to a prosperous B2B sector, and its attendant benefits for the economy at large, lies in joining regional and global supply chains" (E-commerce and Development Report, 2002:39). The prospect of these joined supply chains is encouraging and they could support the expected growth in both e-commerce and Internet usage.   In the case of Africa as a developing region, Internet usage is closely linked to the per capita users in Africa (Internet World Statistics, 2005) and it should assist e-commerce adoption. Although, connectivity is slowly improving in Africa, e-commerce adoption remains low.

Kah (2004:274) suggests that a developing country government's intervention would stimulate the effective use of new services in support of economy-wide competitiveness. African policy makers in particular, were setting objectives with the aid of the World Bank to address telecommunication development needs (Kah, 2004:275).   Many factors such as the state of the national economy, education, technology, culture, demography and geography decisions are all interrelated (and often dependent) on telecommunications development.   Studies conducted by Bhatnagar (2000:1-3) point out that telecommunications infrastructure forms an essential element in any future economic and social development of African economies. As Information technology is taken up into all industrial and service sectors, it is seen as one of the most crucial technologies affecting economic growth in developing countries.

Businesses in developing and developed countries are becoming increasingly aware of the need to participate in the *new economy*[18] and that they need suitable electronic infrastructure (Sarkar & El Sawy, 2003:1). According to Molla (2002:5), when organisations migrate to e-commerce in developing countries, both internal organisational and external environmental challenges associated with e-commerce must be recognised and addressed.

The main barriers reported in literature inhibiting B2B taking off in the Third World are the inadequate deployment of ICT infrastructure and the shortcomings in physical infrastructure, logistics and trade facilitation (E-commerce and Development Report, 2002:39). In addition to these barriers, Hafez (2006:35) sheds light on the importance of specific *cultural factors* playing a role in e-commerce adoption, such as:

- Promoting or hindering electronic business diffusion
- Influencing the integration of developing countries' communities within the global community.

These cultural factors include individual beliefs, value systems, attitudes to information-sharing and language (Hafez, 2006:36). The effect of these factors only became apparent during individual country or regional research cases. Spiegel (2004)[19] in Hafez (2006:39) for example, reports on an education system that emphasised the learning of English to equip companies to compete in the global world. Companies in India are competing in ICT and e-commerce as global players in English. In contrast, China is often the preferred choice for manufacturing, emanating largely from the Chinese government's deliberate intention to encourage a culture of manufacturing; clearly in this case, the language aspect, although recognised as important, plays a secondary role. Further language related factors are illustrated by Hafez (2006:36) referring to the severe language barrier that emanated in the mid-1990s, when attempting to spread the use of the Internet to non-English speaking countries. This must be seen in the light of more recent successes integrating non-English languages into software packages in counties such as Mongolia, Vietnam and Indonesia. This action contributed significantly with the Internet rollout in those countries.

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[18] The new economy consists of new technology, customer-focused services and extensive relationships, networks and information (Tse & Soufani, 2003:306).

[19] Spiegel, R. 2004. A tale of two countries. *Electronic Design Strategy News*, 3 September 2004. http://www.edn.com.article/CA402396.html [20 September 2007].

3.4.5   African developing country selection

The selection of African developing countries to investigate e-commerce adoption could not be done in the same way as in the case of selecting international countries (refer to section 3.4.2). The reason is that the three indices used in the international country selection process, did not all include African development countries. For example:

- The **e-Readiness Rankings (2005)** listed 65 countries, of which only South Africa (position 32), Egypt (position 53) and Nigeria (position 58) were listed.

- The **Internet World Statistics (2005)** only listed the top countries in the world.

- The **Networked Readiness Index (2006)** only listed South Africa (0.3), Kuwait (0.06), Jordan (0.03) and Baharian (0), compared to the USA's index score of (2.02).

From these indices, the researcher was only able to select one of the indices, the e-Readiness Rankings as Index #1, even though this index only included three African countries (identified as South Africa, Egypt and Nigeria). For Index #2, the Internet World Statistics (2005) for Africa, for the period 2000–2005 was considered to be the most appropriate, listing 57 African countries.

- **African development country selection process**

    Firstly, using the e-Readiness Rankings (2005) as the first index, three African countries were listed and these were South Africa, Egypt and Nigeria (Table 3.14). Secondly, the Internet World Statistics (2005) for Africa was used instead, sorted by the *Usage % of Africa* column and used as the second index (Table 3.14). This was accomplished by importing the Internet World Statistics (2005) for Africa index into an electronic spreadsheet and then sorting the table using the *Usage % of Africa* column as the sort criteria. This created a ranked table with South Africa (1), Egypt (2), Morocco (3), Nigeria (4) followed by 60 other African countries. Thirdly, Index #1 was mapped to the secondary index until all matches were completed, producing South Africa, Egypt, Morocco and Nigeria. For completeness, the researcher decided to include a SADC country bordering on South Africa. Ifinedo (2005a:62) reported that

Botswana was identified as a SADC country which shows promising development based on its e-readiness initiatives. Although Botswana was ranked 30th according to the Internet World Statistics (2005) for Africa, it was, however, accepted as part of the sample group and added to the African countries to be investigated. The final country selections are depicted in Table 3.14.

Table 3.14 Selection of African countries

Rank #1	e-Readiness Rankings	Rank #2	Internet World Statistics (2005) for Africa
	Index #1		**Index #2**
32	**South Africa**	1	**South Africa**
53	**Egypt**	2	**Egypt**
58	**Nigeria**	3	Morocco
		4	**Nigeria**
		30	Botswana

Note: Bold typeface country names indicate matches in both columns

This researcher used the five African countries listed in Table 3.14 and found corresponding entries in the Internet World Statistics (2005) for Africa, of African countries as a means to compare these counties using certain criteria and sorting the contents according *Usage % of Africa* countries. This resulted in Table 3.15. In spite of the selection of Botswana, Mutula (2005a:124) found that similar to other sub-Saharan countries, SMEs in the ICT sector in Botswana were largely far from being e-ready.

Table 3.15 Population and Internet usage statistics: Comparison of African countries (Source: Internet World Statistics for Africa, 2005)

Region	Total estimated population in 2006	Population as % of African (%)	Estimated Internet users	Usage % of Africa (%)	Usage % growth (2000–2005)
Egypt	71,236,631	7.0	5,000,000	**21.1**	1,011.1
South Africa	48,861,805	7.4	3,600,000	**15.8**	50.0
Morocco	30,182,038	11.6	3,500,000	**15.4**	3,400.0
Nigeria	159,404,137	1.1	1,769,700	**7.8**	784.9
Botswana	1,856,800	3.2	60,000	**0.3**	300.0

Although Internet connections are available in many African capitals, e-commerce infrastructure gaps exist between developed and developing

countries, where the gap is the largest in Africa with only one in about 118 people using the Internet. This is evident as "... E-commerce is concentrated in South Africa and Egypt, while B2B outside South Africa remains negligible. B2B opportunities do, however, exist for Africa in the online and offline services sector. And in the meantime, exporters of handicrafts and products and services targeting Africans outside their home countries are doing a thriving business in B2C" (E-commerce and Development Report, 2002).

3.4.5.1   Egypt

a) **Causes** - The Egypt Internet Society was established in 1997 to promote education and awareness of the Internet and Web applications. From this initial step, a number of initiatives were taken up both by the Egyptian government and by the private sector to promote e-commerce adoption (Kamel & Hussein, 2002:149). ICTs promote the use and management of supply chain networks, which in turn facilitates procurement, inventory control, supply processes management, production costs monitoring and quality control (Economist, 2000:3). This also offered SMEs tools for marketing and distribution, facilitating responsiveness to market demand and customisation. SMEs were also offered opportunities for innovation and the emergence of new products and services (OECD, 2000:2). Small entrepreneurs were assisted to overcome information poverty and to enable entrepreneurs become more connected, more confident, less risk-averse and more capable of making well-informed decisions (Pease & Rowe, 2003:3). By empowering small entrepreneurs, ICTs offered the potential for increasing exports, promoting growth and human development (Cecchini & Shah, 2002:9). SMEs represent a significant share of the number of firms for production and employment generation. According to a study prepared by the SME Development Unit of the Ministry of Foreign Trade in 2003, SMEs represented almost 99 percent of the number of companies in the private non-farm agricultural sector in Egypt (Abdel-Maksoud & Youssef, 2003:8).

b) **Effects** - In spite of SME activities, Egyptian banks are lagging and according to SET (Secure Electronics Transaction) introduction by Egyptian banks to support e-commerce adoption has not yet been put into place. Furthermore, the low usage of credit cards (less than 200 000 credit cards in 2005) is also an inhibiting factor for adopting e-commerce. Furthermore, according to

Salman (2004:156) due to the current lagging of developing countries using ICT, a great deal of work needs to be done in order to establish suitable platforms and approaches to e-commerce adoption initiatives.

Rizk (2006:3) reports on the low rating of the macro assessments of Egypt's e-readiness by citing the e-Readiness Rankings (2005). Furthermore, an improvement is needed in e-leadership and information security, connectivity, human capital and e-business (McConnell International 2000:11;McConnell International 2001:13).

Research conducted on a sample of 36 small, medium and large firms with (30–199 workers), (200–299 workers) and (more than 300 workers) respectively, in the export textile industry located in the greater Cairo region were selected from a data base of over 120 exporting companies. This represented approximately 60 percent of the total number of garment exporting companies, representing 95 percent of Egypt's total exports of garments (Rizk, 2006:13).

The emphasis of the research was to request information on variables such as e-infrastructure, human capital, actual and perceived use of ICTs and barriers to implementing ICTs.

The main trends found are summarised as:

- Large firms could end up being more *locked in* to specific technologies where high switching costs are a concern. A worrying factor was that 60 percent of large firms had less than thirty employees connected to the Internet and less than ten PCs in management – pointing to a relatively more *modest e-infrastructure* for large firms when compared to small and medium enterprises.

- Medium firms were generally ahead of small firms, having a higher degree of awareness and some base of implementation of ICTs in management and production. They all had less than thirty employees connected to the Internet and less than ten PCs in management (almost 90 percent have less than five PCs). Increasing the e-readiness of medium-sized firms would require heavy investment in human capital, to be complemented by raising awareness and upgrading levels and types of connectivity.

- Small firms need to be increasingly more aware of the role of ICT, together with improving e-infrastructure and human capital. None of the small companies had more than ten employees connected to the Internet, and all of them had less than five PCs in management, relying mostly on dial-up for Internet connectivity.

It appears that it would be beneficial for small and medium firms to work in clusters in order to benefit from economies of scale. A wide scope exists for public and private partnerships to raise the level of e-readiness for small and medium enterprises in the economy. Such projects should be placed as priorities on the development plan and donor support agenda. What emerged strongly from this study was that SMEs were low on their e-readiness not only because of the low level of their e-infrastructure, but also because of the more serious barriers related to awareness of human capital. This finding is in line with barriers mentioned in other micro studies (OECD, 2000; Jutla, Bodorik, Dhaliwal, 2002:139).

SMEs development in general and their e-readiness in particular, will be affected by traditional *old economy* challenges such as financing issues, legal infrastructure, policy setting and the business environment. Singh (2003:309) suggests that education and training bridges the gap between development and implementation of new technology. It is therefore essential to consider people factors right from the onset of new technology adoption and not after its implementation.

3.4.5.2   Morocco

a) **Causes** - Morocco is an Arab nation where most Moroccans are educated in French and Arabic, as well as Spanish in the northern part of the country. Since reforms in the economy were instituted in the 1990s, Morocco's telecommunication market has experienced consistent growth. The following strategic objectives were accepted by the government of Morocco in 1999:

- Implementation of an intergovernmental network

- Emergence of an economy based on knowledge and innovation in Morocco

- Human resource development

- Infrastructure development.

The chief contributor has been the mobile sector where competition was introduced in 2000, with less than 400,000 subscribers in 1999, pushing the number of subscribers past the 12 million mark by 2005. In contrast, the fixed-line telecommunication network declined from 1999 but recovered in 2003 due to demand for Internet access and ADSL Broadband services. The recent awarding of a second and third fixed-line license, aims to provide further stimulation to the telecommunication sector. The telecommunication operator Maroc Telecom was partially privatised in 2001 and was listed on the Paris and Casablanca stock exchanges in 2004 (National IT Policy of Morocco, 2005).

b) **Effects** – Due to continued demand, two Third Generation (3G) mobile licenses were awarded in 2006 and the sale of a further 25 percent of Maroc Telecom in 2007. The economy has been subject to considerable liberalisation in recent years and foreign investment is encouraged. Tourism strengthens Morocco's links with the West, and the country has some aspirations to join the European Union. Large-scale emigration of males to France over the years has introduced an ethnic factor changing the makeup of the Moroccan population. New ICT related career opportunities have arisen for especially women such as telecentres, call centres, Internet cafes and telephone booths. Along with the ICT Policy and country objectives, a number of action plans were instigated. Some of the main action plans were:

- Implementing a legal and regulatory mechanism

- Extension of a new culture based on the flow of transparent information circulation

- Giving SEPTI *Secrétariat d'Etat aux Postes et Tecnologies de l'Information* the role of coordination and guidance.

At the same time B2C are emerging and becoming feasible for the selling of manufactured hand-made products in Morocco by women. These new directions could lead to a globalised economy (National IT Policy of Morocco, 2005).

Note: No literature on e-commerce adoption issues by SMEs in Morocco could be found.

3.4.5.3   Nigeria

a) Causes - Nigeria has a population of about 140 million people and is one of the most populous countries in Africa (World Bank, 2001). In addition, it is also one of the fastest growing economies in Sub-Saharan Africa (SSA) and has a large number of small businesses complementing an *oil-run* economy. The Nigerian government has been the sole provider of telephony and communication systems (Ajayi, 2003[20] and Hamilton, Jensen and Southwood, 2004[21] in Ifinedo 2006:322). The Nigerian government is promoting e-business among SMEs in its National IT Policy, which was inaugurated in 2001 (Ifinedo, 2006:323).

Nigeria is one of the best-performing nations in terms of ICT use and product diffusion in SSA (Mbarika, Jensen & Meso, 2002:17; Mbarika, Kah, Musa, Meso & Warren, 2003:1-3; National Information Technology Development Agency, 2001). The ICT sector also received direct foreign investment. The spread of cyber cafés in the country may be helping to popularise the Internet, which in turn could enhance e-business adoption. The teledensity (number of telephones lines per one hundred inhabitants) in Nigeria has been improving for example, rising from 0.5 in 1999 to 2.0 in 2002, while the present teledensity rate has improved even further following the deregulation of the telecoms industry with licenses being granted to several operators (Ajakaye, T. & Kanu, O. 2004[22]; Ifinedo, 2006:322).

The use of ICT by SMEs in Nigeria does not appear to be pervasive; however, events in Nigeria such as the on-going liberalisation policy in the telecommunication sector are creating opportunities for the emergence of e-business (Ifinedo, 2005:19-21). It is reported that 97 percent of all businesses in Nigeria employ less than 100 employees, and similar to other SSA countries, SMEs form the bedrock of its economy according. It is further found that online business adoption may be hampered by the prevailing conditions norms, traditions or culture that has preference to do

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[20]   Ajayi, G.O. 2003. Role of government in IT development - Status report e-Nigeria. *Proceedings of e-Nigeria*, 10-12 March 2003. Abuja, Nigeria. (Unpublished). http://enigeria.org/2003/10029003/idex.html [9 December 2004].

[21]   Hamilton, P., Jensen, M. & Southwood, R. 2004. *African Internet country market profiles.* http://wwwbalancingact-africacom/profile1.html [10 Jan 2005].

[22]   Ajakaye, T. & Kanu, O. 2004. Cybercafé cybercafé everywhere. *This day online.* http://www.thisdayonline.com [2 December 2004].

business face-to-face (Ifinedo, 2006:321; Ifinedo, 2005:53-55 citing Matambalya & Wolf, 2001[23] and Mead & Liedholm, 1998:61[24]).

b) **Effects** – The findings of the study indicate that e-business adoption may be hampered by the prevailing norms, traditions or culture leading to a preference for doing business, on a face-to-face basis. The preparedness of Nigerian SMEs for e-commerce business is not high due to some external contextual factors. Some of the effects (or barriers) of e-commerce adoption are:

- Lack of knowledge about e-commerce benefits and acquiring finance are among the main contextual factors inhibiting e-commerce adoption in Nigeria.
- Limiting barriers included a general lack of IT skills and critical mass for e-business engagements in the economy.
- Infrastructural support in Nigeria is not conducive to e-commerce operation, though there are signs of improvement. The capability of Nigeria in terms of technical, infrastructural and educational is low.
- Nigerian SMEs are aware of the advantages offered by the Internet and how it could assist them reach global markets and a source of information.
- More government policy and support may be required to provide an enabling environment for e-commerce adoption.

3.4.5.4 Botswana

a) **Causes** – Botswana was considered to be the best African performing economy (Global Competitiveness Report, 2006) and similar to other African countries, started to embrace mobile telephony, moving from a non-existent subscription base in 1997 to approximately 4000,000 subscribers in 2005 (Botswana Human Development Report, 2005:48). There is only one fixed telephone operator, Botswana

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[23] Matambalya, F. & Wolf, S. 2001. *The role of ICT for the performance of SMEs in East Africa: empirical evidence from Kenya and Tanzani.*, Center for Development Research. Bonn: University of Bonn. http://ageconsearch.umn.edu/bitstream/123456789/17181/1/dpdp0042.pdf [30 October 2007].

[24] Mead, D. & Liedholm, C. 1998. The dynamics of micro and small enterprises in developing countries. *World Development*, 26(1):61–74.

Telecommunications Corporation (BTC) although it was liberalised a few years ago allowing the mobile telephone sector to enter the market. BTC was exclusively responsible for the design, implementation and maintenance of the telecommunication infrastructure. It became evident that Botswana had an internal digital (or information) divide, indicating that urban areas had larger ownership figures of ICTs than rural districts. Radio was the most common ICT owned technology followed by telephones (probably cellular telephones), television then Personal computers – most people who used PCs did not use them at their homes (Botswana Human Development Report, 2005:49; World Economic Forum, 2002; Draft Rural Telecommunication Strategy, 2002).

In 2004, the Botswana Government via the Ministry of Communications Science and Technology and a team of researchers from the University of Botswana embarked on a research study to develop a national ICT policy to guide ICT implementation in Botswana. The aim of the study was to determine what ICT communities had access to as well as the problems they generally faced using technology. Primarily, the aim was to determine what information communities needed in order for them to participate in the country's development and in their personal capacity. Part of the research involved an *e-readiness society*[25] assessment, which was conducted by researchers from the Department of Library and Information Studies at the University of Botswana. The assessment consisted of collecting data on the availability and access to ICT by communities to guide ICT policy strategies in the areas of government, education, health, economic development, etc. Three main aspects were highlighted:

- Assessment of the ICT diffusion in Botswana communities
- Identification of the development needs of communities that could be achieved through ICT application

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[25] A study by the Centre for International Development at Harvard University defines an e-ready society as one: That has the necessary physical infrastructure (high bandwidth, reliability and affordable prices); integrated current ICT across businesses (e-commerce, local ICT sector); communities (local content, many organisations online, ICTs used in everyday activities, ICTs taught in schools) and the government (e-government) strong telecommunications competition; independent regulation with a commitment to universal access; and no limits on trade or foreign investment (e-Readiness Society, 2003).

- Identification of factors needed to be in place to ensure that introduction of ICT would produce the desired results.

According to Mutula (2005:595), Botswana's ICT sector continues to grow steadily and by 2004 mobile teledensity had reached 33 percent starting to reach most parts of the country. Furthermore, Mutula states the mobile telephone industry in the whole of Africa reported by the (International Telecommunication Union, 2002) is the fastest growing sector in the world. However, Internet charges are still high in Botswana compared to that of South Africa.

b) **Effects** – Data was obtained from 14 of 17 identified communities. These communities were categorised into three groupings: urban centres, urban villages and rural villages. The urban centres included a relatively high income area in Gaborone (Broadhurst) and a low income, high density area (Old Naledi). Also included was Orapa a mining town in the Central district of Botswana. Not many communities reported ownership or use of personal computers and there were very few respondents who actually owned computers, and even fewer who had access to computers, even at their work places. Rural communities indicated the lack of connectivity and electricity as barriers to using computers and the Internet and connectivity was identified as a problem by individuals who worked in government offices. Almost every community expressed dissatisfaction with a number of aspects: high usage charges, incorrect billing, interference with radio signals, lack of local BTC offices to attend to queries and faults, public phones that did not work and many phones being vandalised. For smaller rural communities there was no telephone coverage.

The e-readiness assessment underscored the challenges that Botswana faces to make its communities part of a world-wide information society. Whilst Botswana enjoys a modernised telecommunications network in the Eastern part of the country (along the railway line), there are many communities unable to communicate due to lack of connectivity. These are smaller rural areas, mainly in the Western and Southern parts of the country. Technologies such as radio, mobile telephones and television are the most used but more in urban centres as many communities cannot access these services due to lack of coverage. Communities' responses were wide ranging but categorised into the following (only the ICT related aspects are listed):

- Improvement of communication infrastructure (roads, transport, radio, televisions telephones, connectivity).

- Improvement of the educational facilities and landscape (schools, vocational training, tertiary institutions, computer training; access to school broadcasting materials, etc.).

- Improved access to government information and services.

According to Uzoka and Seleka (2006:292), research is lacking in Botswana on these aspects of e-commerce development. Uzoka and Seleka (2006:292) conducted a research study on fifty entities where the spread of the study covered manufacturing, financial services, medical, agriculture, education, human services, mining, ICT and government and they concluded "... that businesses in Botswana have an inadequate level of B2C e-commerce adoption". Their main findings revealed the following:

- High correlation between Electronic Fund Transfer (EFT) and Electronic Banking (BK) indicating that firms that perform well on electronic fund transfer would likely do well in electronic banking.

- Low correlation between Electronic Banking (EBK) and Electronic Mail (EML) indicating that firms' use of email has little impact on its adoption of electronic banking.

- The majority of the firms perform very poorly in terms of e-commerce development.

Mutula (2005:596) points out that despite the remarkable development in ICT sector in Botswana, most of the data infrastructure development initiatives were only accessible by Government, and only after 2003 was opened up to the rest of the population.

3.4.5.5   South Africa

International e-commerce adoption trends have not had an immediate impact on South Africa and wide-spread e-commerce uptake has been slow (Cloete, Courtney & Fintz, 2002:9). The South African Electronic Communications and Transaction Act, (South Africa, 2002) was initially published in 1996 and later revised and accepted by the South African Government in 2002. During this time

ATM Banking emerged as a strong pre-cursor to e-commerce (Kinder, 2002:131). For the last few years electronic banking (e-banking) has been established in South Africa and mobile banking (m-banking) introduced in 2006. Not many examples can be found in literature pertaining to successful e-commerce adoption in South Africa. Due to the lack of literature on e-commerce adoption issues in South Africa, reference is made to a number of studies by this researcher in the Western Cape of South Africa.

a) **Causes** – Several examples from literature of the causes of e-commerce adoption in South Africa are discussed:

- Winney (2005:204) found that the South African e-commerce sector experienced rapid growth over the previous five years and Internet penetration is more evident in business and upper income households. In South Africa, the most common online purchases are groceries, apparel and books. Furthermore, the single fastest growing retail categories by number of sites are flowers and gifts followed by apparel, food, beverages and groceries.

- According to a study on South African SMME adoption of e-commerce, Cloete *et al.* (2002:9-11) report that amongst a target population of 253 SMMEs operating in the Johannesburg/Pretoria area and the Western Cape, the use of the Internet for e-commerce by SMMEs is limited when compared globally. In the Western Cape, Cloete *et al.* (2002:7) find that although "... the majority of business have adopted most of the technological capabilities required for the adoption of more sophisticated e-commerce capabilities.", it is concluded that "... most businesses surveyed did not currently have advanced e-commerce capabilities" based on a sample of 195 SMMEs in the manufacturing sector operating in the Western Cape.

- Exploring the state of e-commerce in the airline industry in South Africa, Paterson (2005:231,234) reported that online airline ticket sales have increased rapidly in South Africa. For example, South African Airways reported an annual online activity increase of 200 percent, while Kulula.com reported online ticket sales in excess of 75 percent. Another

new low cost airline, 1time Airline claim that up to 80 percent of its total revenue is derived from online sales.

b) **Effects** – Several cases from the literature are examined to understand the impact e-commerce adoption on the local industry:

- De Klerk and Kroon (2004:33-38) conducted research on South African businesses to determine the role and degree of e-commerce adoption comparing micro and small business to medium and large businesses. They concluded that medium and large businesses tend to use business technologies, such as expert systems, automated storage, robotics and bar codes more than micro and small businesses.

Furthermore, a number of retailers are currently dominating the online market and account for approximately 80 percent of all online retail sales.

Examples of these are:
- Pick 'n Pay Home Shopping (http://www.pnp.co.za)
- Kalahari (http://www.Kalahari.net)
- Woolworths (http://www.woolworths.co.za
- Netflorist (http://www.netflorist.co.za)
- Cybercellar (http://www.cybercellar.com).

In addition, a number of shopping malls are active such as the MWeb Shop Zone (http://www.southafrica.info) and Digital mall (http://www.digitalmall.com), two dominant online shopping mall websites.

- Cape Gateway (2004) report refers to a study by the Ntisiki Enterprise Promotion Agency which states that SMMEs in the Western Cape comprising of 5.4 percent of the total number of enterprises in 2002, accounted for more than 50 percent of turnover in all sectors. Furthermore, the Western Cape Provincial Government allocated R50 million for small business development in 2004 (Cape Gateway, 2004). According to Manuel (2003:1-6) SMMEs in the South African context encompass a broad range of businesses, from established traditional

family businesses employing a few employees, to the survivalist and self-employed entrepreneurs.

- Using the Airline industry in South Africa as an example (although not all SMMEs), e-commerce adoption has expanded rapidly over the last few years. Although slow initially, air travel business has become extremely competitive judging by the frequent advertising campaigns for local air travel by a number of local airlines on radio, television, the local press and direct electronic mail of *e-loyalty*[26] programmes, including South African Airways, the national airline carrier. According to Hartley and Worthington-Smith (2003:151-152), the volume of online travel sales compared to Europe and the United States of America in 2003 was low in South Africa. The *no frills* airline, Kulula.com has become a popular airline and it has carried over 750 000 passengers and has assisted in increasing the domestic air travel market by 12 percent since early 2004. It is considered to be South Africa's largest revenue-generating business to consumer (B2C) business with at least 75 percent of Kulula.com bookings being done online – this percentage is high considering the low Internet adoption rate in South Africa (Hartley & Worthington-Smith, 2003:152). Furthermore, although estimates that Internet sales account for less than one percent of the volume of all airline ticket sales at other airlines in South Africa, 1time Airline, another *no-frills* airline in South Africa, is attempting to change this view by claiming 75 percent of online travel transactions.

- Warden and Tunzelana (2004:5) reported that in the tourism sector, findings based on seven case studies within Small and Medium-sized Hospitality Organisations (SMHOs), the business organisational e-commerce adoption barriers were found to be: negative attitudes, lack of knowledge, resistance to change and lack of management commitment. These findings were in agreement with findings in the literature by Farhoomand, Tuunainen and Lee (2000:31). In a study to determine a business strategy for the adoption level of e-commerce of SMMEs in the Western Cape of South Africa, Motjolopane and Warden (2007:8) found that 812 businesses (18 percent) out of a possible 4,500 businesses listed

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[26] *e-Loyalty is about earning the trust of the right kinds of customers. Most of today's on-line customers exhibit a clear proclivity towards loyalty.*

on the Cape Town Regional Chamber of Commerce and Industry website, adopted some form of e-commerce. Of these 88 were in the ICT sector. This was followed by 69 businesses in the Business Service Consultant sector and 47 businesses in the Construction sector. The remaining 608 businesses were spread between 32 other business sectors;

- Relating to *e-retailing* in the Western Cape of South Africa, Nwoffiah (2006:65) found that gaps are found between the shopping experience in the physical world and online shopping experience. In the context of understanding the impact of technology on e-commerce, security, ability to judge equality, privacy and ease of buying locally were ranked as the top-four, most frequently given reasons for customers not purchasing online. However, for most of the customers surveyed in that study, of the four top reasons for not using online commerce, the security aspect appeared to be least important and the ability to judge quality the most important.

3.4.6 Summary of e-commerce adoption trends in African countries

Investigating the causes and effects of e-commerce adoption trends in African countries concentrated firstly, on the provision of infrastructure to enable e-commerce, and secondly, on the existence of SMEs in their respective economies and the degree of acceptance e-commerce. Table 3.16 depicts the causes of e-commerce adoption in selected African countries. These causes can be summarised under two headings: Government or industry intervention to enable ICT and SME sector status.

Table 3.16 Causes of e-commerce adoption: African countries

#	Causes of e-commerce adoption
	Egypt
1	**Government or industry intervention to enable ICT:** Initiatives launched by the Egyptian government and private sector to promote ICT and e-commerce adoption Egyptian banks lag and lack support for SET (Secure Electronics Transaction) Low usage of credit cards poses inhibiting factor for adopting e-commerce Low e-readiness affects e-commerce adoption **SMEs sector status:** SMEs represent almost 99% of the number of companies in the private non-farm agricultural sector Slow uptake in e-leadership and information security, connectivity, human capital and online trading

	Morocco
2	**Government or industry intervention to enable ICT:** Awarding of fixed-line license aimed to provide stimulation to the telecommunication sector Fixed-line telecommunication network declined from 1999 but recovered in 2003 due to demand for Internet access and ADSL broadband services The telecommunication operator Maroc Telecom listed on the Paris and Casablanca stock exchanges in 2004 Telecommunication market has experienced consistent growth mainly mobile sector where competition was introduced in 2000 **SMEs sector status:** Large-scale emigration of males to France over the years has introduced an ethnic factor of not starting many small businesses Tourism is strengthening Morocco's small business links with the West causing awareness

	Nigeria
3	**Government or industry intervention to enable ICT:** Government has been the sole provider of telephony and communication systems **SMEs sector status:** Current government promoting e-business among SMEs in its National IT Policy SMEs have been made are aware of the advantages offered by the Internet and how it could assist them reach global markets and a source of information

	South Africa
4	**Government or industry intervention to enable ICT:** Telkom has been the sole supplier of communication links Government promoting great support for SMMEs Western Cape Provincial Government allocated R50 million for small business development in 2004 Electronic banking (e-banking) is being rapidly established and mobile banking (m-banking) was introduced in 2006 **SME sector status:** SME and e-commerce sector experienced rapid growth over the last five years and Internet penetration is more evident in small business and upper income households Common online purchases are groceries, apparel and books By number of websites, flowers and gifts followed by apparel, food, beverage and groceries are most popular Online airline ticket sales have increased rapidly in South Africa

In Table 3.17 the effects of e-commerce adoption in selected African countries are depicted. The effects are summarised under three headings: Impact, Advantages and Disadvantages respectively.

Table 3.17 Effects of e-commerce adoption: African countries

#	Effects of e-commerce adoption
	Egypt
1	**Impact:** The e-commerce adoption process has highlighted a number of issues: e-readiness is low Improvements needed in e-leadership and information security, connectivity, human capital and e-business **Advantages:** SMEs were also offered opportunities for innovation and the emergence of new products and services

	Small entrepreneurs were assisted to overcome information poverty
	Entrepreneurs become more connected, more confident, less risk-averse and more capable of making well-informed decisions
	Empowering small entrepreneurs, e-commerce offered the potential for increasing exports, promoting growth and human development
	Disadvantages:
	Large firms could get locked in to technologies – high switching costs is a concern - Few PCs in management
	Medium firms have higher degree of awareness of ICTs in management and production - Few PCs in management.
	Small firms not aware of the role of ICT, e-infrastructure and human capital - Few PC in management. Mainly dial-up for Internet connectivity

Morocco

2	**Impact:**
	Telecommunication services expansion – Third Generation (3G) mobile licenses planned to be awarded in 2006 and the sale of a further 25% of Maroc Telecom in 2007. The economy has been subject to considerable liberalisation in recent years and foreign investment is encouraged
	Advantages:
	New ICT related career opportunities have arisen for especially women such as telecentres, call centres, Internet cafes and telephone booths. At the same time B2C business transaction opportunities are emerging and becoming feasible for selling of manufactured hand-made products in Morocco by woman. These new directions could lead to a globalised economy
	Disadvantages:
	Small SME sector of mainly hand-made products not ideal for e-commerce

Nigeria

3	**Impact:**
	The best-performing SSA country in terms of ICT use and product diffusion can be exploited to benefit the ICT sector
	Receipt of direct foreign investment
	Teledensity rate has improved following deregulation of the telecoms industry - more government policy and support may be required to provide an enabling environment for wide e-commerce adoption
	Advantages:
	The spread of cyber cafés in the country is assisting to popularise the Internet, which in turn will enhance e-commerce adoption
	Disadvantages:
	Lack of knowledge about e-commerce benefits, finance IT skills and infrastructural support

South Africa

101

4	Impact:
	Only small sections of businesses and sectors adopted e-commerce
	18% of businesses out of a possible 4 500 businesses listed on the Cape Town Regional Chamber of Commerce and Industry had e-commerce related websites Internet sales account for less than 1% of the volume of all airline ticket sales in South Africa, no-frills airlines in South Africa report up to 75% of online travel transactions
	Advantages:
	Online air travel business has expanded and has become extremely competitive Eight online retailers are currently dominating the online market and account for approximately 80% of all online retail sales
	Disadvantages:
	Business organisational e-commerce adoption barriers identified:
	• Negative attitudes
	• Lack of knowledge
	• Resistance to change
	• Lack of management commitment
	Gaps remain between online shopping and the physical experience:
	• Ability to judge quality
	• Ease of buying locally
	• Privacy
	• Security

3.5 CASE STUDIES IN SOUTH AFRICA

The researcher conducted case studies on five South African SMMEs. Investigating the causes and effects of e-commerce adoption trends in South African SMMEs concentrated firstly, on the provision of infrastructure to enable e-commerce, and secondly, on business aspects operating as SMMEs in their respective business sector. In Table 3.18, the causes of e-commerce adoption in South African SMMEs are depicted. Causes were summarised under two adapted headings, (different from before in the case of International and African developing countries). These are intervention to enable ICT and SMME business activities.

Table 3.18 Causes of South African SMME e-commerce adoption trends

#	Case study	Causes of e-commerce adoption
1	Case study A Less than 200 employees	**Intervention to enable ICT:** Utilising ICT to effect cost saving Bought in ICT partner company Quick to market – competition looming **SMME business activities:** Management owned – CEO and 4 Partners/Directors
2	Case study B	**Intervention to enable ICT:**

		Less than 20 employees	Initially only telephone and facsimile considered sufficient Guests started demanding more ICT services – Internet and PCs Outsourced ICT and website No internal IT expertise **SMME business activities:** Owner managed – 2 Partners
3	Case study C Less than 100 employees		**Intervention to enable ICT:** Cape Town city council (CCC) required Electricity dispensing CCC collection of account arrears Internal ICT expertise **SMME business activities:** Management owned – CEO and 5 Partners/Directors
4	Case study D Less than 20 employees		**Intervention to enable ICT:** Moved from manual mail order to online order system Outsourced ICT and website website content management system Limited internal IT expertise **SMME business activities:** Owner managed
5	Case study E Less than 20 employees		**Intervention to enable ICT:** Purchased ICT System Outsourced ICT and website No internal IT expertise **SMME business activities:** Owner managed

In Table 3.19, the effects of e-commerce adoption in South African SMMEs are depicted. The effects were summarised under three headings: Impact, Advantages and Disadvantages.

Table 3.19 Effects of South African SMME e-commerce adoption trends

	Case study	Effects of e-commerce adoption
1	Case study A	**Impact:** Market shake-up Utilising ICT to effect cost saving and system automation Leading LCA sector **Advantages:** Funds deposited before providing service (pre-paid tickets) Automated systems No legacy systems to maintain, no royalties **Disadvantages:** Business expansion determined by external factors – fuel, interest rates and legislation Competition, new entrants to market Slow internet access - Broadband needed to spend sufficient time on website
2	Case study B	**Impact:** Expanded market share website serves as online brochure and e-commerce site **Advantages:** Partial funds deposited before providing service International network

		Online booking and virtual markets Manage business from anywhere, anyplace **Disadvantages:** None detected Slow Internet access into South Africa
3	Case study C	**Impact:** Utilising ICT to effect cost saving and system automation **Advantages:** Predictable cash flow – low and high seasons Funds deposited before providing service (pre-paid electricity) Long contracts with municipalities, now nationally **Disadvantages:** Business expansion determined by rate of installation of e-dispensers Users not e-ready
4	Case study D	**Impact:** First to market in SA in electronic component sector Utilising ICT to automate systems Global market **Advantages:** Funds deposited before providing service (pre-paid electricity) Extensive catalogue combined with e-commerce site **Disadvantages:** Users not e-ready Online competition Slow Internet access – Broadband needed to scan website
5	Case study E	**Impact:** Same ICT system to automate entire business First to market in Cape Town in luggage sector **Advantages:** Entire e-commerce system and operation cheaper than new warehouse Extensive catalogue combined with e-commerce site Transaction finalised by credit card before delivering **Disadvantages:** Users not e-ready Product not ideally suited to online trading Slow internet access – Broadband needed to scan website

3.6 CONCLUSION

From in-depth literature reviews, it is evident that Internet usage is increasing, especially in developing countries. Information from literature enabled working definitions for e-commerce, e-business and e-commerce adoption to be formulated. Exploration of e-commerce adoption trends were conducted from international, African developing countries and South African perspectives. These findings enabled the tabulation of causes and effects of e-commerce adoption trends.

Although the South African e-commerce sector has shown rapid growth and has expanded over the last five years, South African Internet usage is still low compared to World standards. In the context of e-commerce, the more flexible approach of small businesses compared to their larger counterparts, gives smaller firms the opportunity to gain competitive advantage. This is supported by literature reported that small businesses in New Zealand for example, are flexible and quick to react and they generally rush to connect and participate in web-based business. Furthermore, it is emphasised that the level of business activity in some industries, are more noticeable than in others.

Although SMMEs in South Africa were initially slow to adopt e-commerce, many have matured and grown and are able to compete in the global economy. In South Africa the number of active e-commerce websites has increased over the last few years and SMMEs have started to compete globally. This is also evident from findings from local case studies conducted by the researcher. Chapter 4 extends the theme of e-commerce adoption introduced in this chapter and defines the underlying concepts leading to mitigating factors for e-commerce adoption within the ambit of research sub-question two.

CHAPTER 4

4. MITIGATING FACTORS FOR e-COMMERCE ADOPTION

4.1 INTRODUCTION

In this chapter research sub-question two[1] is answered by exploring literature and using evidence obtained from local case studies conducted by the researcher. The chapter commences by offering a brief overview of the roles of SMMEs in relation to deploying Internet and web-based technologies to conduct business. e-Commerce adoption factors are explored, including; barriers, benefits, advantages, disadvantages and Critical Success Factors (CSFs). Mitigating factors for e-commerce adoption are proposed by mapping evidence from local case studies to findings from literature. The ensuing mitigating factors are mapped to the e-commerce adoption working definition developed in Chapter 3 and to two successful online businesses by way of comparative analysis.

4.2 BACKGROUND

Birch (1989:34) reported that up to two thirds of the increase in employment in the United States of America (USA), between 1969 and 1976 had been by companies employing fewer than 20 employees. This both started a worldwide interest and stimulated the creation of SMEs, a trend that has continued since then. It is also evident in small business sector expansion explained by Oke, Burke and Myers (2004:1). Business competition increased and it was later fuelled by the increased availability of the Internet and web-based facilities. For example, "... there is no doubt that competitive pressures on UK businesses are increasing, most significantly from international and low cost nations" (Oke et al., 2004:1). Furthermore, web-technologies acted as powerful and essential tools (Rashid & Al-Qirim, 2001:63) to compete at all levels in the new economy, amid a highly competitive world. It is of interest that Grove (1999:1) stated that an inflection point in a business occurs where the old strategic picture dissolves and gives way to the new. Furthermore, Grove states a strategic inflection point is a time in the life of a business when its fundamentals are about to change.

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[1] Which mitigating factors emanated to facilitate e-commerce adoption by SMMEs?

e-Commerce adoption is a typical example of inflicting an inflection point in a business; not only will there be a technological change, or a change in competition, but also a force sweeping through the entire business affecting many aspects of it.

The Internet provided opportunities, especially for SMEs, moving organisations beyond the physical constraints of their traditional distribution channels (Kiang & Chi, 2001:27). This contributed to establishing a world-wide virtual community in which SMEs compete with larger enterprises. In 2000, when the dot com bubble burst, statements such as "... unlimited growth...death of the business cycle" were common (Taylor & Murphy 2004:281). Razi *et al.* (2004:228) provide some reassurance that many dot com businesses overcame the technical, operational and behavioural shortcomings of their failed counterparts, and led the way in logistics, customer support, web-design, promotion and Internet security to become successful enterprises.

Kalakota and Whinston (1996)[2] in Khalfan and Alshawaf (2004:47), proposed four principal contributing factors for bringing the era of e-commerce about. These were:

- Reducing transaction costs
- Providing better services to customers
- Meeting consumer demand
- Creating efficient transactions.

Within the scope of these principal factors, many adoption factors have since appeared in literature and they are discussed in this chapter. These adoption factors are categorised mainly as barriers or benefits to e-commerce adoption.

MacGregor and Vrazalic (2005a:3) found interesting aspects pertaining to SMEs in Sweden and Australia. More than 99 percent of all business in Sweden is classified as small to medium enterprises, employing less than 250 people. Of these, 94 percent are small businesses with less than 10 people. In Australia, MacGregor and Vrazalic found more than 1.2 million organisations were categorised into the small business sector. MacGregor and Vrazalic (2005a:3)

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[2]   Kalakota, R. & Whinston, A.B. 1996. *Frontiers of electronic commerce*. Reading, MA: Addison-Wesley.

further found a number of unique features that set small businesses apart from larger business and classified small businesses as being internal or external businesses. Internal business features include decision making and planning processes within the organisation and their available resources. In contrast, external features were related to market issues (products and services), customers and external environmental factors. These features are depicted in Table 4.1.

Table 4.1 Features: Unique to small business (Source: MacGregor & Vrazalic, 2005a:4)

	Features
#	**Management, Decision-Making, and Planning Processes – Internal**
1	Small businesses have a centralised management strategy with a short-range planning perspective
2	Small businesses have poor management and business skills
3	Small businesses exhibit a strong desire for independence and avoid business ventures that impinge on their independence
4	Small business owners often without information from colleagues
5	Decision-making processes in small businesses are intuitive rather than based on detailed planning and exhaustive study
6	Small business owners have a strong influence in the decision-making process
7	Family values and concerns may intrude with the decision-making processes of small businesses
8	Small businesses have informal and inadequate planning and recordkeeping processes
	Resource Availability – Internal
1	Small businesses face difficulties obtaining finance and other resources and, as a result, have fewer resources
2	Small businesses are more reluctant to spend on information technology and therefore have limited use of technology
3	Small businesses have a lack of technological knowledge and specialist staff, and provide little information-technology training for staff
	Products/Services and Markets – External
1	Small businesses have a narrow product or service range
2	Small businesses have a limited share of the market (often confined towards a niche market) and therefore heavily rely on few customers
3	Small businesses are product orientated, while large businesses are more customer orientated
4	Small businesses are not interested in large shares of the market
5	Small businesses are unable to compete with their larger counterparts
	Risk Taking and Dealing with Uncertainty – External
1	Small businesses have lower control over their external environment than larger businesses, and therefore face more uncertainty
2	Small businesses face more risks than large businesses and their failure rates are higher
3	Small businesses are more reluctant to take risks

Some of the unique features listed in Table 4.1 could also be viewed as constraints for example, small business often have less expertise and fewer available resources. Often these constraints limit expansion and growth opportunities of small business. Many of the unique features are closely linked to the regional areas in which small businesses operate. Regional areas are defined as geographical areas located outside of metropolitan centres and major cities (MacGregor & Vrazalic, 2005a:3).

4.3   e-COMMERCE ADOPTION FACTORS

Many authors have reported on e-commerce adoption factors, and they are classified as:

- Barriers (Daniel *et al.*, 2002:253-254)
- Benefits and realised benefits (Daniel *et al.*, 2002:254)
- Critical Success Factors (CSFs) (Feindt *et al.*, 2002:51)
- Human factors, management and organisational issues and challenges (Krell & Gale, 2005:118-126)
- ICT skill shortages (Kuzic *et al.*, 2002:1607).

Furthermore, these adoption factors along with other less obvious factors such as advantages and incentives of e-commerce adoption are reported by authors such as Castleman and Cavill (2001:6-7), Day and Bens (2005:160), Cloete, Courtney and Fintz (2002:1) and Al-Mashari (2002:187).

e-Commerce has been termed a *disruptive innovation* due to the impending influence of e-commerce on business and society – e-commerce adoption is not only about technology adoption, but other factors such as customer needs and expectations, or change in markets have emerged as equally important deciding factors. Christensen (1997:6) concludes that disruptive innovations may become an innovator's delemma by deciding to what extent to adhere to customer demands. Furthermore, MacGregor and Vrazalic (2005a:2) found "... unlike previous technological initiatives, e-commerce is a *disruptive* innovation that is radically changing the way firms do business". Previous innovations have mainly been to minimise dependency on other (external) organisations, allowing the business to dictate production, marketing, and other business functions, "... e-commerce forced organisations to reassess their boundaries and to focus their

attention inter-organisationally rather than organisationally" (MacGregor & Vrazalic, 2005a:2). Kalakota and Robinson (2001:30-31) report that as previous restrictions to access the Web were dismantled, commercial use of the Internet started becoming more common. This has become beneficial to especially small businesses making them aware of trends pertaining to consumers and services. The Internet and Web applications have been playing supportive roles in providing businesses with additional marketing channels (Rohm *et al.*, 2004:372). For example, successful direct marketing initiatives have emerged and new markets cannot always be analysed using traditional market research instruments (Enders, Jelassi, König & Hungenberg, 2006:70). Online marketing differs from previous traditional marketing practices and they are often viewed as separate activities in business. Online marketing channels have become increasingly popular due to the ease of access to the Internet, using Web applications that have increasingly been integrated into business operations and management marketing strategies. These integration aspects have been adopted by an increasing number of businesses. It is also evident that online businesses are moving away from an "electronic wire" syndrome, towards incorporating e-commerce into business processes and strategies.

> "The whole concept behind virtual integration is to use direct connections, enhanced by technologies like the Internet, to bring your customers virtually inside your business so you can meet their needs faster and more efficiently than anyone else" – Michael Dell (Chairman and CEO, Dell Computer Corporation (Hoque, 2000:57).

Many questions are often raised pertaining to: when or how to adopt e-commerce successfully, which industries should be selected, and what type of products or market sectors should be explored. Thatcher and Foster (2003:2) are of the opinion that the industry within which an organisation operates often determines the degree to which an organisation participates in B2B e-commerce.

4.3.1 Barriers to e-commerce adoption

In this section various barriers to e-commerce and Internet linked adoption issues are discussed from literature and summarised in Tables 4.2 to 4.7. According to Walczuch, van Braven and Lundgren (2000:561), the main barriers to Internet adoption and the consequent development of a Web presence, are simply the concern that the Internet or website would not lead to more efficiency or lower cost. Although the Internet provides 24 hour networked visibility around the world, only larger businesses appear to exploit this fact. This is at least from a cost and investment point of view, as these network opportunities have been too expensive for small firms to sustain.

Purao and Campbell (1998:327) found primary barriers resulting from start-up costs, unfamiliarity with the Web and lack of guidance about how to start the process. Firms already using the Internet, continuing to use it although were being hampered by concerns over security (Abell & Lim, 1996). Although security in itself is a separate topic, security is presented under legal and regulatory frameworks, amongst other barriers.

Furthermore, reasons why small businesses did not access and use the Internet were reported by Walczuch *et al.* (2000:568). Two of the most prevalent reasons that emerged were: lack of time and non-conclusive indications leading to increased efficiency and lowered cost. Adoption barriers connected (and unconnected) to the Internet, are depicted in Table 4.2.

Table 4.2 Barriers: Small firms adopting e-commerce (adapted from Walczuch *et al.*, 2000:563,568)

Connected to Internet	#	Barriers	Description
No	1	Awareness of SMEs / access to infrastructure	Costs (start-up costs) Unfamiliarity with the Internet Technically too complicated Too expensive with regard to computer equipment Lack of guidance about how to start the process Insecure Lack of time
	2	Critical mass among business partners	Suppliers or customers not online Too slow when using Does not lead to more efficiency or lower costs

Yes	3	Confidence in legal and regulatory frameworks / security	Security hazards Guarantee of message delivery Tampering with network messages Unauthorised access to internal networks Interception of network messages Possible use for unintended purposes by personnel Verification of authorship of messages Enforceability of contracts negotiated over the network Too expensive with regard to telecommunication costs
	4	Adaptation of business processes	Decreased productivity through frivolous use

Barriers (#1) and (#2) in Table 4.2 were applicable to companies without Internet access, whereas barriers (#3) and (#4) were applicable to companies already trading online. Small firms often use electronic commerce on an experimental level, and difficulties arising with process adaptation to online trading is not a major concern (Walczuch *et al.*, 2000:564).

A number of barriers entering the digital economy by SMEs have been identified by Taylor and Murphy (2004:285) and are summarised in Table 4.3.

Table 4.3   Barriers: SMEs entering the digital economy (adapted from Taylor & Murphy, 2004:285)

#	Entering the Digital Economy
1	Many SMEs are unaware of the potential of ICT to enhance their business operations - they consider that these technologies and techniques are not applicable to the products and services they offer, or the manner in which they choose to conduct business
2	Some SMEs occupy small and clearly defined niche markets, often entirely local, that do not need global connectivity via the Internet by word-of-mouth acting as guarantee of quality, service and reliability - fosters trust and stability
3	Perceptions of unresolved security and privacy issues associated with Internet use - typically in online payment activities, discourage small firm take-up of online trading
4	Lack of IT skill-base to engage in the digital economy - some are owner-managed with some ICT skills - most SMEs cannot hire ICT savvy staff
5	High initial set-up costs and perceived on-going costs of ICT - unable to finance investment, most likely forced to outsource ICT services
6	Most SMEs can invest "only-once" in ICT - becomes a barrier if ICT needs to be integrated into new solutions or e-business models and existing equipment may become additional barriers

As e-commerce matures, a major challenge for policy makers and SMEs to overcome these above mentioned barriers arises over time, although these

barriers vary between member states in the European Union (Taylor & Murphy, 2004:286).

It was found by Poon and Swatman (1999:11-12) that small businesses did not reap short-term benefits from trading on the Internet. Many were concerned that their offerings were not easily purchased online or that they required some form of face-to-face interaction with customers. In contrast, considering long-term benefits, more participants experienced some form of new opportunity since adopting the Internet for business activities. All participants were of the opinion that the Internet provided superior communication via email as a medium for business, where most believed email offered what the telephone and fax service did not offer by overcoming time and geographical limitations.

According to Kalakota and Robinson (2001:32) businesses need to implement updated ICT systems and procedures as soon as possible to eliminate delays. This may also require technical changes. Referring to the UK Online Annual Report (2002:14), small firms preferred to work offline using ICT to manage internal processes more efficiently. Timmers (1998:3) raised concerns about security, costs and legislation, and interoperability, while authors such as Jutla *et al.* (2002:140-152), Sadowski, Maitland and van Dongen (2002:78-83) reported on the complexity of available e-commerce services. Furthermore, Jutla *et al.* (2002:140–142) identified limited resources for competing in the global market, whereas Mehrtens, Cragg and Mills (2001:172) found the lack of financial resources was not a reason to delay Internet adoption. Sadowski *et al.* (2002:76) confirmed that Internet adoption does not always require large investment or advanced telecommunication infrastructure. However, Sadowski *et al.* (2002:77–78) and Feindt *et al.* (2002:53) revealed that a principal adoption barrier to using ICT emanated from managers differing in their opinions about the time and effort to devote to incorporating telecommunication infrastructure to satisfy online needs. Jeffcoate, Chapel and Feindt (2002:122) found a lack of SMEs customised information could contribute to why SMEs were not taking the opportunity and advantages the Internet offered them. In Table 4.4 23 adoption barriers were identified and tabulated.

Table 4.4 Barriers: Adopting e-commerce (adapted from Simpson & Docherty, 2004:320)

#	e-Commerce adoption	#	e-Commerce adoption
1	The unwillingness of managers to be responsible for technical change	13	Costs
2	Use of ICT to reduce costs and improve efficiency rather than trading online	14	Lack of awareness of what is involved
3	Fear of entry into global markets	15	Lack of skills
4	Readiness and adoption rates vary by industry sector	16	Lack of knowledge
5	The older the SME, the less likely they were to use e-commerce	17	Lack of help
6	Integration of legacy systems is difficult	18	Lack of time
7	Executive understanding is poor	19	Inadequate telecommunications infrastructure
8	Ignorance surrounds the technology, fuelling concerns about security, costs, legislation and interoperability	20	Lack of trust
9	Lack of profitable business models	21	Lack of relevance to their particular industry sector
10	Lack of qualified employees	22	Lack of SME bespoke information
11	Complexity of available e-commerce services	23	Wrong type of product or service for e-commerce
12	Limited resources		

The barriers in Table 4.4 are not specifically categorised however, Lawson, Alcock, Cooper and Burgess (2003:270) suggested that adoption barriers could be categorised due to technical or social factors. Results revealed by Lawson *et al.* (2003:275) in Australian studies, found adoption barriers were due to lack of skills, knowledge and poorly trained staff. Implementation costs, operating costs, lack of expertise and the difficulty of e-commerce training also remain important adoption barriers.

Simpson and Docherty (2004:321) reported on a number of barriers contrasting findings in the USA and Europe on larger businesses. In the USA, for example, large businesses generally state integration of legacy systems, executive understanding and concern over the lack of qualified employees as the main adoption barriers, while in Europe, large businesses perceived the adoption barriers to be due to trust, security and complexities of e-commerce systems. In both cases, there was agreement on the lack of profitable business models for e-commerce.

The principle of e-marketplaces according to Stockdale and Standing (2004:302), is nothing new as marketplaces have a long history in human society of trading goods and services for other goods or for money, and in being central to the concept of human socialisation (McMillan,2002[3] cited by Stockdale and Standing (2004:302). Furthermore, e-marketplaces "... must offer an advantage over traditional markets if they are to succeed and encourage firms to overcome any difficulties arising from using technology" (Stockdale & Standing, 2004:302). Stockdale and Standing (2004:305-309) found eight e-marketplace adoption barriers categorised as external and internal barriers, summarised in Table 4.5.

Table 4.5   Barriers: Adoption of e-marketplaces (summarised from Stockdale & Standing 2004:309)

Barriers	#	E-marketplaces adoption
External	1	Lack of understanding of SME needs
	2	No common technology standards
	3	E-competence of industry sector
Internal	4	Identification of benefits
	5	Global tracking
	6	Financial constraints
	7	Supply chain integration
	8	Understanding of e-environment

Although these e-marketplaces barriers appear to be general in nature, they need to be dealt with in a similar way as dealing with e-commerce adoption barriers. Stockdale and Standing (2004:308) suggest that the environments SMEs operate in would determine, to a large degree, how these barriers are to be overcome and changed into benefits.

A number of e-commerce adoption challenges (or inhibitors) classified as *technological, managerial* and *business related challenges*, are presented in Table 4.6.

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[3]   McMillan, J. 2002. *Reinventing the bazaar. A natural history of markets.* New York: Norton and Company.

Table 4.6 Barriers: Challenges to e-commerce adoption
(Source: Kuzic et al., 2002:1609)

#	e-Commerce Adoption
1	**Technological challenges**
	Security
	website issues
	Technology issues including cost, software, infrastructure
2	**Managerial Challenges**
	People and organisational issues
	Obtaining senior management backing
3	**Business challenges**
	Customer service
	Customers' old habits
	Legal issues

In summary, the cost of technology, lack of knowledge of dealing with customer e-commerce issues, managing the change to e-commerce and technology links to existing back-end systems were identified as key challenges (Kuzic et al., 2002:1614).

4.3.2 Benefits of e-commerce adoption

In this section various benefits associated with e-commerce and Internet adoption are discussed and depicted in Tables 4.7 to 4.9. These benefits are further categorised as *perceived* and *derived benefits*, given in Tables 4.10 and 4.11 respectively. On the whole, all these benefits indicate various opportunities for businesses to adopt e-commerce.

In an Australian qualitative research study, Poon and Swatman (1999:9-10) investigated twenty three online small businesses across a number of business sectors. The results were categorised as *direct* and *indirect perceived benefits*, "... benefits are based on individuals' experiences....not an objective measure" (Poon and Swatman, 1999:11). Direct and indirect benefits are illustrated in Table 4.7 in the context of short and long-term operations.

Table 4.7 Benefits: Using Internet commerce (adapted from Poon & Swatman, 1999:12)

Perceived Benefits	Short term	Long term
Direct Benefits	Save communication costs Generate short term revenues	Securing returning customers Long term business partnership
Indirect Benefits	Potential business opportunities Advertising an marketing	Ongoing business transformation New business initiatives

Placing these benefits into perspective from the study by Poon and Swatman (1999:11), reveals that small businesses are not reaping significant short-term benefits from Internet commerce. Many businesses believe that their offerings are not easily purchased over the Internet or that they require some form of face-to-face interaction.

According to Walczuch *et al.* (2000:561-562) small firms were not adopting the Internet to conduct business at the same rate as their larger counterparts, although offering them many advantages. The authors cited a number of empirical studies and these benefits are summarised in Table 4.8.

Table 4.8 Benefits: Internet use by small firms (adapted from Walczuch *et al.*, 2000:562)

#	Category	Description
1	Product promotion	Direct and indirect advertising
2	New sales channel	Easy access to potential customers Online sales and transactions Ability to reach out to international markets Increase in market share of products/services
3	Direct benefits – savings	Low cost communication Savings in communication costs Savings in advertising costs Increased productivity Lower cost margins for products/services Lower cost of obtaining supplies
4	Time to market	Product delivery
5	Customer services	Greater customer satisfaction
6	Indirect benefits – brand image	Company image enhanced Create an up-to-date corporate image
7	Technological and organisation al learning	Obtain know-how through discussion with others on the Internet
8	Customer relations	Form and extend business networks
9	New business models	Competitor's performance benchmarking Create new business opportunities

		Speedy and timely access to information from websites
		Communication efficiency improved
		Effectiveness in information gathering
		Availability of expertise regardless of location
		Better service and support from suppliers

Furthermore, Walczuch *et al.* (2000:562) stated that these benefits were not all equally important, and proposed that direct and indirect benefits, low cost communication and easy access to potential customers were the most important benefits. Overall, small firms claimed more benefits, such as speedy and timely access to information on websites, than larger firms.

Major benefits for e-commerce adoption were derived by the financial and banking sectors promoting increased sales, business efficiency, competitive advantage, increased automation of processes and an increased customer base (Kuzic *et al.*, 2002:1608). The authors conducted research on a number of Australian top 500 companies. They further found that a major reason for most companies, irrespective of size, to participate in e-business was to extract some benefit from it. Two main categories: tangible and intangible e-commerce adoption benefits were identified and summarised in Table 4.9.

Table 4.9   Benefits: e-Commerce adoption (Source: Kuzic
et al., 2002:1609)

Benefits	Description
Tangible	Business efficiency
	Increased automation of processes
	Transformation of traditional market chain
	Retained and expanded customer base
	Reduced operation costs
	Acquisition of a niche market
Intangible	Enhancing well-being and education of customers
	Consumer loyalty
	Competitive advantage
	Convenient Shopping

The major benefits of e-commerce adoption reported by Kuzic *et al.* (2002:1614) are: business efficiency, improved image, competitive advantage, increased automation of processes and increased business turnover.

Walczuch *et al.* (2000:566) reported on fifteen perceived benefits ranked by importance. An observation made by Walczuch *et al.* (2000:566) was that there were three direct benefits (lower costs acquiring supplies, increased productivity and increased sales). These are presented in Table 4.10 in positions 15, 12 and 4 respectively.

Table 4.10 Perceived benefits: e-Commerce adoption (Source: Walczuch *et al.*, 2000:566)

#	Perceived benefits	#	Perceived benefits
1	Distance related barriers disappear	9	Better consciousness 'business environment'
2	Improved company image	10	Availability of knowledge regardless of location
3	Continuous advertising all around the world	11	Better information on customers
4	**Increased sales**	12	**Increased productivity**
5	Effectiveness in collecting information	13	Better support and service by suppliers
6	More customer service	14	Faster and/or more flexible delivery suppliers
7	Increased customer satisfaction	15	**Lower cost acquiring supplies**
8	Possibility of reaching international markets		

Some of the benefits depicted in Table 4.10 should be viewed as short-term benefits, allowing for more development and increased use of online trading making some benefits obsolete, or rather-making them the norm of online business (Walczuch *et al.*,2000:566). However, long-term benefits would most probably be associated with suppliers and customers having more of an impact on larger firms.

Organisations adopted e-commerce for several reasons with various perceived benefits (Dubelaar *et al.*, 2005:1251). This was revealed by these authors who conducted research using eight business cases in the financial services industry and the retail and manufacturing sectors, focussing specifically on B2C aspects in Australia. Furthermore, Damanpour (2001:16) stated that some of these benefits were better management of information, better integration of suppliers and vendors, better channel partnership, lower transaction costs, better market understanding and expanded geographical coverage. Dubelaar *et al.* (2005:1255) further found the benefits could be categorised into process effectiveness, growth and customer-oriented categories. These derived benefits

are given in Table 4.11. From the three categories appearing in Table 4.11, Dubelaar et al. (2005:1256–1257) found that the third category, customer-oriented benefits was rated higher than the other two mentioned, indicating that e-commerce benefits appear to be more noticeable from a customer perspective.

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Table 4.11   Benefits: Derived B2C (Source: Dubelaar et al., 2005:1257)

#	Categories	Description
1	Process effectiveness-oriented	Ordering process automation
		Integration of online and offline business
		Improved inventory management
2	Growth-oriented	Moderate to high sales growth
		Increased learning about online business
	·	Generation of additional income/profits
		Value creation through new Internet channel
3	Customer-oriented	Winning new customers
		Internet based trading
		Clients increasingly using web-medium

The benefits of e-commerce adoption for SMEs relate to factors such as ability to keep pace with changing business landscapes, having access to global markets, changed production methods and costs, enhanced communications, reduced transaction costs and stimulated competition (Timmers, 1998:3; Tumolo, 2001:56–60; Scully & Woods, 2001[4] cited by Stockdale and Standing, 2004:305). In addition, Walczuch et al. (2000:561) found the smaller size of SMEs to be a noticeable advantage and benefit, as it made them more adaptable and responsive to changing conditions when compared to larger organisations. However, this does not indicate that large organisations cannot be adaptable and responsive to change.

"The prevailing wisdom has been that small companies are fast, entrepreneurial, responsive, and effective. Large companies are slow, bureaucratic, unresponsive, and ineffective. This is pure nonsense" (Gerstner, 2000:242).

[4]   Sculley, A.B. & Woods, W.A. 2001, B2B exchanges. The killer application in the business-to-business Internet revolution. New York: Harper & Collins.

4.3.3 Advantages of e-commerce adoption

Stockdale and Standing (2004:301) compiled a list of ten major advantages categorised as e-commerce adoption benefits for SMEs participating in e-marketplaces. Table 4.12 summarises these advantages.

Table 4.12 Advantages: e-Commerce benefits in e-marketplaces (Source: Stockdale & Standing, 2004:301)

#	Advantage	Benefits in e-marketplaces
1	Access to a wider range of markets .	For suppliers there is the potential to broaden the company's target market globally by seeking out marketplaces with a global reach For buyers there is the potential to widen the supplier base to find lower prices or a new product line
2	Greater potential for partnerships	Electronic communication enhances the ability to maintain geographically distant relationships through e-mail and multimedia programs, thereby widening support for the supplier/seller base
3	Flexibility in administration and communication	The use of an electronic environment enhances the flexibility and accuracy of administrative procedures and it facilitates communication within a company and across partnerships
4	Convenience (24/7 accessibility)	Convenience in interaction with partners, for example, time zones are less problematic when communicating electronically and customers can submit orders in their own time (it should be noted that a number of issues such as timing for global auctions requires some concessions to normal working hours)
5	Information	An advantage of many e-marketplaces is the accumulation of information into one site and it is in the interest of both market maker and participants that all parties are well informed, although a level of trust in the marketplace must be established to maintain confidence in the sources of information Information exchange is enhanced through the offering of multimedia applications for marketing, tendering and design purposes – these designs and plans can be presented via site for tendering purposes using software drawing packages Some sites offer Web services to develop marketing for their participants
6	Improved customer Services	The ability to tailor customer services to individuals is well supported as online and e-marketplaces facilitate this ability - for example, Ford anticipates that it will be able to supply car dealerships with special order models within 2 weeks after receiving online specifications
7	Updating of information	Many marketplaces support instant updates of catalogues and price lists, product specification and configurations Traditional catalogues are expensive to print and distribute and require additional printing costs to update them. Costs of online updates are substantially low

8	Lower transaction costs	Search costs for new buyer/suppliers are substantially lower - additionally, electronic transaction processing, such as order entries, online payment options and order tracking, are seen as more efficient and less expensive
9	Differentiation of products and services/ customisation	The transparency of information in e-marketplaces enables companies to identify where they can differentiate their products and services from competing companies within the same marketplace
10	Ability to enter supply chain for larger companies	Large companies have broadened their supplier bases through the use of e-marketplaces. The advantages of costs and speed that can be gained from trading on online are available to companies of all sizes and they reduce the barriers that have hindered smaller companies attempting to enter the supply chains of larger companies

The e-commerce benefits for SMEs relate to SMEs ability to keep pace with a changing business landscape. The range of benefits that can be achieved by participation in e-market places is extensive, although not all benefits will apply equally to all businesses.

4.3.4 Disadvantages of e-commerce adoption

According to MacGregor and Vrazalic (2005a:5) Swedish and Australian studies revealed that SME e-commerce adoption barriers were generally perceived as disadvantages. This was mainly due to "... eroded trading barriers for small businesses, this has often come at a price of altering or eliminating commercial relationships and exposing the business to external links". Although there were some conflicting results in their findings, in that some SMEs did not perceive e-commerce adoption a disadvantage, rather as a change in the mindset of the organisation. The most noticeable disadvantage was the decline in contact with customers. Table 4.13 depicts eight disadvantages.

Table 4.13   Disadvantages: e-Commerce adoption (Source: MacGregor & Vrazalic, 2005a:6)

#	Disadvantages of E-Commerce Adoption
1	Deterioration of organisation's relations with business partners
2	Increased costs
3	Increased computer maintenance in organisation
4	Doubled work in organisation
5	Reduced flexibility of the work in organisation
6	Work in organisation has become more monotonous since e-commerce was adopted
7	Affected security of IT systems in organisation
8	Too dependant on e-commerce following adoption of this technology

4.3.5 Reasons for e-commerce adoption

Simpson and Docherty (2004:315) investigated reasons why UK SMEs involved in traditional commerce, would need to move to e-commerce. The authors found little evidence why these SMEs would need to adopt e-commerce. However, from investigating the literature, the authors cited examples of aspects of ICT, management, reasons (benefits) associated with e-commerce adoption. Reasons for e-commerce adoption are summarised in Table 4.14.

Table 4.14 Reasons: Adopting e-commerce (Source: Simpson & Docherty, 2004:320)

#	Reasons for adopting e-commerce	#	Reasons for adopting e-commerce
1	To improve business competitiveness	11	Impression management
2	To try out new e-commerce models	12	Advertising costs can be reduced
3	Management eagerness/motivated CEO	13	Company size and perceived importance of e-commerce to business purpose
4	The need for better communications	14	To improve communications
5	Admission to world markets	15	External pressures from a new type of customer value proposition
6	Greater opportunities for innovation in SMEs due to SMEs' smaller size and flatter organisational structure	16	Responding to competitors
7	Perceived benefits	17	Low entry costs
8	Organisational readiness and external pressure	18	To enhance customer relations
9	Opportunistic and based on cost	19	The Internet as a "lifesaver" for ailing businesses
10	To increase sales	20	May reduce working hours for owner-managers in some businesses

Many benefits appearing in Table 4.14 are of a general nature, but according to Simpson and Docherty (2004:326), internal pressures from family (particularly from children) and friends, rather than external pressures (including competitive), were a major factor in adopting e-commerce. Furthermore, e-commerce adoption appeared to assist small and struggling businesses. A new aspect emanated, that of social benefits, manifested in the form of reduced workload of owner-managers, giving them more time to reflect and think about their business by implementing and using time saving processes.

Walczuch *et al.* (2000:567) found that Dutch small firms derived benefits from using the Internet for business, by successfully applying the phenomenon of border-crossing (disappearance of distance related barriers). Subsequently, it was found by Walczuch *et al.* (2000:567) that many new and varied uses of the Internet emerged. Of these SMEs, 91 percent used the Internet for external communication via email and only 25 percent of firms used the Internet for internal communication. These findings are depicted in Table 4.15 ranked according to usage percentage.

Table 4.15   SME Internet usage (Source: Walczuch *et al.*, 2000:567)

#	Type of use	(%)	#	Type of use	(%)
1	External communication (E-mail)	91	8	Research and development and sharing of information and software	19
2	Searching for Web page addresses	79	9	Being seen at the forefront of modern technology	18
3	Randomly looking for information	76	10	Sending purchase orders to suppliers	18
4	Obtaining information from suppliers	57	11	Product and market research	18
5	Offering information to customers	32	12	Receiving orders from customers	12
6	Contact with governmental agencies	25	13	Voice/video conferencing	1
7	Internal communication	25	14	Placing job vacancies	<0

More than 75 percent of firms searched for Web page addresses when searching for information on the Internet (Walczuch *et al.*, 2000:566). These authors also found that areas of growth over the next few years would be offering information to customers, sending purchase orders to suppliers and receiving orders from customers, as well as placing job vacancies.

Ratnasingam (2004:71-72) conducted research on approximately one thousand Australian and New Zealand businesses that included B2B, B2C and B2G (Business to Government) entities. The aim was to examine the challenges, barriers and risks that SMEs experienced with e-commerce adoption. The author paid special attention to ICT and security issues with the view to explore e-commerce adoption and implementation matters. Table 4.16 provides a description of ICT costs, summarised by four cost categories: security, implementation (physical) and (documentation), and contractual.

Table 4.16 Technological costs: e-Commerce implementation (Source: Ratnasingam, 2004:75–76)

#	Cost category	Description
1	Security	• Internally - from e-commerce system and business practices • Externally - from trading partners • Government policies, taxes and audit procedures • Management of security issues • Trading partners' lack of skills and technical know-how for secure e-commerce, creating operational and technical risks
2	Implementation (Physical)	• Applications, connection costs, hardware, software, set-up, Maintenance, Compatibility with internal and external systems
3	Implementation (Documentation)	• Initial search costs, Writing contracts, Pay staff to update and maintain databases
4	Contractual	• Correspondence, Transmission, Coordination
		• Staff training • Technical implementation expertise, Contracts with communication supplier
		• Lack of technical knowledge, Lack of expertise, Lack of resources hindered IT use and e-commerce participation

4.3.6 Critical success factors of e-commerce adoption

Success is defined as:

"... having achieved the desired results, effects or outcomes" (Chambers, 1994[5] in Dubelaar et al., 2005:1252).

Critical Success Factors are defined as:

"... those few key areas where things must go right for business to prosper" (Rockart, 1979[6] in Dubelaar et al., 2005:1252).

As far as e-commerce adoption issues pertaining to the banking and finance industry in Australia were concerned, Kuzic et al. (2002:1607) reported that both, benefits and challenges occurred however, mainly CSFs. The key challenges

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[5] Chambers. 1994. *The Chambers dictionary*. Edinburgh: Chambers-Harrap.
[6] Rockart, J.F. 1979. Chief executives define their own data needs. *Harvard Business Review*, 67(2):81-93.

uncovered for this industry were the cost of technology, lack of e-commerce knowledge, acquiring IT skilled people, customer service and budgeting.

To maximise value from e-commerce, businesses ought to identify and evaluate factors applicable and critical to their existing business success. Furthermore, Kuzic *et al.* (2002:1609) identified three critical success factor groups. These are technological, managerial and business related and they are summarised in Table 4.17.

Table 4.17 CSFs: Banking and Finance industry (Source: Kuzic *et al.*, 2002:1609)

#	CSF	Description
1	Technological	Secure transactions
		Website functionality and features such as, catalogues, frequently asked questions, CRM, decision support
		Payment issues credit cards and e-payment
		Integration of website to all business processes
		Adequate resources and appropriate e-commerce infrastructure
2	Managerial	Effective project leadership – company vision
		Forming alliances – with suppliers, technology providers, customers
		Appropriate organisational structure
3	Business related	Advertising on-and offline
		Rapid delivery
		Disintermediation
		More personalised customer service
		Market responsiveness

Considering the CSFs in Table 4.18, secure transactions were not considered a major challenge, but rather a success factor. Other success factors were project management, adequate resources, support from top management and facilitation of rapid delivery systems.

Kuzic *et al.* (2002:1611) further established a ranking order for benefits, challenges and CSFs from the financial and banking industries, of which only the CSFs are summarised in Table 4.18.

Table 4.18 CSFs: Ranked Banking and Finance industry (Source: Kuzic et al., 2002:1611)

Rank	CSF Description	Rank	CSF Description
1	Secure transactions	20	Forming alliances with new partners
2	Top management support	21	Payment via credit card
3	Functional and user-friendly website	22	Cross-functional project team
4	Partnership with technology providers	23	Active role of IT department in organisation
5	Effective project leader	24	Online tracking facilities
6	Adequate resources	25	Advertising in newspapers, magazines, radio and TV
7	Regular update of the content of the website	26	Electronic payment system
8	Rapid delivery	27	Allowing FAQ on website
9	Responsive and flexible to the market	28	Appropriate metrics to measure success
10	Being visionary	29	Online personalised recommendations
11	Responsive and flexible towards new strategies	30	Providing online decisions support
12	More personalised customer service	31	Advertising online
13	Integrating website to all business processes	32	Availability of new intermediaries for EC
14	Excelling in communication with customers	33	website listed on critical search engines
15	The use of new technology	34	Comprehensive e-commerce legislation
16	Appropriate organisation structure	35	Appropriate Socio-technical policy
17	Partnership with service provider	36	Appropriate packaging
18	Partnership with suppliers	37	Disintermediation
19	Online catalogue		

In Table 4.18 the most common CSFs identified are secure transactions, top management support, functional and user-friendly website, and extends to the least common CSF, disintermediation.

Research on SMEs based on the KITE (2006)[7] project cited by Feindt et al. (2002:51), specifically focussed on "... the *baby gazelles*[8] of the Internet economy". An example of a fast growing gazelle is a SME that has listed on a

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[7] KITE (Knowledge and Information Transfer on Electronic commerce) 2006. A project of the European Strategic Program on Research on Information Technology of the European Union (ESPRIT). Collected information about 150 SME e-commerce ventures world- wide from a sample of 1 000 innovative start-up e-commerce activities in various industry sectors.

[8] An innovative start-up SME (in terms of products, application of technology and pursuing business concepts) and being classified as a fast growing business.

stock exchange and employs 100 people two years from inception (Feindt *et al.*, 2002:61). CSFs emanating from the above mentioned study were divided into eleven categories, all linked to SMEs during the start-up phase of e-commerce adoption. According to the authors, it must be kept in mind that these factors were developed for real-world businesses and they are summarised in Table 4.19.

Table 4.19   CSFs: Start-up (Source: Feindt *et al.*, 2002:55-56)

#	Category	Definition	Competitive advantage
	Category	**Definition**	**Competitive advantage**
#	**Relevant to all businesses involved in e-commerce**		
1	Content	The presentation of a product or service offered over the Internet in a way that is attention-grabbing and compelling	Customers are attracted to the site and persuaded to buy
2	Convenience	The usability of the website for the purpose for which it was designed: for example, to assist, to buy or sell, to find information, to track a process	Users find it easy to carry out the process, so are more likely to use the site and return to it
3	Control	The extent to which organisations have defined processes that they can manage SME may have a process that they can manage SME may have an agreed process with its fulfilment company whereby it is informed when its products are delivered to customers; an SME may have a process for responding to customer queries within a certain timeframe - for changing and updating information on its website	The E-commerce business is efficient and responsive, and well-positioned to improve, automate and integrate processes in the future
4	Interaction	The means of relationship-building with individual customers by providing timely pre-sales information and excellent after-sales support	The business builds up a critical mass of loyal customers
	Relevant to all businesses within a particular industry sector		
5	Community	The means of relationship-building with groups of like-minded individuals / organisations by enabling the exchange of information and services tailored to the needs of the community	The business builds a critical mass of highly loyal customers/partners
6	Price Sensitivity	The sensitivity of a product or service to price competition on the Internet	The business positions itself as a leading supplier of a price-competitive commodity/or non/less price-sensitive value-added product or service, depending on strategy

		Relevant to individual businesses	
7	Brand- Image	The ability to build up a brand name for e-commerce business and its products and services, using online and offline brand-building techniques	The more awareness a business can generate for its site, the greater the volume of traffic and potential for sales
8	Commitment	A strong motivation for using the Internet and the will to innovate	The E-commerce venture is driven by a strong vision that motivates all concerned to succeed
9	Partnership	The extent to which an e-commerce venture uses partnerships to leverage Internet presence and expand its business	Partners can extend the market reach of an E-commerce company and enable it to provide services it would otherwise not have the resources to carry out
10	Process Improvement	The extent to which companies can change and automate business processes	The business can respond quickly and cost-effectively to new market opportunities
11	Integration	The provision of links between underlying IT systems in support of partnership and process improvement	Integration enables companies to carry out new and extended (Extranet) business processes in real-time, reliably and cost-effectively

It is evident that the eleven CSFs were further segmented into three phases *of* growth through which an SME may pass. These phases are: start-up phase, growing and establishing phase, and supporting high volume and maturing phase of e-commerce activity. As SMEs grow, mature and develop, more of the identified CSFs may become applicable to particular businesses.

Feindt *et al.* (2002:56) categorised SMEs into three business categories; determination focussed, differentiation focussed and cost focussed. A SME with a focus on a determination to grow and create wealth has to take into account most of the eleven mentioned CSFs at an early stage in its development. A cost focussed baby gazelle "... has to take into account as many as seven CSFs right from the start, whereas a differentiation focus baby gazelle has to handle the first six CSFs to compete effectively". Table 4.20 depicts these three phases of growth and differentiation-and cost focussed approaches. Table 4.20 also indicates that brand image is a borderline CSF, with brand image included in a differentiation-focussed start-up baby gazelle, but not included in a cost-focussed start-up business.

Table 4.20 CSFs: Phases of growth and differentiation-and cost focussed approach (Source: Feindt *et al.*, 2002:56)

#	CSF	Diff BG[a]	Cost BG[b]	Growth phase
1	Commitment			
2	Content			
3	Price sensitivity			
4	Convenience			Start-up
5	Control			
6	Interaction			
7	Brand image			
8	Community			Growth / Transition
9	Partnership			
10	Process improvement			High Volume / maturity
11	Integration			

Key: [a] Differentiation Baby Gazelle; [b] Cost focus Baby Gazelle

Dubelaar *et al.* (2005:1251) asserted that organisations need to manage problems associated with electronic trading adoption and a number of factors are associated with successful e-business adoption. They further explored literature to obtain CSFs associated with e-commerce adoption in the B2C space and reported on findings by Turban *et al.* (2000)[9] in Dubelaar *et al.* (2005:1252). In addition, Phan (2002:213-215), Porter (2001:62) and Butler (2000:38-40) reported aspects of CSFs. Subsequently, Dubelaar *et al.* (2005:1253) created three major CSF categories; strategic, structural and management-oriented and these are depicted in Table 4.21.

Table 4.21 CSFs: B2C environment (Source: Dubelaar *et al.*, 2005:1253)

#	Category	Description
1	Strategic factors	Internet and related technologies used as a compliment to the existing strategies
		Basis of competition not shifted from traditional competitive advantages such as costs, profit, quality, service, and features
		New competitors and market shares tracked
		Web-centric marketing strategy
		Company's strategic position in the market strengthened
		Distribution and supply chain model frequently reviewed to maximise company's gain
		Buyer behaviour and customer personalisation
		First-mover advantage and quick time to market
		Good products and services offered by e-business
		Innovation allowed when risks are low
		Customer's and partner's expectations from the Web to be well-

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9 Turban, E., King, L.J. & Chung, H. 2000. *Electronic commerce: a managerial perspective.* New York: Prentice Hall.

		managed
2	Structural factors	Right digital infrastructure
		Good e-business education and training to employees, management and customers
		Current systems expended to cover entire supply chain
		Good cost control
3	Management -orientated Factors	Organisation-wide commitment to e-business leadership (in terms of roles, responsibilities, budget matters, cross-functional interdependencies)
		Support for e-business from top management
		Awareness and understanding of capabilities of technology by executives
		Communication of the e-business throughout the organisation by top management

Research findings of Dubelaar *et al.* (2005:1261) indicate that the majority of companies derived benefits in the context of satisfying customers, improving business process effectiveness, increasing company growth in terms of income and customer development and enhancing value.

It was found to be essential for SMEs to choose their trading partners and skills carefully, starting with a needs-based strategy, rather than a technology-based solution, as "... not to all solutions meet their requirements should aim to develop an e-commerce strategy that complements the corporate strategy" (Ratnasingam, 2004:80). Furthermore, organisations should aim to develop an e-commerce strategy that complements the corporate strategy. The most prominent CSFs to implement e-commerce are depicted in Table 4.22, however, Ratnasingam (2004:80) omitted to specifically distinguish between e-commerce adoption and implementation.

Table 4.22 CSFs: Implementation of e-commerce (Source: Ratnasingam, 2004:80)

#	Critical success factors required for implementing e-commerce in organisations
1	Start with a needs-based strategy rather than a technology-based solution, as not all solutions meet requirements and business processes of a trading partner, as some segments will not use the Web
2	Develop an e-commerce strategy which complements the corporate strategy.
3	Aggregate the disparate investments in e-commerce that are likely to be found in any organisation
4	Avoid layering costs onto the current distribution network and look for substitution between channels
5	Choose trading partners and their skills carefully
6	Integrate across the entire organisation in order to achieve large efficiency gains.
7	Recognise that the transparent implementation and changing process is importance both in terms of acceptance and achieving expected efficiency gains

8	Distinguish between striving to win new markets or customers and gaining cost savings from process investments
9	Develop a benefits register and measure achievement against it

A number of factors have been identified to promote e-business success among SMEs. However, most of these factors relate to internal rather than external conditions of businesses. This is evident according to Taylor and Murphy (2004:288) referring to the report of European Innovation Monitoring System (1996)[10], which in turn cites Burns and Harrison (1996)[11]. Further findings are by Lin (1998:45-47), Perren (1999:58-64) and Feindt et al. (2002:53).

The main factors among these are:

- Owner motivation

- Experience and management skills

- Expertise in managing growth

- Access to resources (money, technology and people)

- Innovation, competitive advantage and flexibility

- Close contact with customers

- A focus on profits rather than sales

- Strong demand and operating in a growth market.

Critical growth factors of SMEs engaged in e-commerce was identified by Feindt et al. (2002:55) emanating from their research, culminating in eleven success factors identified and divided into three broad categories and depicted in Table 4.23.

Table 4.23   Critical growth factors: Implementation of e-commerce (Source: Feindt et al., 2002:55)

Critical SME growth factors					
#	Factors	Categories	#	Factors	Categories
1	Content	All companies involved in e-commerce	7	Brand image	Individual companies supporting
2	Convenience		8	Commitment	
3	Control		9	Partnership	
4	Interaction		10	Process improvement	
5	Community	All companies in a particular industry sector	11	Integration	
6	Price sensitivity				

[10] European Innovation Monitoring System. 1996. Review of studies of innovative fast growing SMEs, Publication No. 43, Brussels, May.

[11] Burns, P. & Harrison, J. 1996, Growth. In Burns and Harrison, J. (eds). *Small business and entrepreneurship*. London: Macmillan.

4.4 MITIGATING FACTORS FACILITATING e-COMMERCE ADOPTION

Although many e-commerce adoption benefits, barriers and success factors were reported on in section 4.3, it is not a simple matter to identify a list of mitigating factors to facilitate e-commerce adoption. It is evident that some barriers appearing in certain situations, may even be deemed benefits in other situations. In an attempt to explore mitigating factors more fully, examples of international and local cases were considered, although a number of examples from literature have already been explored.

4.4.1 International mitigating factors

Evidence from research conducted by Khalfan and Alshawaf (2004:48) pertaining to adoption and implementation of e-banking in Oman are summarised in Table 4.24. Similar factors identified in section 4.3 emanated, to the extent that "... In general, banks in the Arab World are conservative and have been slow to launch major e-banking services", and "... Internet banking is a relatively new area in this region, there are several issues that have not been adequately investigated, especially in the context of emerging economies" (Khalfan & Alshawaf, 2004:48). Managerial barriers to e-banking adoption are tabulated in Table 4.24, and ranked in order of importance from the results obtained from the study in Oman.

Table 4.24   Managerial barriers to e-banking adoption (Source: Khalfan & Alshawaf, 2004:55)

#	Barriers	Rank
1	Lack of top management support	1
2	Dependence on external vendors	2
3	Internet banking projects are NOT aligned with organisational objectives	3
4	Limited technological knowledge	4
5	Lack of knowledge on the importance of e-commerce projects	5
6	Managers prefer the 'traditional' ways of doing business	6

Considering the six barriers depicted in Table 4.24, only barriers (#1) to (#4) were considered important by IT managers applicable to Omani banks. This was due to valuing the emerging technology of e-commerce, but at the same time, expressing some doubt that the new technology would be suitable to Omani business environments (Barrier #1). Barrier #2 was accepted as a core factor

133

essential to e-banking. Another observation was that Internet banking projects were not aligned with organisational objectives (Barrier #3). Finally, the lack of technological knowledge, mainly due to the rapid changes in technology (Barrier #4) was an important aspect to come to terms with (Khalfan & Alshawaf ,2004:54–56).

Details of e-commerce experiences of eight major business organisations involved in e-commerce, namely Transtec, BHP Steel, Ford Motor Company, Barnes and Nobel, West Marine, Dell Corporation, Amazon.com and FedEx were disclosed by Al-Mashari (2002:182). During the analysis of the case studies, a number of CSFs were identified. All the identified businesses were linked to successful e-commerce adoption initiatives and could be considered as examples to provide mitigating factors of e-commerce adoption. Table 4.25 provides a summary of these case studies findings.

Furthermore, many factors emanating from the case studies depicted in Table 4.25, also appear in section 4.3 for example, customer interaction, top management support, ease of use, low cost, infrastructure and others.

Table 4.25   Case study results of e-commerce adoption experiences (Source: Al-Mashari, 2002:187)

CFSs Case study findings		
Dell	**Transtec**	**Ford Motor Co.**
• User-friendly Web interface • Top management support • Maintaining strong links with customers and suppliers • Powering website with strong search engine. • Ensuring customer acceptance • Providing up-to-date information, including price list • Presenting prices in many different currencies • When using the shopping cart, you can store its contents for later use	• All information it provides comes from the same database or data source • Short and fast decision processes at the enterprise, enabling new developments to be implemented as soon as tests have confirmed their reliability and benefit • Internet presence has been widely recognised and has been a marketing success • Transparency of content presented, and user-friendly and comfortable interaction features • Clear strategy on how	• Providing computers to most of worldwide workforce • Ford Motor Co. www.ownerconnection.com provides 24/7 connectivity between the company and its customers, and Ford Online Store gives customers the convenience of ordering selected parts and accessories from their home PC
		Barnes and Nobble
		• Business growth • Increased customer satisfaction • Decreased costs
		West Marine

• Continuous promotions • When buying a computer, you can draw up and price your own specification, with the facility to modify different elements according to need and cost • Customers can browse the Dell site by country • When customers specify components in their selected *computer* system, Dell enables them to print the report and an expanded report *for personal use* • Customers can track orders via the order ID number at any time • Providing powerful support service via the website	pre-defined goals should be achieved • Good technical infrastructure for fast processing of customer information and orders	• Top management commitment • Setting clear objectives • *Dealing with excellent supplier*
	BHP Steel	**Amazon**
	• Top management support. • Company-run staff training and awareness programmes • Maintaining good trading partner relationships • Assisting customers by providing technical help and cost/benefit analysis for them	• Easy set up, via the Internet itself, of online sales of books • Trouble-free ordering, payments and delivery • Revenue sharing (up to 15 percent to the online bookstore) • Not set-up or service fee • Low cost • Easy to use
	FedEx	
	• Trouble-free ordering, payments and delivery • No set-up or service fee • Low cost • Easy to use	

4.4.2 South African mitigating factors

This researcher conducted case study research on five South African SMMEs. Using a similar reporting format to the one used by Al-Mashari (2002:182) on international case studies, local case studies were conducted and the evidence is summarised in Table 4.26. For each of the case studies appearing in Table 4.26, their respective CSFs were selected using the following procedure:

- A CSF list was compiled from Table 4.25, starting with the longest list of CSFs (Dell Corporation) and adding additional CSFs from the other seven case studies

- The CSF list was compared to evidence obtained from the case study reports for each of the local case studies. Irrelevant, or non-applicable CSFs were eliminated

- The resulting CSFs for each case study were then used to populate each case study's specific CSFs in Table 4.26.

Table 4.26 CSFs: Summary of South African case study findings of SMME e-commerce adoption

Critical Success Factors		Case studies				
#		A	B	C	D	E
1	User-friendly web interface	✓	✓	✓	✓	✓
2	Top management support	✓	✓	✓	✓	✓
3	Maintaining strong links with customers	✓	✓	✓	✓	✓
4	Ensuring customer acceptance	✓	✓	✓	✓	✓
5	Providing up-to-date information, including prices	✓	✓	✓	✓	✓
6	Continuous promotions	✓	✓		✓	✓
7	Customers can track bookings via booking ID number at any time	✓	✓		✓	✓
8	Providing support service via the website	✓	✓	✓	✓	
9	Good technical infrastructure for fast processing	✓	✓	✓		✓
10	Open system, anyone may access to conduct business	✓	✓		✓	✓
11	Evidence of maintaining good trading partner relationships	✓	✓			
12	Powerful website with strong search engine	✓				
13	When using the shopping cart, contents can be stored for later use	✓			✓	

4.4.3 Compiling e-commerce adoption mitigating factors

The four principal factors leading to e-commerce adoption introduced in section 4.2 by Kalakota and Whinston (1996) (cited before) consisted of; reducing transaction costs, providing better services to customers, meeting consumer demand and creating efficient transactions, and they were used to commence this process of compiling e-commerce adoption mitigating factors. The first and fourth principal factors (reducing transaction costs and creating efficient transactions) were found to be very similar, and as no specific details could be obtained on what basis each were identified, the last factor was eliminated from the list. Additional adoption factors and benefits or advantages have emerged from the literature as discussed in section 4.3, of which most factors could be classified under the three remaining principal factors.

Notwithstanding some additional factors were identified and grouped together as; organisational, management strategies, the importance of relevant infrastructure, maintaining good trading partner relationships and required skills base factors. Adding these additional five factors to the three original principal factors, eight mitigating factors for e-commerce adoption were formulated for SMMEs and they are depicted in Table 4.27.

Table 4.27   e-Commerce adoption mitigating factors

#	Mitigating factors
1	Reducing transaction costs
2	Providing better services to customers
3	Meeting consumer demand
4	Promoting partnerships with stakeholders
5	Organisational issues
6	Management strategies
7	Relevant infrastructure
8	Required skills base

4.4.4   Validation: e-Commerce adoption mitigating factors

Validation of the e-commerce adoption mitigation factors depicted in Table 4.27 is conducted in this section. The reason for the validation is to ensure that the mitigating factors are relevant and of practical use. The validation process is conducted in two parts. In Part 1, the mitigating factors are mapped to the e-commerce adoption working definition developed in Chapter 3. In Part 2, the mitigating factors are mapped to two further cases from literature.

- **Part 1 - Mapping to the e-commerce adoption working definition** - this was accomplished by mapping the respective mitigating factors to relevant phrases appearing in the working definition.

The *mapped* working definition of e-commerce adoption is depicted below, indicating the relevant mitigating factors (#1 to #8) where applicable:

Cost effective (Factor #1) way to reach global players (Mitigating factor #2), gaining market share (Factor #2), streamlining a wide spectrum of business processes (Factor #6) and technology (Factor #7) for competitive advantage (Factor #3) utilising telecommunication networks (Factor #7), improving relationships (Factor #4), advantageous to early adopters, willing to change (Mitigating factor 6) and improve communication - internally and externally (Factor #5), ensuring sufficient resources (Factor #6) and skilled-staff Mitigating factor (Mitigating factor #8).

From the above mapping procedure, all eight mitigating factors were contained in the e-commerce adoption working definition.

- **Part 2 - Mapping to successful e-commerce adoption cases** - this was accomplished by mapping the e-commerce adoption mitigating factors to two successful international online chain stores by indicating which mitigating factors (#1 to #8) were applicable.

  - **Wal-Mart** - The strategy of this chain store in terms of their B2C e-commerce initiative was explored. This business evolved from a traditional *branch-based* business and Khosrow-Pour (2006:111) cited Yousept and Li (2006)[12] quoting Wal-Mart Europe ISD Director as stating "... I think we see the dot com operation as an extension or another way of touching our customers" (Factor #2). Furthermore, Wal-Mart had experienced growth in their online business, while continuing to grow their core business. For Wal-Mart, it was important to trade online as it offered their business another means to communicate and meeting their customer needs (Factor #3). An interesting observation about this business process is that although Wal-Mart trades online, the business remained to trade via their stores, this being the bulk of their business. Yousept and Li (2006) found the combination of *online* and store-based businesses is often customer localised, indicating that "... the *click* option is a way to improve services to customers" passing financial benefits to their customers (Factor #1).

  - **Office Depot Inc.** - Lee (2006:111) reported on this chain store (an International office equipment supplier chain) "... through technology we can give our employees access to more comprehensive information more quickly than we could in the past." (Factor #4). Lee (2006:111) further found technology provided the power to make better decisions more quickly and cost-effectively by eliminating the steps and reducing errors that are inevitable with all paper-based manual processes (Factors #5, #7). This meant Office

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[12] Yousept, I. & Li, F. 2006. Building an online grocery business – the case of ASDA.com. In Khosrow-Pour (ed). *Cases on electronic commerce technologies and applications.* London: Idea Group:107-127.

Depot Inc. could streamline their entire business and rededicate cost savings to improve customer service (Factors #1, #6).

Considering both these examples, internal, external, technological and cost issues were highlighted as being essential for online business. Furthermore, customers are important components in order for online businesses to grow. The reliance on ICT was revealed as a key element to cost saving, speed and a number of other essential aspects. It was evident that the continuation of traditional outlets augmented online aspects of businesses.

The validation discussion in this section encompassed the working definition of e-commerce adoption and two successful international online businesses. In both instances, the e-commerce adoption mitigating factors were mapped to indicate the relevance of the mitigating factors depicted in Table 4.27. Therefore, the requirement of research sub-question two could be satisfied.

4.5 CONCLUSION

The Internet and its accompanying technologies have been characterised as disruptive technologies because they challenge business structures, technological infrastructure and management decision-making processes. Many e-commerce adoption factors were found in the literature spanning over the past five years revealing barriers, benefits, advantages and CSFs. Human, management and organisational factors, issues and challenges as well as skill shortages have also been revealed.

Fundamental issues were explored typically faced by SMMEs to understand various stakeholders such as, customers, suppliers and partners, still largely lacking. It was further observed that studies on e-commerce covering aspects such as relationship management with suppliers, customers, competitors, and future business and environmental strategies were not available. This chapter set out to provide mitigating factors for e-commerce adoption firstly, by exploring literature and secondly using evidence from local case studies. The outcome of this process necessitated the addition of absent, but essential factors to formulate relevant mitigating factors. These mitigating factors were verified by mapping these factors to the e-commerce adoption definition formulated in Chapter 3.

Furthermore, mapping occurred to cases from successful online business in practice. In the above deliberations and analysis, research sub-question two was satisfied.

In Chapter 5, the focus of this research is on developing a scientifically based model to formalise an approach to e-commerce adoption within the ambit of research sub-question three.

CHAPTER 5

5. e-COMMERCE ADOPTION MODEL

Due to the complexity of the design process of the e-commerce adoption model, a structure diagram is included here to simplify the sequence and topics covered in this chapter, which has been divided into seven sections. Starting with an introduction, a number of sections follow as depicted in Figure 5.1, leading to the development of the model and conclusion of the chapter.
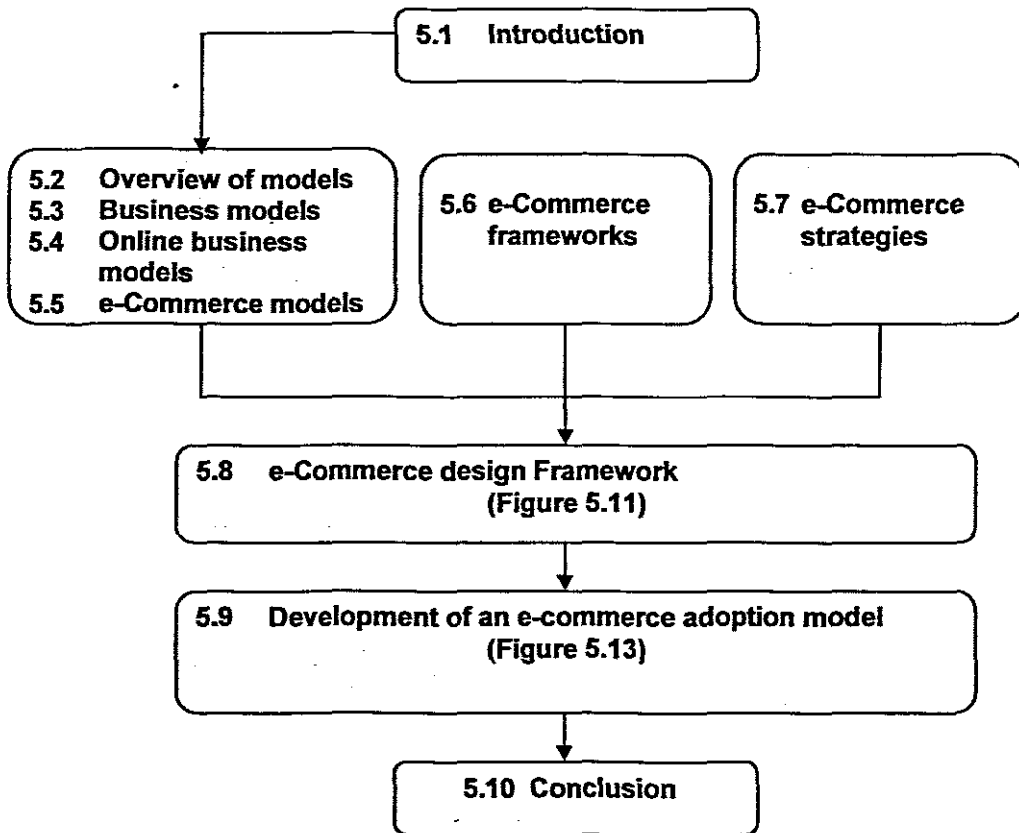
Figure 5.1 Layout of Chapter 5

5.1 INTRODUCTION

From the outset of this research, a scientifically based e-commerce adoption model (the model) was planned to be developed, to formalise an approach to e-commerce adoption within the ambit of research sub-question three. Firstly, the literature contained in chapters 3 and 4, and the exploration of business models, frameworks and strategies in this chapter highlight the importance of these topics. Secondly, the online business environment is explored, thereby revealing

aspects from the literature pertaining to e-commerce adoption and its associated challenges.

A framework was created to guide the development of the model. Although a model is developed in this chapter, this model is validated and refined in Chapter 6, to become the final e-commerce adoption model.

5.2 OVERVIEW OF MODELS

The bold and shaded part in the graphic below used in this section dealing with models, indicates the current topic under discussion and coinciding with the layout of the chapter depicted in Figure 5.1. The same graphic layout is used in sections 5.3, 5.4 and 5.5.
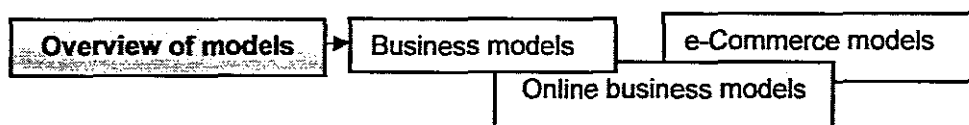
Cleland and King (1968:66) state that "... a model is a representation of something else". In their analysis of the definition of a model, the authors refer to the *something else* in the definition as some observable system or phenomenon that exists in the real world. They further cite an example of a child's model aeroplane being a representation of a real-world system. Each exterior dimension of the real aeroplane is accurately represented in miniature on the model. In addition, many detailed features of the real aeroplane are completely excluded from the model. Furthermore, the aeroplane model mentioned above is an intrinsic part of a scientific model; that is, some aspects of the real system are included, and some are excluded. This is "... consistent with the scientist's idea of a model as an abstraction of reality" (Cleland & King, 1968:66).

They further expand their discussion around another model, the ground-training device (known as a simulator). There are very different elements and features pertaining to the two models mentioned. These two kinds of models illustrate the applicability of the layman's view of a model as a representation of *something else,* to the scientific concept of a model. In the case of the model for the child, the exterior configuration, colour and markings are important, and the aspects

that are not visible, are unimportant. However, in the case of the simulator, the aesthetic value is insignificant, but the interior design and detail is of the utmost importance.

A contrasting description of a model is provided by Takahashi and Takahara (1995:1):

> "Let A and B be two objects. If B is considered to copy the features of A, B is called a model of A. Then A is a prototype of B."

An analysis of this description reveals that B is not a copy of A, but possesses the features of A. From this definition, whether B is a model of A is not absolutely determined. There is no absolute and objective criterion to determine whether one entity is a model of another. A model is what model builders consider a model according to their criteria of validity. Furthermore, "... the validity determines only whether the model under consideration is *good or not* in terms of the aims for the construction and use of the model. The aims are closely mapped to the functions of the model: theory, formation, simplification, reduction, extension, explanation, concretisation, globalisation, action or experimentation" (Appostel,1960[1] cited by Takahashi & Takahara, 1995:1-2).

Considering the validity of models mentioned above with reference to some aim to use the model, the first objective of this research, discussed in Chapter 1, states that theoretical contributions formulated within the ambit of this thesis should have a practical as well as a theoretical application in solving real-world problems, to the benefit of target SMMEs.

There are many different kinds of models that have been applied to physical systems. A schematic diagram typically is used to represent an electrical system and it is equivalent to a physical system. A schematic diagram consists of unique blocks representing elements in an actual system. Lines and arrows between these blocks indicate links between the physical elements. Furthermore, an organisation chart normally depicts human elements of an organisation (system)

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[1] Appostel, L. 1960. Towards the formal study of models in the non-formal sciences. In Freudenthal, H. (ed). *The concept and role of the model in mathematics and the natural and social sciences*: a colloquium, Dortrecht: Holland.

in blocks, rather than depicting organisation elements, but their interrelationships are indicated by lines linking the various blocks (Cleland & King, 1968:41).

A useful taxonomy to understand the structural differences in models, is given by Churchman, Ackoff and Arnoff (1966:159–162) and Cook and Russell (1993:11). These authors categorise models as *iconic, analogue,* or *symbolic:*

- **Iconic models:** An iconic model is a simple scale transformation of the real-world system – a model airplane is an iconic model

- **Analogue models:** An abstract variety of models as its properties are transformed – one property is used to represent another. A graph is the simplest illustration of an analogue model

- **Symbolic models:** The most abstract variety of a model is the symbolic model. In such models, properties are substituted by symbols. Using the equation $x = \frac{1}{2} gt^2$, represents a simple physical model. In this case, x is interpreted to be the distance travelled by a body falling from rest, g is a constant describing the acceleration caused by the gravitational force, and t is the time duration that the body is allowed to fall. In management studies, symbolic models have been used to describe simple phenomena. For example, the model $P = R–C$ or *Profit* equals *Revenue* minus *Cost,* has been recognised and used by managers for a long time.

One of the most useful classifications of models divides them into those that *optimise* versus those that *simulate* (Sterman, 1988:14). Clemson (1984:77) provides a description of the requirement for models in organisations, which reads "... The manager is always faced with some *thing* which he/she is trying to manage into behaving in one sort of way rather than some other sort of way". Furthermore, manager acts based on some framework that includes at least four elements:

- Some image of a preferred state, perhaps a goal or merely a way of behaving by the system (for example, a low rate of crime is desired)

- Some image of the current state of the system (for example, society suffers from a high rate of crime)

- Some image of the way the system works (for example, the reducible system view of crime)

- A belief, based on the previous three images, that the situation may be improved (for example, increase the penalties for criminal behaviour and criminals should be deterred).

It is quite common for errors to occur in model development. This situation can be mapped to the description of *mental models* given by Sterman (1988:18). He describes the concept as flexible, taking into account a wider range of information than just numerical data, and it can be adapted to new situations and be modified as new information becomes available. Furthermore, mental models can be viewed as filters through which our experiences are interpreted, plans are evaluated, and choices are given for possible courses of action. Richmond (1993:115) posits that mental models are the dominant thinking paradigm in most of the Western world.

Cook and Russell (1993:11) view models as a representation or an abstraction of an object or a particular real world phenomenon. Another aspect of a model is given by Clemson (1984:83) who states "... given that a model plays a central role in our actions (i.e. the bridge between action and expected outcome), how can we put science to work to improve the models that we have available to us in managing organisations?" Furthermore, any branch of science "... can be applied to a managerial situation and will, given proper methodological rigour, provide a valid model of that situation" (Clemson, 1984:84).

Clemson gives a further example of a model developed in acoustics where "... the results known to the expert in acoustics can then be translated into the managerial situation" of a very different model. The philosophy of model translation allows the importation of knowledge obtained from one field applied to another field.

A discussion on models would not be complete without reference to the work of Hall (1976), which is still relevant today. Hall bases the process of model building on the concept of a bounded system in interrelated parts, using System Dynamics (or Theory of Structure) citing Forrester (1968[2]) to aid the modelling and simulation of complex dynamic feedback systems. Hall (1976:187) uses an example of the level of readership of a magazine to conceptualise a system state that changes from one time period to the next in response to the system activities. Such a system's stimuli state could be due to the inflow and outflow of subscribers to the readership level. From a practical point of view, the inflow and outflow of readership might be equated as a function of factors for example, the magazine's volume, price and appeal compared to other magazines. In the case where these factors are linked and interrelated to other functions forming part of a dynamic feedback loop, the entire organisational system can be characterised or simulated.

Morecroft *et al.* (1991:93) discuss a bottom-up approach to model development where the development of a biotechnology start-up business from conceptualisation, was monitored. This monitoring included a management team's injection of strategic scenarios, accessing literature right to the capturing of data to create a model. Aspects of a bottom-up approach to model development will be used during the e-commerce adoption model development at the implementation level by using factors, benefits, CSFs and other criteria to expand the bottom layer of the model under development.

Blake, Mouton and McCanse (1989:165) provide the following specifications for designing a model based on *systematic development*[3], of *what should be*, which is repeated here verbatim to retain the original thoughts of the authors and to enforce the concept of formulating an approach as opposed to formulating a model:

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[2] Forrester, J.W. 1968. *Principles of systems.* Cambridge, Mass: Wright-Allen Press.
[3] A more detailed presentation of the theory, techniques, and results of systematic development is contained in: Blake R.R., Mouton, J.S. & McCanse, A.A. 1989. *Corporate excellence through grid organization development: a systems approach.* Houston: Gulf.

"Clear-cut objectives are a prerequisite to the kind of development that takes place under the systematic approach. An ideal model specifies what the result should be at a designated time. To be systematic, the model must be based on theory, fact, and logic, uncontaminated in the status quo or by extrapolations from the past. *The model must be understood to represent the ideal, not the idealistic. Ideal thinking can identify what is possible according to theory, logic and fact. Ideal thinking can be tested against objective criteria to assess its practicality. Idealistic thinking, on the other hand would have an unreal quality, probably rooted in self-deception and expressing what is desired or what is wanted without having been tested against theory, logic or fact. Ideal thinking is subjective and is based on criteria having little or nothing to do with the facts of the situation. Ideal thinking has sometimes been suspect and rejected as idealistic. Yet through history, some of what might qualify as among the world's greatest change projects – The Magna Carta, the Constitution of the United States – have probably come about through ideal-type formulations".*

This researcher acknowledges the approach discussed above that systematic model development must be based on *theory, fact and logic*, bearing in mind that the testability aspect of the model against set objectives of the research is essential. Subsequently, the model developed will be validated to ascertain if it is ideal (not idealistic) for the targeted use by SMMEs.

The investigation of business models, online business models and e-commerce models is conducted in sections 5.3, 5.4 and 5.5 respectively.

5.3   BUSINESS MODELS
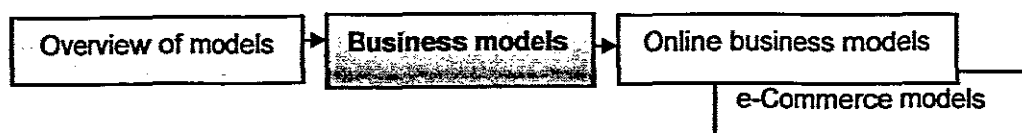
Business models are used to describe how organisations conduct business to generate revenue in order to sustain itself in future (Turban, King, Viehland & Lee, 2006:22–24). Morecroft *et al.* (1991:115) emphasise the value of pre-

existing models in any new model or system development initiative. They find that businesses may start with one or even two business models and over time, change some of these models, or even add a third, or more, models to their business. However, according to Mansfield and Fourie (2004:35), the belief that a good business model alone is sufficient for survival in a networked economy is misleading and possible a key factor for failed networked ventures.

Business models draw on a multitude of business subjects, including economics, entrepreneurship, finance, marketing, operations and strategy to name a few (Chesbrough and Rosenbloom, 2002:529-532).

Osterwalder *et al.* (2005:17-18) define a business model as:

> "... A conceptual tool containing a set of elements and their relationships and allows expressing the business logic of a specific firm. It is a description of the value a company offers to one or several segments of customers and of the architecture of the firm and its network of partners for creating, marketing, and delivering this value and relationship capital, to generate profitable and sustainable revenue streams".

Osterwalder *et al.* (2005:3) offer information on the perception of the role of models by reporting on research conducted on the IS community subscribed to the ISWorld mailing list. They found that respondents were divided on the role of business models. Approximately half the respondents queried were of the opinion that business models had more to do with a *value/customer-oriented* approach, while the remaining respondents asserted that business models had more to do with an *activity/role-related* approach. From these findings, Osterwalder *et al.* (2005:3) could draw the analogy that from a business perspective, the former definition is outward looking, while the latter definition is more inward looking. These results will be kept in mind by this researcher when developing the details of the model by catering for both outward- and inward-looking aspects of a business. Furthermore, the significance of this is further highlighted by Chesbrough and Rosenbloom (2002:529-532) who state that a mediocre innovation with a great business model may be more profitable than a great innovation with a mediocre business model. This in essence points to an

essential fact linking the importance of a good business model to a successful business.

Viehland (2000:1) states that business models evolved over the following five stages:

Stage 1   Retail businesses were traditionally defined as brick-and-mortar storefronts including inventory stores. These businesses either had products on their shelves or relied on production lines to provide finished products for sale. In addition, a safe and comfortable environment had to be created for customers to shop. However, this model soon led to high overhead cost to businesses, which the customer inevitably had to absorb.

Stage 2   Mail order retailers emerged and replaced the storefront concept to a great extent, but not necessarily inventory stores.

Stage 3   When automatic inventory replenishment systems came into existence, just-*in-time* inventory systems appeared, heralded as a major innovation. A well-known case explaining the latter is that of Wal-Mart, which became a price leader in the USA retail market (Clemons & Row, 1991:275).

Stage 4   As the Internet and Web became more viable as a business option, *virtual retailing* was introduced. Businesses such as Comp-U-Card, a buying club, could then move into virtual retailing. Viehland (2000:2-4) further reports that Wal-Mart's CEO described their new business focus as, "... this is virtual-reality: We stock nothing, but we sell everything".

Stage 5   The virtual reality model changed to a more focused niche market concept (Chesbrough & Rosenbloom, 2002:529-555).

Revealing a slightly different aspect of models, Osterwalder (2004:42) proposed four Pillars (or business areas) for traditional or online business:

- **Product** – What business the company is in and the products and the *value propositions offered to the market*

- **Customer interface** – Who the company's target customers are, how it delivers products and services and how it builds strong relationships with customers

- **Infrastructure management** – How the company efficiently performs infrastructural or logistical issues, with whom and what kind of network enterprise

- **Financial aspects** – What the revenue model is, as well as the cost structure and the sustainability of the business model.

The conceptualisation of these four business areas was influenced by the balanced scorecard approach and business management literature (Osterwalder, 2004:42). The same author further extended the four areas into nine interrelated building blocks (or elements) as depicted in Table 5.1.

Table 5.1   Business model building blocks (Source: Osterwalder, 2004:42-43)

	Pillar	Building blocks elements	Description
1	Product	Value proposition	An overall view of a company's bundle of products and services, of value to customers customer
2	Customer interface	Target customer	A segment of customers a company wants to offer value and describes the groups of people with common characteristics for which the company creates value The process of defining customer segments is referred to as market segmentation
		Distribution channel	A means of getting in touch with customers
		Relationship	The kind of link a company establishes between itself and customers and describes how a company goes to market and refers to the company's marketing and distribution strategy
3	Infrastructure management	Value configuration	The arrangement of activities and resources that are necessary to create value for customers
		Core Capability	The ability to execute a repeatable pattern of actions that is necessary in order to create value for customers The capabilities and competencies necessary to execute the company's business model

		Partnership	A voluntarily initiated cooperative agreement between two or more companies in order to create value for customers
			Networks of cooperative agreements with other companies necessary to efficiently offer and commercialise value
			The company's range of business alliances
4	Financial aspects	Cost structures	The representation in money of all the means employed in the business model
		Revenue model	Describes the way a company makes money through a variety of revenue flows

Each of the nine elements influences general business activities, such as business management, strategic management, operational management including ICT infrastructure.

A number of definitions relating to business models are summarised below:

a) **Laudon and Traver (2003:660)**

- A set of planned activities (sometimes referred to as business processes) designed to result in a profit in a marketplace.

b) **Timmers (1998:4)**

- An architecture for the product, service, and information flows, including a description of the various business actors and their roles
- A description of the potential benefits for the various business actors
- A description of the sources of revenue.

c) **Rappa (2005)**

- The method of doing business by which a company can sustain itself, that is, generate revenue
- Spelling out how a company makes money by specifying where it is positioned in the value chain.

d) **Weill and Vitale (2001:25)**

- The e-business model includes the roles and relationships among a firm's customers, allies, and suppliers, the major flows of product, information, and money, and the major benefits to the participants.

e)　Chesbrough and Rosenbloom (2002:529-532)

- **Value proposition** – a description of the customer problem, the product that addresses the problem, and the value of the product from the customer's perspective
- **Market segment** – the group of customers to target, recognising that different market segments have different needs. The potential of an innovation is only unlocked sometimes when a different market segment is targeted
- **Value chain structure** – the company's position and activities in the value chain and how the firm will capture part of the value that it creates in the chain
- **Revenue generation and margins** – how revenue is generated (sales, subscription, support, etc.) the cost structure and the target profit margins
- **Position in value network** – identification of competitors, complementors and any network effects used to deliver more value to the customer
- **Competitive strategy** – how a company attempts to develop a sustainable competitive advantage, for example, by means of cost, differentiation or niche strategy.

f)　Laudon and Traver (2003:672)

- Value proposition
- Revenue model
- Market opportunity
- Competitive environment
- Competitive advantage
- Market strategy
- Organisational development
- Management team.

g)　Prananto, McKay and Marshall (2001:1257)

- Investment in suitable ICT
- Reengineering and design of business processes

- Marketing and customer relationship management
- Management of resources
- Logistics and/or distribution capability.

Chesbrough and Rosenbloom (2002:529-532) assert that business models should draw on a multitude of business related subjects. In these seven business model definitions, many business subjects and requirements were revealed. This researcher endeavoured to include a multitude of business subjects in the model development by incorporating various business entities such as strategic, operational and implementation requirements.

5.4 ONLINE BUSINESS MODELS
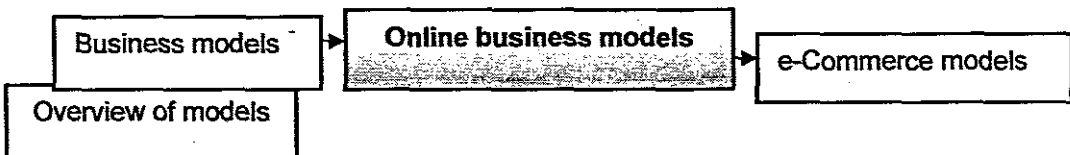
Organisations operating in highly competitive environments rely on strategies that are adaptive (Davis, Morris & Allen, 1991:44; Jennings & Seaman, 1994:459). Ganesh, Madanmohan, José and Seshadri (2005:42) posit that maintaining an external focus to facilitate adapting to market change often comes at significant cost. In addition, organisations focussing on narrowly defined product-markets are usually more inward looking and therefore at risk of failing to adapt when market changes and opportunities occur.

According to Ganesh et al. (2005:42), adaptation involves changes in strategic behaviour to improve competitive position. This achieves a better fit between the organisation and its environment. However, it may involve comprehensive changes in products, services, resources and capabilities, thereby fostering external linkages to regenerate competitive advantage. Furthermore, Ganesh et al. (2005:43) present key characteristics of online businesses in the following way "... interconnectivity and network externalities, make it necessary for Internet-based firms to adopt dynamic strategies, including product versioning, rapid product development, direct relationships with users and frequent partnering". This requires periodic re-orientation by changing to new strategies

and structures necessary to accommodate changing environmental conditions. In view of these requirements for businesses to be adaptive and open to strategic changes, models, frameworks and strategies are, at times, used interchangeably to compete in a competitive economy.

The Web has grown to be increasingly popular over the last decade and it has become acceptable practice for organisations to adopt Internet and web-based technologies into their operational and business processes (Gale & Abraham, 2005:114). A number of new business models appeared during the economic boom before the dot.com crash in 2001. This occurred as individuals and organisations attempted to capitalise on the Internet and related technologies. Some of these new models survived while others failed (Day & Bens, 2005:160). It is evident that web-related technologies play a fundamental role in online trading. Porter (2001:62) states that instead of using the Internet in isolation, firms have a greater probability of success if they integrate technology into their current strategies.

Factors such as e-loyalty, viral marketing, customer experience and maintenance of online customers have contributed to making e-commerce adoption a complex process. This is evident especially in the dynamics of understanding customer online shopping needs (Reichheld & Schefter, 2000:105–106; Klopper, 2002; Mohammed et al., 2002:204; Hoffman & Novak, 2000:179–180; Chang, Cheung & Lai, 2004:543–559). Porter (2001:62) further states that firms solely pursuing technological advantages are doomed to failure. The increasing adoption of electronic trading has affected businesses, in particular, how businesses structure themselves to become more flexible and adaptive, with the emphasis on changing business processes. According to Mansfield (2005:252), "... customer centricity, dynamic pliancy and to lesser extent, market exploitability" are important dimensions in the performance of a business. From the above discussion, it is evident that the Internet and web-based technologies form an integral part of new business channels to facilitate online trading.

Furthermore, the model development needs to include these types of technologies, customer and market dynamics and business processes to satisfy strategic and operational aspects of business operations.

Web-based commerce or online trading facilitated by the Internet, has produced a number of different kinds of business models. Malone, Weill, Lai, D'Urso, Herman, Apel, and Woerner (2006:156) posit that "... many people attribute the success of firms such as eBay, Dell and Amazon, for example, to the way they used new technologies – not just to make their operations more efficient – but to create new business models together". There are many variations of web-based business models operating between customers and suppliers and some of these are reported by Viehland and Vitale, 2001:21; Lipton, 1998; Weil and Vitale, 2001:25 and Hartman, Sifonis and Kador (2000). Rappa (2005) maintains a comprehensive taxonomy of online business models on the Web. He maintains nine major categories, some of which are associated with online business models:

- **Brokerage** – Brokers facilitate transactions in B2C or B2B or C2C markets by bringing together buyers and sellers
- **Advertising** – This model is only effective in large traffic volume applications, in essence, an extension of a traditional media broadcasting model
- **Infomediary** – Infomediaries provide information to both buyers and sellers using data about the buying habits of consumers and extremely valuable especially when information is carefully analysed and used to target marketing campaigns
- **Merchant** – These are classic wholesalers and retailers of goods and services, known as e-tailers
- **Manufacturer** – Manufacturers reach buyers directly and are thereby able to compare distribution channels making full use of the enabling power of the Web
- **Affiliate** – Affiliate sites provide easy click-through facilities to provide purchase opportunities from a number of different website merchants
- **Community** – The viability of community models is largely based on user loyalty where users who have a common interest in an area congregate on a community website
- **Subscription** – Users subscribe to a service and are charged a periodic fee to access information
- **Utility** – These are metered usage systems and they typically operate on a pay-as-you-go approach.

It is evident that the adoption of online business is a complex issue and it involves changes in strategic behaviour, possible comprehensive changes in products and services and the application of resources and capabilities to improve a competitive position. At the same time, a better fit between the organisation and its environment needs to be achieved, forging external linkages to enhance competitive advantage, e-loyalty, viral marketing and customer experience. These points to the fact that customer behavioural aspects need to be included in the model development.

5.5   e-COMMERCE MODELS
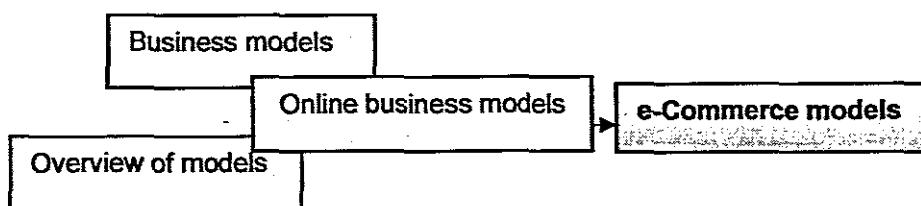
In this section, seven of the most applicable e-commerce models for this research are reviewed from literature. The discussion commences by depicting e-commerce as an innovation, followed by a description of the stages of business development considering strategies, products and services, competitors and resources and thereafter an outline of e-commerce adoption paths. Aspects such as attitudes and causes for e-commerce adoption success are then discussed. Two popular models, Rogers (1962) and Angehrn (1997), which have remained applicable for many years, covering various aspects of e-commerce are included in the review.

The discussion of a number of models portrayed in Figure 5.2 will contribute to the understanding of the role of models within the context of the e-commerce adoption. Furthermore, the models will assist this researcher with the development of a model already portrayed in Figure 5.1. Each of the models identified in Figure 5.2 are discussed in detail in sections 5.5.1 to 5.5.7.

5.5	e-COMMERCE MODELS

5.5.1	Rogers model of innovation diffusion (Rogers, 1962)

5.5.2	ICDT model (Angehrn, 1997)

5.5.3	Model of Internet Commerce Adoption (MICA) (Cooper & Burgess, 2000)

5.5.4	Evolution Model for firm adaptation (Ganesh *et al.*, 2005)

5.5.5	Conceptual model of e-business development (Fillis, Johansson & Wagner, 2003)

5.5.6	E-commerce model of adoption stages (Motjolopane & Warden, 2007)

5.5.7	Causes for e-commerce success model (Razi *et al.*, 2004)

Figure 5.2   e-Commerce model discussion topics

5.5.1   Rogers' model of innovation diffusion

The Rogers' *innovation diffusion model* governs the adoption of a new product moving through five stages over time. The stages consist of knowledge, persuasion, decision, implementation and confirmation. The second stage, persuasion, is described as the perceived characteristics of an innovation (Rogers, 1995). The five perceived attributes of an innovation are highlighted as being the main determinants of an innovation; relative advantage, compatibility, complexity, trialibility and observability.

Kendall, Tung, Chua, Hong, Ng and Tan (2001:227) adapted a portion of the Rogers (1962) model as a framework for exploring e-commerce adoption as a form of innovation. The main reason for the Kendall *et al.* (2001:227) study was to determine the applicability of Rogers' model by treating e-commerce as an innovation. This was carried out in a relatively unexplored SME sector in Singapore. The authors cited a number of researchers using aspects of Rogers'

This space therefore caters for a wide range of services for customers, in real-time, delayed point-to-point or multi-point connections.

- **Virtual Transaction Space (VTS)** – a new transaction space for economic agents to exchange business transactions such as invoices and payments. In the first phase of Internet development, the Internet has not been used extensively due to *underdeveloped* legal, security and reliability aspects. *To improve the Internet's use, utilising standards to* enable transaction processing of services, particularly in electronic payments, are necessary.

The ICDT model provides a basis for distinguishing between four separate types of businesses related to Internet-presence. Furthermore, the ICDT model "... also provides a framework for describing and analysing the impact of the Internet on the evolution and extension of the market offer" (Angehrn,1997:365). This is accomplished by gradually adapting and transforming the nature and perception of some traditional products and services, which would also include launching new substitute or complementary products and services, in one or more of the described virtual spaces.

5.5.3 Model of Internet Commerce Adoption (MICA)

According to Cooper and Burgess (2000:119) "... the proliferation of e-commerce and the exponential growth of the Internet as a commercial medium has resulted in the development of a number of frameworks that seek to enable a better understanding of what businesses are doing on the Web". Furthermore, from many studies and surveys undertaken to report on the status of e-commerce within SMEs, new forms of e-commerce have emerged in both B2C and B2B areas (Dowler & Lawrence-Slater 1998:1-2; Poon & Swatman, 1997:81); Yellow Pages 1998:10; Wai-Pun, Farhoomard and Tuunainen, 1997:1; Wales Information Society, 1998) amongst others. The MICA model was designed to reveal the different stages of e-commerce adoption that SMEs pass through as part of the process of developing their websites.

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160

Figure 5.3   Model of Internet Commerce Adoption (MICA) (Source: Cooper & Burgess, 2000:194)

According to Cooper and Burgess (2000:190), the MICA model depicted in Figure 5.3 could be used as a tool, both for locating the position of an industry on the Internet commerce road map, and for assessing how it has progressed to that location.   The MICA model consists of three layered stages, incorporating three Levels of business processes. Furthermore, the three layers are attributed to the Ho (1997)[7] model of promotion, provision and processing.   MICA's staged approach to the development of commercial websites is an approach well accepted within IS history (Cooper & Burgess, 2000:194), in that growth occurs by adding functionality.   Lawrence, Corbitt, Tidwell and Lawrence (1998:143–153) and Sterne (1996:27–42) report however, that business growth occurs when focusing on customer needs.   Macro-level factors were the drivers behind technological change.

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[7]   Ho, J. 1997. Evaluating the WWW: a global study of commercial sites. *Journal of Computer Mediated Communication*, 3(1).
http://jcmc.indiana.edu/vol3/issue1/ho.html [30 October 2007].

Globalisation effects and the removal of geographical and physical barriers offer new opportunities, especially for smaller firms. Specific SME industry and sector factors influence SMEs activity in relation to e-business. It is expected that a range of positive and negative attitudes will be found in all sizes of firms.

However, strong differences occur in smaller firms. Furthermore, it was found that different sets of business, marketing, entrepreneurial and Internet competencies were identified. Fillis, Johansson and Wagner (2004a:183) found that a fostering of cultural and philosophical change may be needed to increase participation in e-business initially, which indicates low levels of interest.

5.5.4 Evolution model for enterprise adaptation

Ganesh *et al.* (2005:48) reported on case study research findings in India, on transformation in the B2B e-marketplace environment where a three-stage model of adaptation served as a framework to capture the evolution and adaptation of B2B marketplaces.

According to them, the three stages of evolution of a firm's adaptation are:

- **Aggregation** – formative stage, with B2B acting as an aggregator offering catalogues detailing product listings
- **Transactions** – expansion stage, expanding operations, revenues and number of transactions
- **Integration** – consolidation stage, attaining maturity in the nature and process of service delivery.

Each of these evolution adaptation stages is summarised in Table 5.2. The model highlights "... that we need to have a comprehensive understanding of the factors that could influence the adaptation of firms" and it "... contributes to a growing body of research, seeking to understand the determinants of organisational ability to adopt and gain competitive advantage in new competitive and high-velocity environments" (Ganesh *et al.*, 2005:44).

Table 5.2 Evolution of firm adaptation (adapted from Ganesh et al., 2005:44)

	Business focus	Aggregation (1999-2000)	Dynamic Transactions (2000-2001)	Integration and collaboration (>2002)
1	Products and or services	Static listings and directories	Auctions, reverse auctions, logistics, escrow etc.	Supply chain integration, collaborative planning, forecasting
2	Strategic focus	Match making.	Match making, reducing transactions	Inter-organisational processes
3	Revenue model	Listing free	Listing fee, transaction fee, fee for VAS	Licence fee, listing fee, transaction fee, fee for VAS
4	Competitors	Online and physical directories, other B2B marketplaces	Brick and mortar auction houses, other B2B marketplaces	Software service providers, consulting firms, other B2B marketplaces
5	Source of competitive advantage	First mover advantage and network externalities	First mover advantage, network externalities, trust, brand, reputation, complementary among internal and external resources, low transaction and search costs	International processes, lock-in, networks externalities, trust, brand, reputation

The adaptation changes in Table 5.2 span from 1999 to beyond 2002. The early changes were short-lived, as firms had to rethink their attitudes towards business, competitors and business processes. This opened opportunities for more integration and new collaborative approaches.

5.5.5 Conceptual model of e-business development

Fillis et al., (2004a:179) proposed that "... e-business can be interpreted either as a totally new business philosophy or as just another business tool add-on. If the former scenario is supported, then existing concepts and theories of marketing and other business areas must be reformatted in order to understand that owner/managers of smaller firms can incorporate and implement this approach to business, globalisation and technology effects appeared to have spurred smaller firms around the world to embrace e-business practices."

```
┌─────────────────────────────┐
│ Macro-factors:              │
│ globalisation               │
│ removal of geographical and │
│ physical barriers;          │
│ Increased competition       │
│ EU/Government policy.        │
└─────────────────────────────┘
              │
              ▼
    ┌─────────────────────────┐
    │ Industry/sectoral factors│
    └─────────────────────────┘
              │
              ▼
┌─────────────────────────────┐
│ Firm/Managerial factors:    │
│                             │
│ size of firm; business to   │
│ business; business to       │
│ customer; mass/niche        │
│ markets; type of product;   │
│ sets of business competencies.│
└─────────────────────────────┘
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Positive attitudes to e-business:

motivation and enthusiasm; creative orientation; innovative; pro-activity; flexibility; aggressiveness; open to risk.

Negative attitudes to e-business:

conservatism; fear of change/technology; lack of drive, lack of imagination, lack of interest; inertia in decision making; security fears; financial constraints and other resource barriers; unwilling to learn new skills.

Potential benefits of adoption:
better relationships with customers and suppliers; increased information; increased visibility; competitive advantage; access to new markets; real time communication; increased knowledge; greater efficiency; cheaper promotional costs; more even playing field between small and large firms; improved communication with other market sectors; new distribution and communication channels; better targeting of customers.

Implications of non-adoption:
lagging behind the market; missed opportunities; continued reliance on traditional methods of business; conservative image problem; lost customers; new barriers to entry over time.

Reverting to conventional business approaches

Adoption of e-business

Non-adoption

Adoption of e-business over time

Continuation and development of e-business

Continued Non-adoption

Figure 5.4   Conceptual model of e-business development (Source: Fillis et al., 2004a:184)

In order to understand how internal and external factors impinge on e-business adoption and development in small firms, Figure 5.4 serves as a guide to

164

understand the reasons behind online trade development, benefits thereof and implications of non-adoption (Fillis *et al.*, 2004a:184–185). According to Fillis *et al.* (2004a:183–184), "...Globalisation, technology, e-business, barriers and competency-based issues have been shown to interact in the development of e-business in the smaller firm".

5.5.6 e-Commerce adoption stage model

According to Motjolopane and Warden (2007:1), although e-commerce adoption offers the potential for business improvement for SMMEs, there is a lack of consensus regarding the e-commerce adoption approaches. There are two adoption approaches, an adoption ladder and a managed strategic adoption approach. The first approach follows a sequential phased approach, whereby businesses adopt e-commerce in phases: starting at e-mail, moving to static website, e-commerce, e-business and finally reaching e-enterprise (Van Akkeren & Cavaye, 1999; Hoque 2000:8; Willcocks & Sauer, 2000:9–12; Parish, Kibblewhite, Woodley & Richardson 2002:4; Jones, Hecker & Holland 2003:288; Vosloo, 2003:59–65; Teo & Pian, 2004:458; Castleman & Cavil, 2001:3; Levy and Powell 2003:173). The second approach, proposed by Chau and Turner (2003:100) pertaining to a managed strategic adoption and is based on a management decision that depends on the strategic decision needed for the business.
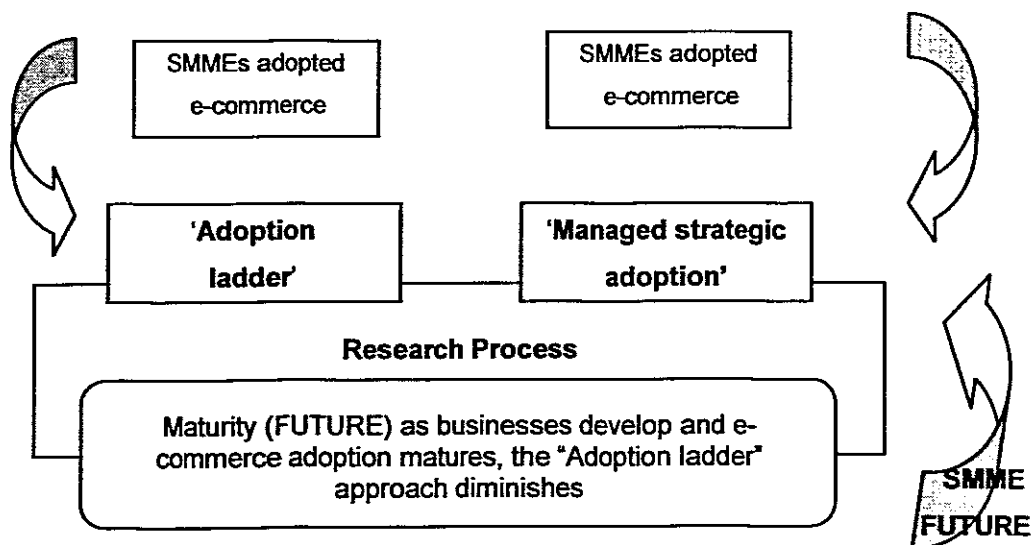
Figure 5.5   e-Commerce adoption stage model (Source: Motjolopane & Warden, 2007:11)

165

Figure 5.5 suggests that SMMEs initially follow an 'adoption ladder' e-commerce adoption approach, whereas larger and more established companies follow a *managed strategic adoption* approach. The model proposes that as e-commerce adoption matures, the *adoption ladder* approach would diminish favouring the *managed strategic adoption* route.

5.5.7   Causes for e-commerce success model

Razi *et al.* (2004:239) created a model representing the causes of dot com failure and success, referred to here as the Razi model, and it is depicted in Figure 5.6. The Razi model proposes two main categories for the causes of success; controllable and uncontrollable causes.

Controllable causes are further categorised into strategic, operational and technical causes, and uncontrollable causes are categorised into technical and behavioural causes. The significance of analysing the Razi model is due to dot coms that "... overcame the technical, operational and behavioural shortcomings of their failed counterparts and led to the way in logistics, customer support, Web design, promotion and Internet security" (Razi *et al.*, 2004:228).

The Razi-model proposes four causes for dot.com success:

- **Strategic causes** – Focuses on marketing, promotional and product/service strategies
- **Operational causes** – Focuses on infrastructure, back-end support, logistics and customer services
- **Technical causes** – Focuses on website design, file server issues such as information security, response and reliability
- **Behavioral causes** – Focuses on customer issues such as expectations, behaviour and confidence.

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┌─────────────────────────────────────────────┐
│          Causes for dot com successes        │
└─────────────────────────────────────────────┘
                       │
        ┌──────────────┴──────────────┐
┌──────────────────────┐     ┌──────────────────────┐
│  Controllable causes │     │ Uncontrollable causes│
└──────────────────────┘     └──────────────────────┘
```

Website design
Less Graphics
Avoid pop-up messages
Easy navigation
Fast loading
Keyword search
Personal Greetings
Legible privacy policy
Fast and easy checkout
On-site as well as e-mail
confirmation of orders

Server
Fast maintenance,
Upgrades.
Secured environment.
Capable of handling
high volume Internet
traffic

Strategic → **Operational** ← **Technical**

Behav-ioural

Technical

Niche market promotion: product/service differentiation

Products for specialised market.
Promotion of domain, website and
products/services
Proper web indexing, easy navigation
Expert advice on products/services
Careful selection of less expensive but
effective media for promotion
Exploitation of demand side
Economies of scale by product/service
differentiation

Improvement in:
security
dial-up
connections
ISP services

Good back-end Infrastructure for
logistical support – JIT logistics
or dependable 3rd party logistical
support
Brick-'n-click firms are more successful
compared to click-'n-click firms
Superior customer service

Proactive measures to control customer behaviour provide:
Accurate product and delivery cost.
Exact delivery schedule
Online tracking
Personal greeting for repeat customers.
Secured environment
Outstanding customer service

Figure 5.6   Causes for e-commerce success model (Razi et al., 2004:239)

Each of these four main areas is further extended into a number of e-commerce adoption-related causes. Razi et al. (2004:238) provide examples of successful e-businesses and conclude that success may not be attributed to a single factor, but to a combination of factors.   Their findings reveal that lack of business knowledge, inadequate business plans, ineffective promotion, poor back-end logistical support, failure to meet customer expectations and support, misuse of funds and dwindling investor faith in e-commerce are some of the critical reasons for lack of success.   One important aspect worth mentioning is security, often

highlighted as a serious compromising factor to business integrity. In an online environment, this is no exception as Razi *et al.* categorise security as an uncontrollable cause (not meaning that security should not be controlled or managed from within an organisation). For example, Fourie (2003:27) sums this up by stating "... the successful protection of information does not hinge entirely on technological developments, but is also a matter of security awareness by senior management and all employees".

The seven e-commerce related business models discussed in this section contributed to the understanding of what is needed by a business to trade successfully in an online environment. The model proposed by Razi *et al.* (2004:239) provides four business elements: strategic, operational, technical and behavioural causes, required for successful e-commerce. These elements are used in the strategic level (refer to figures 5.12 and 5.13) of the e-commerce adoption model.

5.6 e-COMMERCE FRAMEWORKS

Silverman (2005:97–100) defines a model as an overall framework for how we look at reality, it provides insight into the real problems facing entities. Frameworks are sometimes used in the context of models, and other times to depict the procedural aspects of models.

For example, the software and consulting company IDS Scheer AG (2006)[8] develops integrated tool portfolios for business strategy, design, implementation and the controlling of business processes. In this aspect, a Business Process Framework, residing under the banner of Procedural model phases illustrated in a value chain, is used. This depicts a process using a framework consisting of strategic level sequential action, such as strategic planning, quality preparation, current quality study through to total quality management.

Four frameworks found in the literature most applicable to this research are discussed in this section. The discussion of these frameworks contributes to the

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[8]   IDS Scheer AG. 2006. http://www.ids-cheer.com/international/english/profile/2422 [24 October 2006].

understanding of the role of frameworks within the context of the e-commerce model development process portrayed in Figure 5.1. These frameworks are indicated in Figure 5.7.
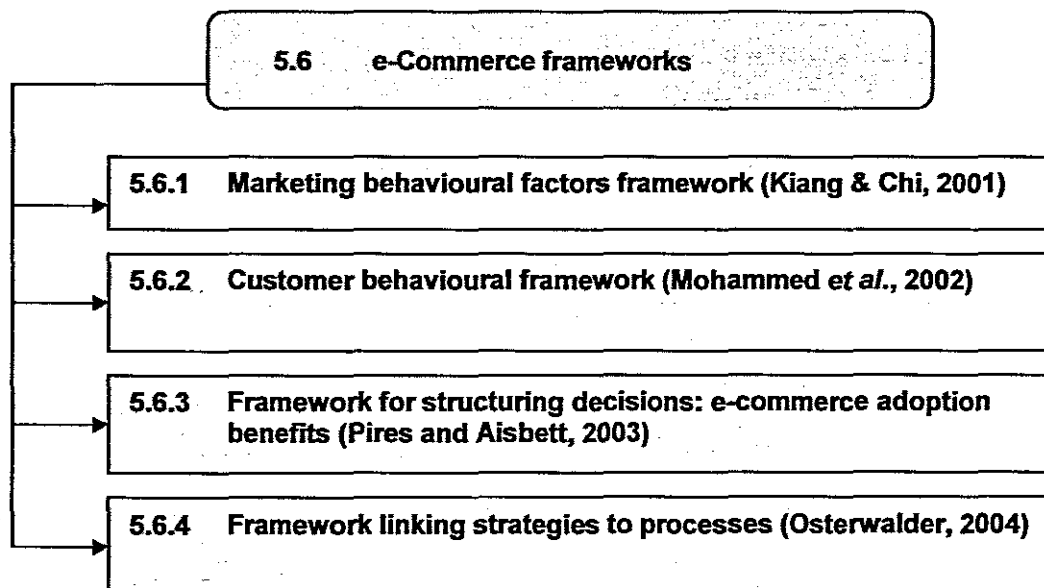
Figure 5.7 e-Commerce framework topic layout

Each of the above-mentioned frameworks is explored in more detail in sections 5.6.1 to 5.6.4.

5.6.1 Marketing behavioural factors framework

Marketing activities occur through three types of channels according to Kiang and Chi (2001:28) as depicted in Table 5.3:

- Communication
- Transaction
- Distribution.

Although the advantages given in Table 5.3 are categorised under three distinct marketing channels, each advantage pertains to online trading and therefore does not necessarily have to be categorised or portrayed only in this manner.

Table 5.3   Marketing activity advantages (adapted from Kiang & Chi, 2001:28)

	Marketing activity channels	Advantages
1	Communication	Improved product information
		Improved price information
		Availability of service
		Lower communication cost
		Interactivity- providing information on demand
		Real-time inventory update
		Online technical support
		Quick response to enquiries
		Customisation (orders)
		Post sale service
		No personal contact
2	Transaction	Virtual storefront accessible by all Internet users
		Lower transaction costs
		Micro-transactions
		Reduce human errors
		Reduce procurement cycle time
		Lower inventory level
		Lower related overheads
		Customisation promotion and sales
		Flexible pricing
		Low entry level and establishment costs
3	Distribution	Reduced waiting time to receive products (especially digital products and services)
		Lower cost of delivery (digital products/services)
		Customers tracking own orders
		Reduced customer service representatives

The marketing channels could also be used in isolation (or independently) such as for describing customer benefits, management functions or technical and infrastructure requirements.

5.6.2   Customer behavioural framework

Four stages of customer and behavioural experiences are proposed as an experience hierarchy, consisting of the functionality, intimacy, internalisation and evangelism stages and depicted in Table 5.4 (Mohammed et al., 2002:209–216). Furthermore, Internet marketing is the process of building and maintaining customer relationships through online activities. Furthermore, Internet marketing

170

would facilitate the exchange of ideas, products and services by satisfying business and customer goals. These actions have an impact on customer behaviour (Mohammed *et al*, 2002:204).

Table 5.4   Customer behavioural factors (adapted from Mohammed *et al.*,
2002:209-216)

Behavioural Factors		
	Factors	**Description**
	Customer experience	A customer's perception and interpretation of all the stimuli encountered while interacting with the firm
1	**Functional** *The site works well*	This is often a developmental process in the mind of customers normally after a number of iterations with a website
2	**Intimate** *They understand customer*	Customisation is understood to be the ability of a website to either tailor (tailoring) or be tailored (personalisation) to suit customer preferences
3	**Internalisation** *It's becoming part of the customer*	This is often a developmental process in the mind of customers normally after a number of iterations with a website
4	**Evangelism** *Customers like to share the story*	This stage can only be reached if the three preceding stages have been completed, i.e. the website works, it has become an individual experience and the brand has been integrated into the lives of customers

The behavioural factors listed in Table 5.4 are the customer experience evolving sequentially, where the next factor is adopted only when the previous step has been completed. There is no timeline or measurable indicator given when a stage has been reached, as this can only be determined by the customer's attitudes or actions based on the experience gained by interaction with a website or online business. This entire framework is based on e-loyalty, "... to gain loyalty of customers, you must first gain their trust....price does not rule the Web, trust does" (Reichheld & Schefter, 2000:107).

5.6.3   Marketing and Informational framework: e-commerce adoption benefits

Pires and Aisbett (2003:297) found "... the advantages flowing from ICT adoption as being one or more of strategic, informational or transactional". Furthermore, strategic benefits include changes to a firm's products or way of operation, including any form of competitive advantage. This can be brought about by realignment and improved customer relations. Informational benefits are those

accruing from improved support for communication, reporting and decision-making. This includes better information access, quality and flexibility. Transactional benefits are those achieved through improved efficiency in operations. This framework is termed a dual (marketing and informational) framework. The marketing perspective focuses on internal, customer and competitor factors. Advantages flowing from ICT adoption (Mirani & Lederer, 1998:803) are characterised by strategic, informational and transactional factors.

Table 5.5   A dual informational marketing framework for organising issues relating to e-commerce adoption benefits (Source: Pires & Aisbett, 2003:297)

	Benefits	Internal	Customer	Competitors
1	Strategic	Impacts on strategic positioning, such as organisational capacity for change	Impacts on customer base	Planning for competitive business environment, formatting alliances
2	Informational	Communication within firm such as traditional ICT evaluations	Communication with customer such as traditional marketing	Information flow across market sectors, assuming to lead to price convergence
3	Transactional	Operation of firm such as traditional ICT evaluations	Methods to deal with customer and key focus of analysis of e-commerce	Competitive advantage through transactional improvements involves traditional production-related benefits of ICT

According to these authors, Table 5.5 could be viewed as a three-by-four matrix of factors that could be considered when assessing the cost relative to advantages of adopting e-commerce. This usually comes into contention when e-commerce has an impact on an organisation's internal, customer or competitive environments.

5.6.4   Framework linking strategy to process

According to Osterwalder et al. (2005:9), the ontology of a model is a set of expressions that are intended to denote aspects of the modelled object. Figure 5.8, depicts a framework that links business strategies to business processes.

Planning Level   Strategy   ICT pressure

Architectural   Business Model   e-Business opportunities and change

Implementation Level   Business Process   e-Business process adoption
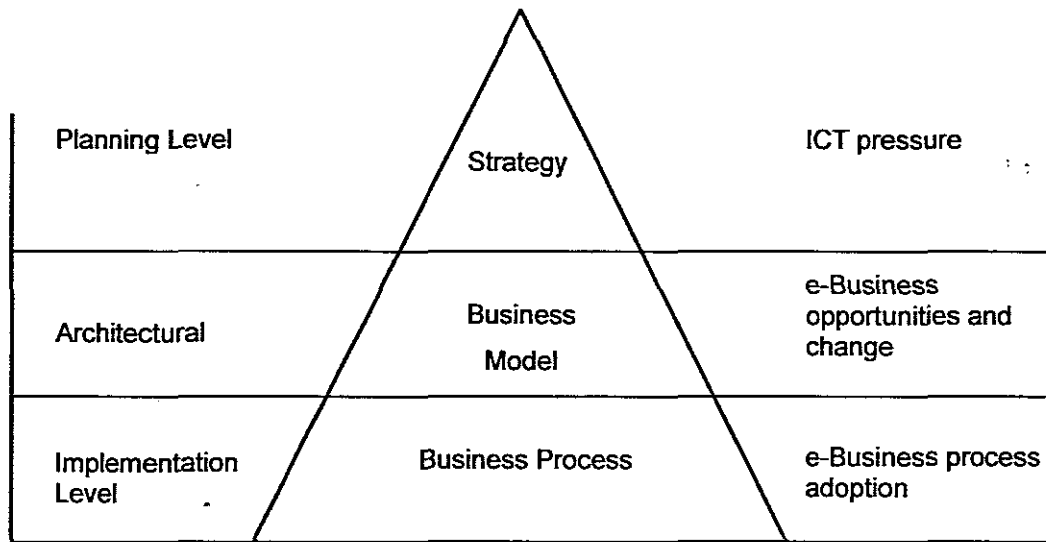
Figure 5.8   Framework linking strategies to processes (Source: Osterwalder, 2004:148)

The framework consists of the following layers:

- **The top layer** accommodates strategic matters such as the planning stage and resolution of ICT issues

- **The middle layer** deals with the business model dynamics and includes activities such as business process architecture, business opportunities and business change

- **The bottom layer** supports business processes adoption and implementation aspects.

Osterwalder (2004:147) asserts that an important aspect to consider, with reference to business model development, is the alignment of business strategy and a business processes model. This contributes to successful operation of a business. The relevance of this framework is that it will assist in formulating the draft e-commerce adoption model linking business strategies to business processes.

Most elements presented in the four e-commerce related frameworks discussed in this section contributed towards the understanding the researcher obtained specifically pertaining to the role of frameworks in the context of models. The impact of this was such, that a framework (see Figure 5.11) was first developed to guide the development of the e-commerce adoption model.

5.7 e-COMMERCE STRATEGIES

Chesbrough and Rosenbloom (2002:529) contrast business strategies to that of business models. Understanding these differences are required to add impetus and value to the development of the e-commerce adoption model. The authors provide the following three differences between business strategies and models:

- **Creating value vs. capturing value** – The business strategy focuses on creating a sustainable competitive advantage, whereas the business model focus is on value creation. The business model addresses how that value will be captured by the firm

- **Business value vs. shareholder value** – Business strategies focus on delivering business value to shareholders. For example, financing methods are not considered by business models, but nonetheless have an impact shareholder value. Business models are architectures to convert innovations to economic value for businesses

- **Assumed knowledge Levels** – Business strategy depends on complex analysis that requires certainty in the knowledge of the environment. Business models assume limited environmental knowledge.

Four strategies found in the literature applicable to this research are discussed in this section. The discussion of these strategies contributes to the understanding of the role of strategies within the context of the e-commerce model development process. These strategies are indicated in Figure 5.9.

Pires and Aisbett (2003:299) state "... it is no longer credible to claim that e-commerce is just a tool that enhances current ways of doing business. E-commerce impacts on firms' internal, market and competitive environments, hence, it must impact on their competitive position". It also changes consumer and supplier behaviour (Hodkinson & Keil, 1996:116; Peterson, Balasubramanian and Bronnenburg (1997:329). Determining whether a business should design a new strategy, retain existing strategies, or augment existing strategies with e-commerce features is a decision, which is not discussed in the literature.

5.7	e-COMMERCE STRATEGIES

5.7.1	Business strategies for small firms in the new economy (Tse and Soufani, 2003:306)

5.7.2	Operations strategy for e-business (Lowson and Burgess, 2003:157)

5.7.3	Planning strategy for CSFs and benefits (Damanpour, 2001:26)

5.7.4	Strategic tasks: mapped e-commerce issues (Tribunella, 2001:4)
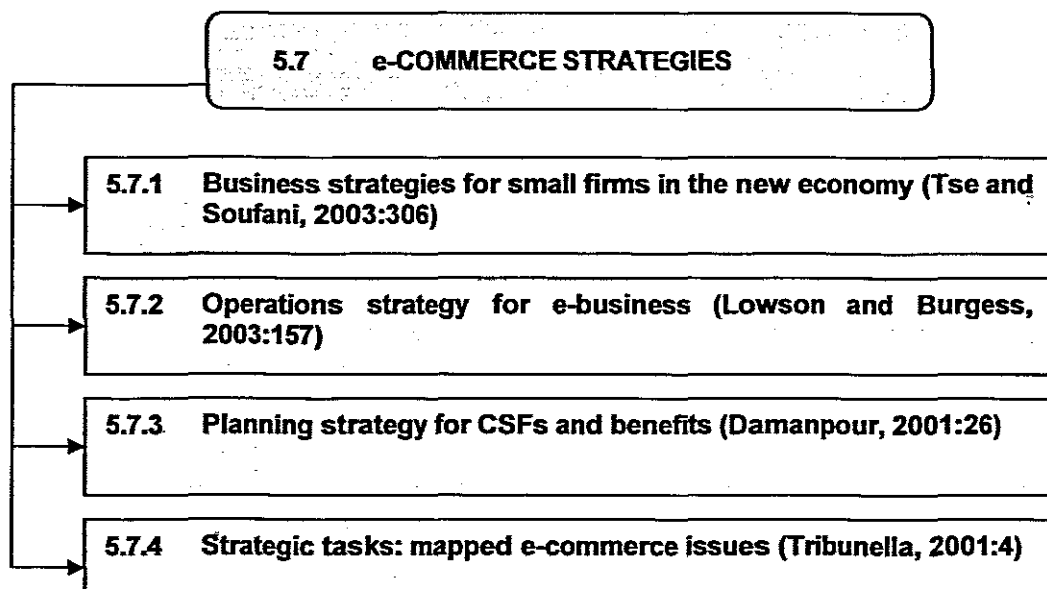
Figure 5.9   e-Commerce strategy topic layout

Using strategies in business is common and when a business changes focus or structure it is common to adopt or to follow a new strategy. This is no different especially viewed from an e-commerce adoption perspective. Strategies purely based on conventional strategic approaches may also prove inadequate. In times of uncertainty, as in the case of the new economy, traditional approaches to formulating and implementing strategy are not sufficient. Therefore, neither strategy nor business models in isolation offers success for online business as both are required (Mansfield & Fourie, 2004:42).

Revealing the concept of strategies by Chesbrough and Rosenbloom (2002:529) and Pires and Aisbett (2003:299) above, has lead the researcher to realise that business strategy is a vital element for the sustainability of any business. The researcher chose to investigate four strategies from literature deemed the most suitable to e-commerce adoption. These strategies are discussed in sections 5.7.1 to 5.7.4, and they provide sufficient background for selecting the most appropriate aspects of these strategies to be included in the e-commerce adoption model.

5.7.1   Business strategies for small firms in the new economy

Tapscott (1996:68) argues that "... there is an inextricable linkage among the new economy, the new enterprise, and the new technology". This manifests in the digitisation of the economy and the strategy formulation of small business.

Tapscott further suggests that there are a number of inextricable linkages between the new economy, the new enterprise and the new technology. There are also a number of themes that govern this inextricable linkage. Tse and Soufani (2003:306) propose three themes that appear to be most relevant to small businesses strategy formulation. These themes are *virtualisation, molecularisation* and *disintermediation*. Furthermore, de Figueiredo (2000:42–45) suggests that the first step to formulate business strategies for the new economy is to understand the nature of the product offerings. Virtualisation of markets makes it easy to sell and distribute especially, digital products. Molecularisation enables a business to reach many new networks previously not possible. A business can become the *middleman* by re-intermediating itself as a new entity in the new economy, positioning itself between suppliers and customers – i.e. disintermediation. Table 5.6 proposes a strategy for SMEs adopting e-commerce.

Table 5.6 Strategic strategy: SME e-commerce adoption (adapted from Tse & Soufani, 2003:316)

Phenomenon	Definition	Strategies
Linkage between the new economy, new enterprise and new technology	**1. Virtualisation** Relates to the phenomenon in which transaction processes are conducted electronically while products remain predominantly physical	Use the Internet as a means to disseminate and collect information as well as to take orders Use the Internet as an additional means to transact Distribution of digital products
	2. Molecularisation Refers to the phenomenon that the economy is breaking up into very small units as a result of the dramatic improvement in access and in the quality of information brought by the Internet	Offer bundled services and products Be Flexible Use the Internet to enhance customer relationships
	3. Disintermediation Refers to the phenomenon in which traditional intermediary businesses are circumvented and the guiding logic behind some traditional industries begins to disintegrate, as the consequence of the emergence of networks	Explore niche markets Capture outsourcing opportunities

These themes would assist small businesses create competitive advantages, identify new customers, locate an applicable market segment to suit their

176

business needs (and strengths) and understand the dynamics of customer relationships.

5.7.2   Operations strategy for e-business

Lowson and Burgess (2003:157) proposed a range of building-block components for an e-commerce operations strategy.
These are:

- Core competencies, capabilities and processes
- Resources
- Technologies
- Key tactical activities.

The transformation process evolved over time in four stages, from the early mass manufacturing processes prevalent in the 1920s, moving down the decades towards the current individualisation of products and services. This required the entire supply networks to be fully integrated and data to be shared at all stages of manufacturing, supply, sales and marketing culminating in e-operations. Key factors and their associated delivery mechanisms are listed in Table 5.7

Table 5.7   Operations strategy: e-Business (adapted from Lowson and Burgess, 2003:157-160)

	Operations e-Commerce development strategy	Key factors Elements that support an e-commerce operations strategy for e-business opportunities and challenges	Delivery mechanism
1	Operations strategy	**Core competencies, capabilities and processes:** Only process and organisation-based elements are considered	
		Process-based	Derived from transformation activities
		System or co-ordination based	Process across entire operation system
		Organisation based	Process across entire organisation
		Resources: These elements cover ICT facilities, business systems, training and human development	

Individual resources	Capital equipment and skills. Working to create competitive advantage.
Tangible	Physical technologies Finance
Intangible	New communication and information systems. Culture and brands.
Human	Specialised skills, knowledge, communication and interaction
Technologies: Cutting edge equipment that play an increasing role in e-commerce	
Equipment	Suitability of equipment
Technological knowledge	Core technological know-how
Product innovation	New product development
Process innovation	New and focussed processes across organisation
Tactical activities: Online business, customer support and supply chain management	
Key activities	On-line business promotion
Core activities	Customer support and survival Bargaining power of suppliers

Table 5.7 offers a list of key operational business factors, which should assist organisations if they align their organisational strategic priorities with the commercial environment in which they operate.

5.7.3 Planning strategy for Critical Success Factors (CSFs) and benefits

To assist enterprises with their e-business planning, three CSFs should be considered (Damanpour, 2001:26) to improve online business performance. Furthermore, the three factors of execution and demand fulfilment, collaboration, and flexibility and speed are deemed essential components of e-business planning and Internet integration. These are depicted in Table 5.8.

Table 5.8   Planning strategy: CSFs (adapted from Damanpour, 2001:26)

	Critical success factors	Details
1	Execution and demand fulfilment	E-business and websites should aid the demand driven production process via e-marketplaces, e-catalogues and bidding systems Open sourcing environment Reduce time between demand and fulfilment Firms serve market as one, customers, consumers, employees and partners are all treated individually
2	Collaboration	Partnerships with trading community Dynamic and just-in time collaboration Attitude Responsiveness Custom solutions Increase global competition Fast Seamless integration
3	Flexibility and speed	Flexible Quick Accurate Technical business model business interaction system Integration and flexible specific project strategies Tracking of competition Global thinking

The CSFs in Table 5.8 would best assist companies if they were planned simultaneously with long-term planning strategies. An important aspect highlighted is that Internet is borderless and it does not adhere to boundaries, thus introducing many cultural and social implications for their actions, products and services offered.

Damanpour (2001:21) cites Intel Corporation (2000)[9] where e-business benefits are identified with the goal of competitive advantage over those who lag. In online trading, the website increasingly becomes the interface between employees as well as between companies, their suppliers and their customers.

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[9]   Intel Corporation. 2000. Benefits of moving to e-business. *Intel, legal information and privacy policy.* http://www.intel.com.tr/english/ebusiness/sidebars.htm [20 November 2004].

179

Table 5.9   Planning strategy: e-Business benefits (Source: Damanpour, 2001:21)

	Benefits	Description
1	E-commerce benefits	To gain competitive advantage over those businesses who lag behind
2	Increased available management information	To track sales data and reporting activities
3	Increased integration of suppliers and vendors	To give a better understanding of business needs To produce right products available at the correct time
4	Expanded channel partnerships	To ensure right products available at the correct time
5	Lower transaction cost	To ensure reduction of costs and increased efficiency factors
6	Better market understanding	To increase ease of automated data extraction
7	Expanded geographic coverage	To develop facilities transacting across the world

The e-business benefits in Table 5.9 apply equally well to e-commerce and hence results in online businesses experiencing improved efficiency, reduction in errors and possible higher customer satisfaction. Online transacting benefits also remove traditional retailing barriers, geographical barriers, time barriers and information barriers amongst others.

5.7.4   Strategic tasks: mapped to e-commerce issues

Tribunella (2001:4) defines strategy as the continuous planning process, which focuses on keeping an organisation competitive in its environments and he identifies the following five strategic tasks:

- **Develop a mission and vision** – Analysing the internal and external environment to gain insight into strength and weaknesses and specifically, to know the capabilities of the organisation. By focussing on the appropriate market, this knowledge and insight could translate into increased profits.

- **Set long-term objectives** – Convert managerial statements made in the vision and mission statements into specific performance targets. Results

180

and outcomes are measured to track an organisation's progress towards its mission.

- **Formulate a strategy** – A specific course should be charted to achieve long-term measurable objectives. The starting point is a marketing plan with sales objectives. Variables such as product mix, compensation cost and human resources should be well planned. Where objectives are the ends, strategy is the means of achieving them.

- **Implementation** – Management must decide on strategies with the highest probability of success. These are strategic choices requiring detailed action plans.

- **Evaluate** – Performance must be evaluated and corrective adjustments instituted. Progress towards goals needs to be monitored and measured and modifications to strategies may have to be considered in cases of competitive forces.

Tribunella (2001:8) identified major e-commerce issues and proposed a method to link e-commerce issues to business strategies as depicted in Figure 5.10.
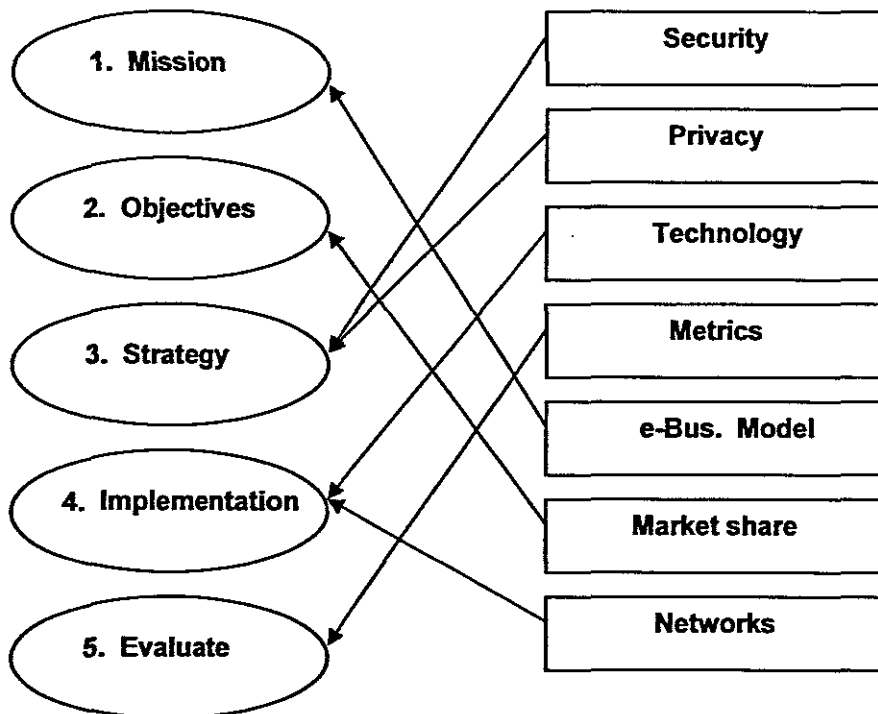
Figure 5.10   Strategic tasks: Mapped to e-commerce issues (Source: Tribunella, 2001:4)

A strategic planning process task aimed to keep an organisation competitive was used for this process. The reason for this mapping was "... before an organisation dives into the world of Internet business, a clearly planned e-commerce implementation strategy should be thought-out" (Tribunella, 2001:8).

Furthermore, Figure 5.10 depicts mapping e-commerce issues to five strategic tasks. Classifying e-commerce issues into strategic categories serves to present e-commerce issues in a systematic and rational manner. This points to the fact that "... an Internet presence must be completely consistent with the organisation's business strategy" (Tribunella, 2001:12). When planning an e-commerce initiative, a strategic planning process should be followed both to reduce the risk of failure and to remain focused.

The discussion on strategies above has highlighted many important aspects about the role of strategies employed in business and in particular, e-commerce business. The importance of the online strategic business themes of virtualisation, molecularisation and disintermediation are noted and will play a significant role in the model. Furthermore, the researcher was made aware that supply networks need to be fully integrated and that data must be shard at all stages of manufacturing, supply, sales and marketing culminating in e-operations. These factors lead to benefits and CSFs for online businesses and a web-presence must be totally consistent with business strategy. Therefore, the adoption model formulated in section 5.8 will incorporate some of these aspects most appropriate to this research.

5.8   e-COMMERCE MODEL FRAMEWORK DESIGN

According to Cleland and King (1968:45) any model, whatever its nature, should be constructed according to the following process:

- Determining which elements of the system are sufficiently important to be incorporated into a model, and which are not
- During the construction of models, allowing for models to sometimes be more artistic than scientific.

Cleland and King (1968:45) offer basic concepts, which can either be applied to the modelling problem or incorporated in a design framework. These are:

- Subsystem integration (integrating functions and processes of various subsystems)

- The black box approach (operating as a transformation unit changing measurable inputs into measurable output).

Furthermore, from the literature it is evident that e-commerce adoption is more than a simple implementation. In support of this notion, authors such as Porter (2001:64) and others, state that e-commerce is no longer about technology or about implementation only, but that it requires an integrated business approach.

Osterwalder (2004:147) asserts that an important aspect to consider with reference to business models is the alignment of strategy and business process models. Furthermore, researchers stress the importance of providing business models integrated with business strategies, management, marketing and supporting technology issues (Viehland, 2000:1-2, Chesbrough and Rosenbloom, 2002:530).

As far as the value of a model is concerned, Cleland and King (1968:48) assert that "... The primary value of a model is that it does leave things out". This statement implies that if "... all models were *perfect*, in the sense that they included all aspects of the real system, there would be no models but, rather simplistic reproductions of the real-world systems". Furthermore, Cleland and King's (1968:40–41) views on the perfect model, are about adapting models for different applications or reasons, while remaining part of the same system.

The discussion highlights both the importance or the *worth* of a model, and how it depends on the intended use for the model. In the context of this research, an e-commerce adoption model should be useable by SMMEs before, during and even after adopting e-commerce.

After considering the aforementioned discussions and exploration of facts about models, frameworks, strategies and business requirements, the researcher selected the three-level model structure proposed by Osterwalder (2004:148) (refer Figure 5.8) as the first step in creating a framework. This was considered the most appropriate framework to form the base of the e-commerce adoption model. The structure of Figure 5.8 serves as a framework for the e-commerce model and the content of each layer must suit the requirements of this research.

Note 1: Dashed line area extracted from Figure 5.8, framework linking strategy to process (Osterwalder, 2004:148)
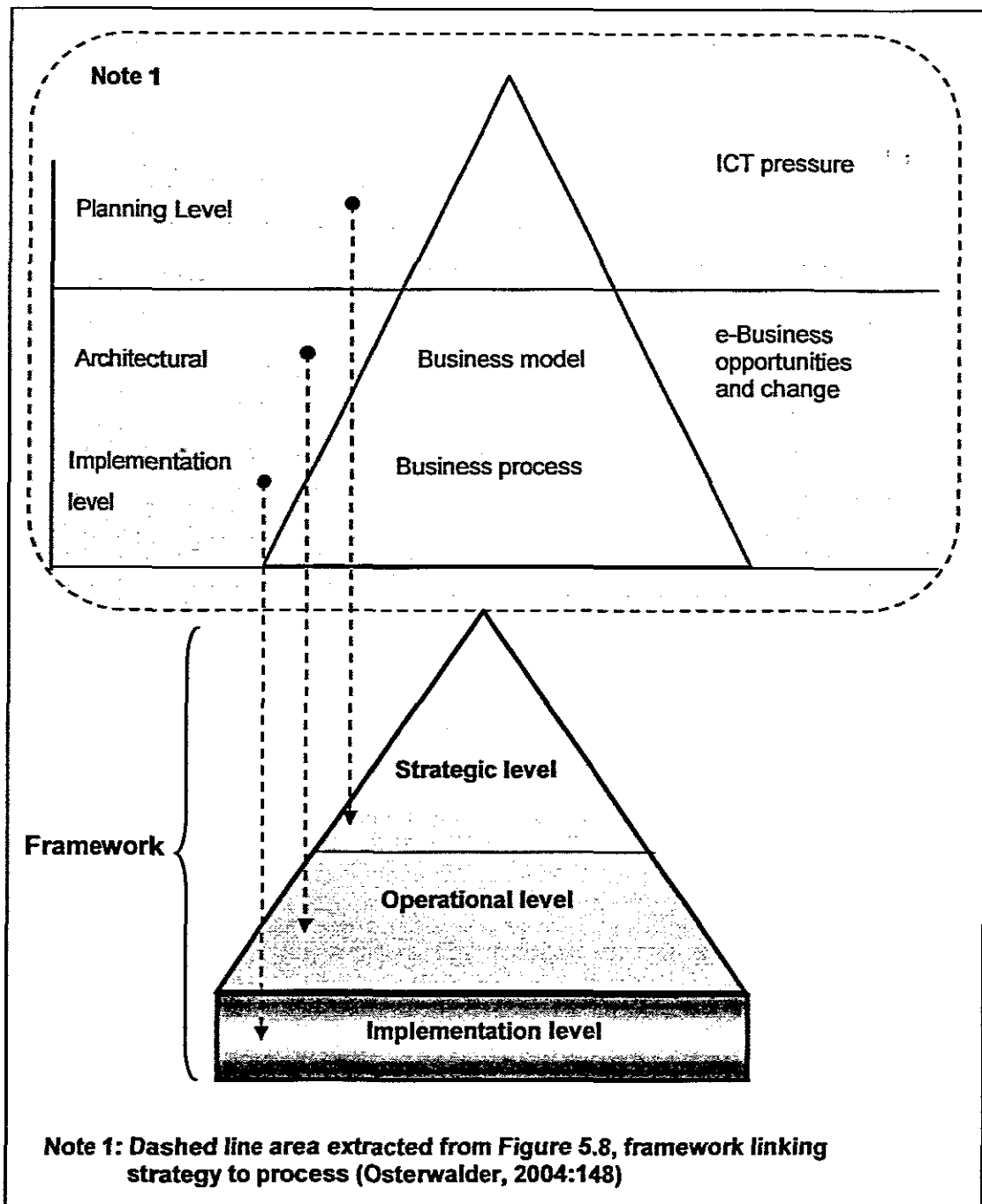
Figure 5.11   Framework of e-commerce adoption model

Figure 5.11 provides a graphical representation of the framework. The first step was to rename the layers. The top layer called Planning Level concerned with strategic issues was renamed the Strategic Level. The middle layer called the Architecture Level concerned with e-business opportunities and change was renamed the Operational Level and the third level, called the Implementation Level concerned with e-business process adoption, was left unchanged.

184

Figure 5.11 represents a three-tiered framework for the e-commerce adoption model. Although this framework's level structure originates from Osterwalder (2004:148) depicted in Figure 5.8, the content of the levels is obtained from contributions of several authors reported in the literature discussed in this chapter, relating to successful business models, frameworks and strategies. This framework specifies the structure of the model, represented by three layers. Section 5.9 expands upon this fist step and covers the development of the model.

5.9 DEVELOPMENT OF THE e- COMMERCE ADOPTION MODEL

As mentioned before, the development of a model is not a simple matter. Churchman *et al.* (1966:159–162) as well as Cook and Russel (1993:11) categorised models as iconic models, analogue models or symbolic models. Sterman (1988:18) described the concept of *mental models* as flexible, considering a wide range of information, not just numerical data and adaptable to new situations; in addition, the model must be modified as new information becomes available. An important observation by Richmond (1993:115) is that the image of a current state of a system (model) is often in error, for various reasons. Therefore, the model will not always be correct, i.e. the interpretation or use of such a model may vary as information varies. For example, the market may change, the product or service may change or new trends may emerge. With the Internet and web-based technology systems constantly changing, this propagates a changing environment.

This researcher adopted the approach that the model developed should be flexible and adaptable, and be able to be changed. Furthermore, it became evident to this researcher that the model should consist of three layers, representing a strategic, operational and implementation level, based on interpretation of the literature reviewed in this chapter. Furthermore, this researcher views the above-mentioned statements about models possibly being in error, as extremely important, and will therefore validate and refine the model after the design phase to reduce the margin of error.

Each of the three levels, (strategic, operational and implementation) will be expanded and developed referring to the literature contained in this chapter, specifically using tables and figures.

NOTE: A pull-out schematic (Figure 5.14) at the end of this chapter, depicts the relationship of these tables and figures and could be consulted for clarity during the reading of the development process of the model.

5.9.1 Strategic level factors

As mentioned before, the Razi model (Figure 5.6) represents a successful online model supporting strategic, operational, technical and behavioral success elements in its top layer. At the strategic level, the Razi model activities consist of managing aspects such as products and infrastructure (controllable) and facilitating changing real-world Internet and web-oriented behavioural environments (uncontrollable). Furthermore, the Razi model supports causes for successful online trading identifying market niches, appropriate websites, superior logistical and customer service, and improved supply chains.

In the Razi model the term *causes* is used, whereas in developing model the term *factors* is used instead. The reason is that the model will be used by future e-commerce adopters (and possibly in cases where e-commerce had been adopted) where *factors* would be a more appropriate term to use than *causes*.

The four success factors are the starting point of the model development at the strategic (top) level. The literature used for expanding the strategic level was summarised in tables 5.3 to 5.7 and Figure 5.6 for the four respective success factors.

The next step is to develop the operational level factors according to the framework of Figure 5.11.

5.9.2 Operational level e-commerce processes

In this section, the operational level is populated using the four strategic level factors, depicted in Figure 5.12. The four factors are discussed in sections (a) to (d) below:

a)   Operational level: Strategic factors (refer Table 5.6)

Referring to the approaches to strategic strategies given in Table 5.6, Tse and Soufani (2003:306) state that strategies for small firms in the new economy are considered to be an important aspect of development and growth. According to Evans and Wurster (1999:85-86), virtual markets are characterised by high reach and richness, where the latter relates to the number of suppliers, consumers, vendors and competitors that an entity can interact with. Furthermore, the Web has transformed the way customers purchase products by a number of simple clicks and customers can therefore, reach many products. However, businesses selling non-commodity goods with known specifications have a greater likelihood of success in the new economy.

The technique used to create new tables from one or more tables is based on a technique used by Kiang and Chi (2001:30-31), creating new tables by linking and mapping two separate entities (tables) into a new table using common intersecting criteria. This is similar to a table joining process but without copying any redundant information to the new table.

According to Kiang and Chi (2001:28), marketing activities revolve around three channels: communication, transaction and distribution as depicted in Table 5.3. The advantages listed in Table 5.3 affirm that these channels can be grouped together or split-up to function independently in areas such as customer issues, product matters, technical specifications, infrastructure requirements and others. Similarly, managing these channels could also be done on a grouped basis or individually, as discussed above. This multi-role of marketing is explained by Mohammed et al. (2002:4) such that Internet marketing is the process of building and maintaining customer relationships through online activities to facilitate the exchange of ideas, products and services that satisfy the goals of both parties. Although executing marketing plans is more operational, marketing is a strategic issue and belongs to the strategy of a business.

This researcher linked these marketing channels (Table 5.3) grouped together with the strategic online factors presented in Table 5.6. This linking action augments the factors emanating from virtualisation, molecularisation and disintermediation, forming Table 5.10.
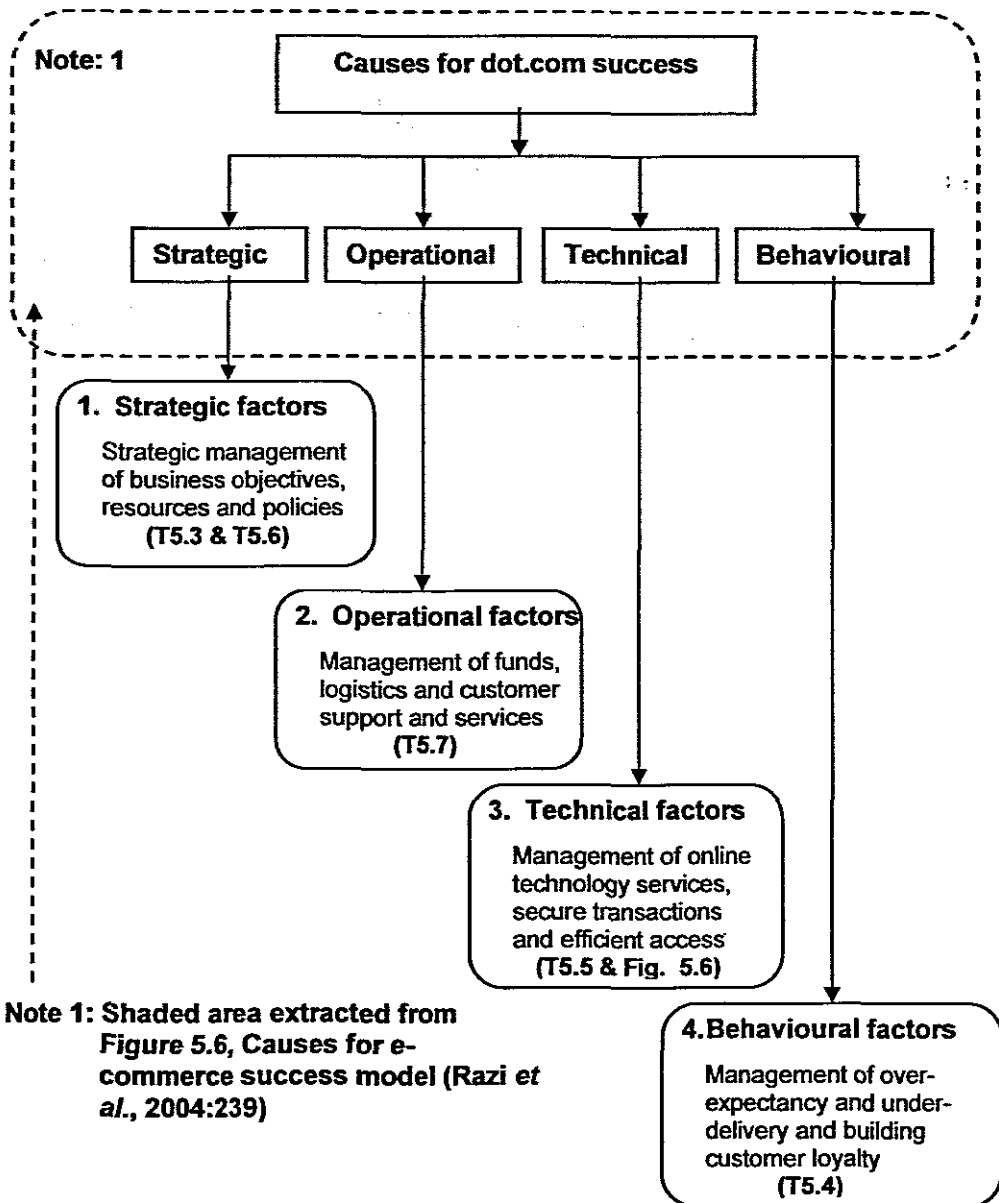
Figure 5.12   e-Commerce adoption model: Strategic level processes

The graphic below depicts this process.
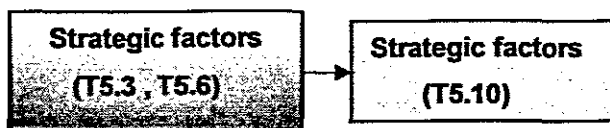
Table 5.10   Operational level: Strategic factors

	Strategic level	Operational level
1	**Strategic factors** Strategic management of business objectives, resources and policies	**An inextricable link exists between the new economy, the new enterprise, and the new technology**
		1 Virtualisation – Disseminating and collecting information, electronic transaction processing, while products and services may remain physical
		1.1 Disseminate and collect information and process orders
		1.2 Use the Internet as additional sales channel
		1.3 Distribute appropriate products and services
		2 Molecularisation – Breaking the economy up into small units due to improvement in access and quality of information
		2.1 Offer bundled services
		2.2 Business flexibility
		2.3 Enhance customer relationships
		3 Disintermediation – Traditional intermediary businesses circumvented due to emergence of networks
		3.1 Niche markets
		3.2 Outsourcing opportunities
		4 Marketing – Enhancing customer relationships, dealing with competitors, branding and understanding the market in which they trade
		4.1 Pure-play (Internet business)
		4.2 Bricks and mortar (traditional business)
		4.3 Branding

b)   Operational level: Operational factors (refer Table 5.7)

Opportunities and challenges proposed by Lowson and Burgess (2003:157–158) are used for e-business development initiatives for conducting e-commerce activities and adoption, as depicted in Table 5.7. Lowson and Burgess (2003:157) further propose building blocks for an e-business operations strategy consisting of core competences, resources, technologies and tactical activity as key factors where an operation strategy is defined as the operational use of the Internet and its associated technologies to apply operations management. Although these key factors are defined in the context of e-business, these key factors also apply to an e-commerce environment. As the focus of this research is on e-commerce, these key factors will be used in the context of e-commerce development. In a similar way to processing strategic factors, starting with Table 5.7 and selecting operational strategy as the common criteria, the operations strategy as the main source of factors creates Table 5.11.

```
┌─────────────────────────┐     ┌──────────────────────────────┐
│   Operational factors   │────▶│   e-Commerce development     │
│        (T5.7)           │     │          (T5.11)             │
└─────────────────────────┘     └──────────────────────────────┘
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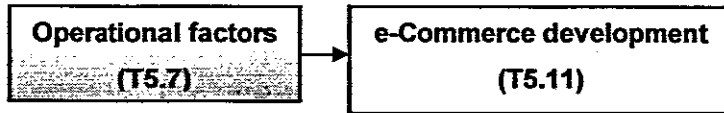
Table 5.11   Operational level: e-Commerce development factors

Strategic level	Operational level
2 **Operational factors** Management of funds, logistics and customer support and services	**5 e-Commerce development** – Elements that support an e-commerce operations strategy to maintain online opportunities and challenges
	5.1 Core competencies, capabilities and processes – Processes and organisation-based elements
	5.1.1 Process based 5.1.2 System or co-ordination based 5.1.3 Organisation based
	6 Resources – Elements of ICT facilities, business systems, training and human development
	6.1 Individual resources
	6.2 Tangible
	6.3 Intangible
	6.4 Human
	6.5 Collective resources
	7 Tactical activities – Operational view of tactical strategies
	7.1 Key activities
	7.2 Core activities

c)   Operational level: Technical factors (refer Table 5.5 and Figure 5.6)

Pires and Aisbett (2003:292) consider that an analysis of ICT needs should be considered interdependently with internal, competitor and market analyses (Table 5.5).   Razi *et al.*   (2004:241) find Web design, server up-time, a secured environment and database management essential strategies for e-commerce adoption (Figure 5.6).   Tse and Soufani (2003:306) suggest that in the new economy technology, customer-focused services and strategic levels of connectivity are required, especially in the networking and information environments.   These technical requirements discussed above are combined to create operational level technical factors depicted in Table 5.12.

```
┌─────────────────────────┐     ┌──────────────────────────────┐
│   Technical factors     │────▶│   Technical factors          │
│     (T5.5 , F5.6)       │     │         (T5.12)              │
└─────────────────────────┘     └──────────────────────────────┘
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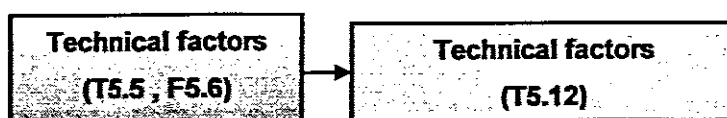
Table 5.12   Operational level: Technical factors

Strategic level	Operational level	
Technical factors Management of online technology services, secure transactions and efficient access	**8 Technical** – Facilitation of technology to support e-commerce transactions and efficient online technologies and web-based systems	
	8.1 Equipment	
	8.2 Technological knowledge	
	8.3 Process innovation	
	8.4 Good website design	
	8.5 In-house or outsourced ICT services and helpdesk	
	8.6 Information and customer databases essential	
	8.7 Security (often viewed as a major barrier)	

d)   Operational level: Behavioural factors (refer Table 5.4)

The literature does not provide specific guidance to assist in the management of businesses to determine the behavioural benefits that Internet trading could provide for their business (Kiang & Chi, 2001:27). The interaction between humans and technology is challenging and SMEs would need to view the process of e-commerce adoption from a behavioural point of view, and not only through a technology viewpoint.

Mohammed *et al.* (2002:204) define customer experience as "...a target customer's perception and interpretation of all the stimuli encountered while interacting with the firm." An example of customer experience is of the management of Nextcard.com who used a tagline "...next generation" credit card, where the firm's concierge service offered automatic online form filling and all account activities. This included transferring funds, reviewing account balances and downloading account information that transferred seamlessly into products such as Microsoft Money and others. For Nextcard.com's management, these factors contributed to enhancing the customer experience. Hughes (2002:255) finds that marketing e-commerce not only has to consider customers and their competitors, but also the market in which they trade. Marketing as a means of enhancing customer relationship management is therefore added to the behavioural factors given in Table 5.4. The strategic level behavioural factors are depicted as the customer behavioural factors, Table 5.13.

Behavioural factors (T5.4) → Customer behavioural factors (T5.13)

191
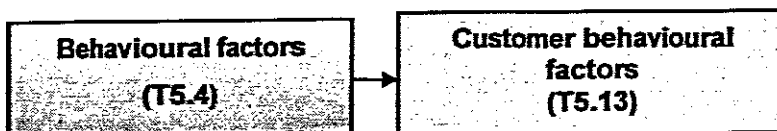
Table 5.13   Operational level: Customer behavioural factors

	Strategic level	Operational level
3	Behavioural factors Management of over expectancy and under-delivery and building customer loyalty and confidence	**9 Customer experience** – Maintaining customer expectation and interpretation of all the stimuli encountered while interacting with the business
		9.1 Functional – The site works well
		9.2 Intimate – Understanding customers
		9.3 Internalisation – Becoming part of the customer
		9.4 Evangelism – Customer like to tell the story

At this stage, the first two columns (strategic and operational levels) of Figure 5.14 have been completed. The bottom entry of the operational factors (e-commerce benefits) consists of a combination of tables 5.5 and 5.9 respectively, and no new table will be created, but the e-commerce benefits will be incorporated in the value proposition Table 5.10.

5.9.3   Implementation level processes

In this section each of the operational level business process factors identified in tables 5.10 to 5.13 are mapped to the implementation level. These factors are:

- Virtualisation
- Molecularisation
- Disintermediation
- Marketing
- e-Commerce development
- Resources
- Tactical activities
- Technical
- Customer experience
- e-Commerce benefits.

The mapping was accomplished through a detailed examination of these operational level factors from literature. Each of the tables 5.10 to 5.13 representing the operational level were used to create the Implementation level tables discussed below.

a) Implementation level: Expanding operational level strategic factors (refer Table 5.10)

This expansion of the operational level strategic factors results in three new tables 5.14 to 5.16 for virtualisation, molecularisation and disintermediation and marketing. Tse and Soufani (2003:306,313–314) find that the Internet reduces manufacturing and transaction costs and includes cost saving of communication with counterparts in other organisations. Staff can be freed-up by using technology thereby allowing them to network with customers, suppliers and counterparts. Furthermore, complementary products and services, joining different networks, fostering strong relationships with customers and others advantages are available as future strategies. To benefit especially small businesses, Tse and Soufani (2003:315) propose that making use of the Internet becomes a means of taking orders and providing information (virtualisation), as well as enhancing customer relationships (molecularisation) and allowing them to explore niche markets more effectively (disintermediation).

Pires and Aisbett (2003:292) state that although developing effective marketing strategies involves internal competitor and customer analysis, formulating strategies for market segmentation, targeting and positioning is vital and more crucial for online trading.

From traditional marketing concepts, using segmentation, the 4Ps of marketing are:

- Product
- Pricing
- Promotion (market communication)
- Place (distribution).

Mohammed et al. (2002:11) find that elements of community and branding should be added to the four elements. Community is the level of interaction with user-to-user connections. Branding is a critical long-term element for building relationships on the Web. However, branding is viewed not at the same level as the '4 P's', but as a moderating variable.

Using common criteria of virtualisation, molecularisation, disintermediation and marketing in Table 5.10, each factor was again analysed to ensure all factors and themes were carried forward. Information revealed in the literature discussion was incorporated in the final expansion and depicted in tables 5.16 to 5.18.

| Operational level: Strategic factors (T5.10 , marketing 4P's) | → | Virtualisation (T5.14) Molecularisation (T5.15) Disintermediation (T5.16) Marketing (T5.16) |
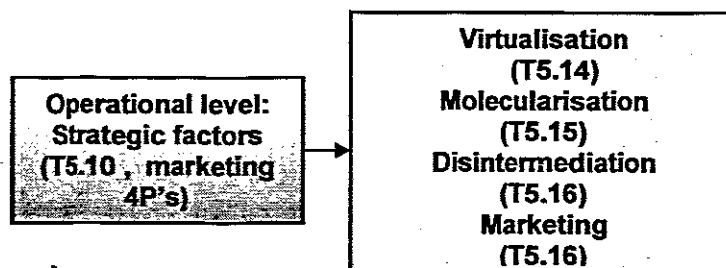
Table 5.14 defines implementation level virtualisation, extending the reach to product and brand related factors.

Table 5.14   Implementation level: Virtualisation

	Strategic level	Operational level	Implementation level
1	**Strategic factors** Strategic management of business objectives, resources and policies	**1 Virtualisation -** Disseminating and collecting information, electronic transaction processing, while products and services may remain physical	
		1.1 Disseminate and collect information and process orders	i) Real time access to information ii) Online transaction processing iii) Greater efficiency (can't hide) iv) Reduce searching cost v) Meet customer needs vi) Builds brand name vii) Finance – provide price comparison, bargaining power, managing negative working capital (paying before order is manufactured), manage marketing and advertising, able to move to e-commerce

194

| | 1.2 Use the Internet as additional sales channel | i) Maintain market segment
ii) Lowered distribution cost
iii) Enhance customer reach
iv) Provide complementary products
v) Act as information broker
vi) Select product and service |
| | 1.3 Distribute appropriate products and services | i) Lowered distribution cost of products and services
ii) Facilitate easy distribution of products or services |

Table 5.15 defines implementation level molecularisation, extending the view into small units of the economy specifying bundled services, flexibility and customer relationships. This will ideally benefit SMMEs using the Web for online business.

Table 5.15   Implementation level: Molecularisation

	Strategic level	Operational level	Implementation level
1	**Strategic factors** Strategic management of business objectives, resources and policies	**2 Molecularisation –** Breaking the economy up into small units due to improvement in access and quality of information	
		2.1 Offer bundled services	i) Products bundled from different networks ii) Provide access to 3rd party products iii) Improved relationships with partners, customers and between customers
		2.2 Business flexibility	i) Ability to join networks ii) Small businesses are quick to position for new opportunities iii) Enhance trust in partner and reputation iv) Manage first mover danger
		2.3 Enhance customer relationships	i) Provide superior online services ii) Provide customisation iii) Develop personalisation iv) Foster e-loyalty v) Virtual communities for customer participation vi) Develop co-products

Table 5.16 defines implementation level disintermediation and marketing themes. The move to niche markets tends to eliminate the intermediary where marketing and branding is concerned.

Table 5.16   Implementation level: Disintermediation and marketing

	Strategic level	Operational level	Implementation level
1	**Strategic factors** Strategic management of business objectives, resources and policies	**3 Disintermediation –** Traditional intermediary businesses circumvented due to emergence of networks	
		3.1 Niche markets	i) Explore new markets ii) Create new products iii) Eliminate intermediaries iv) Establish direct link to customers v) Open architecture and standards
		3.2 Outsourcing opportunities	i) Large companies often outsource to SMMEs ii) Control business network centrally iii) Be aware of rivalry among competitors
		4 Marketing – Enhancing customer relationships, dealing with competitors, branding and understanding the market in which they trade	
		4.1 Pure-play (Internet business)	i) Develop online strategy ii) Promote marketing strategy
		4.2 Bricks-and-mortar (traditional business)	i) Develop business strategy ii) Promote integrative marketing strategy iii) Develop marketing strategy (Offline) iv) Develop marketing strategy (Online)
		4.3 Branding	i) Develop Products ii) Maintain competitive Pricing iii) Adopt to Promotion – communication vi) Foster Community communication v) Manage Place – distribution

b)   Implementation level: Expanding operational level e-Commerce development factors (refer Table 5.11)

Operational factors represented in Table 5.11 are expanded using the headings:

- e-Commerce development
- Resources
- Tactical activities.

Operational strategies proposed by Lowson and Burgess (2003:157–158) include many transformation based elements and activities, such as system based, organisation-wide based or networked based.   Resources (tangible and intangible) are often dependent on the industry and considered as individual resources of a firm, or the way a firm works to create competitive advantage. It is vital to stay focused once a firm trades online and strategies, especially marketing strategies, need to be closely followed.   Razi et al. 2004:240-241) stress the importance of a fulfilment process that needs to follow just-in-time logistics.   This is closely associated with a robust back-end infrastructure and Amazon.com is used as an example. Each of the operation level factors in Table 5.11 were expanded by referring back to Table 5.7 and applying the information discussed above, to create Table 5.17 identifying factors at all three levels of the adoption model.

Operational level: e-Commerce development (T5.11) → e-Commerce development (T5.17)
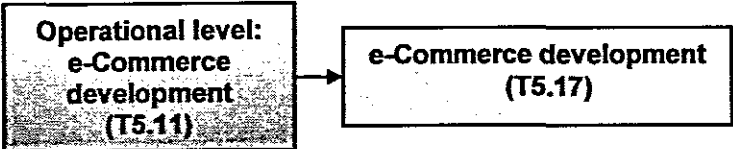
Table 5.17 defines implementation level e-commerce development including core competencies, resources and tactical activities. It also extends the view into logistics, competitive advantage and power of customers and suppliers. This would be beneficial to SMMEs using the Web and related technology in online trading.

Table 5.17   Implementation level: e-Commerce development

	Strategic level	Operational level e-Commerce transformed over time to trade products and services online requiring ICT to integrate supply chains and networks including sales and marketing culminating in e-operations	Implementation level
2	*Operational factors* Management of funds, logistics and customer support and services	*5 e-Commerce development –* Facilitating opportunities and challenges	
		5.1 Core competencies, capabilities and processes – Process and organisation-based elements	i) Provide just-in-time logistics
		5.1.1 Process based	i) Process based transformation activities
		5.1.2 System or co-ordination based	i) Process across entire operation system
		5.1.3 Organisation based	i) Process across entire organisation
		6 Resources – Elements of ICT facilities, business systems, training and human development	
		6.1 Individual resources	i) Manage capital equipment, skills and resources ii) Provide competitive advantage
		6.2 Tangible resources * General statements	i) Physical technologies * ii) Finance *
		6.3 Intangible resources	i) Maintain new communication and IS ii) Manage culture influences iii) Brands

		6.4 Human resources	i) Maintain specialised business
			    skills and knowledge
			iii) Foster communication and
			       interaction
			iv) Redeploy staff

		6.5 Collective resources	i) Capitalise on competitive advantage
		7 Tactical activities – Operational view of various strategies	
		7.1 Key activities	i) Oversee online business promotion

		7.2 Core activities	i) Maintain customer support essential for survival ii) Manage customer bargaining power

c)   Implementation level: Expanding operational level technical factors (refer Table 5.12)

Razi *et al.* (2004:241) stress the fact that good website design is essential for both B2B and B2C applications. Features such as keyword search, easy checkout systems, email conformation confirmation of orders and general customer service are vital to maintain customers. Above all, speed of access and download are essential, to help with the frequently slow customer infrastructure and slow dial-up lines. Security and customer confidentiality remain a point of contention for customers, firms and policy makers. The adoption of technology by SMEs is affected by a number of conditions, such as lack of necessary IT expertise, sophisticated software applications and reliance on vendor support, training, after-sales service and vendor expertise (Seyal & Rahman, 2006:285).

Expanding Table 5.12 and mapping the technical causes by referring back to Figure 5.6 and using the information discussed above assisted with creating and populating Table 5.18.
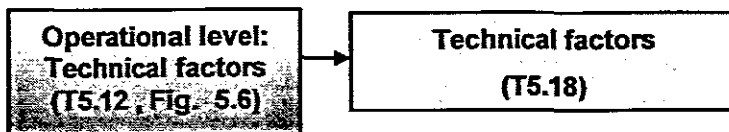
Table 5.18 defines implementation level technical factors, focusing on technology, technological knowledge extending the view to product innovation, ICT design and security.

Table 5.18   Implementation level: Technical factors

	Strategic level	Operational level	Implementation level
3	Technical factors Management of online technology services, secure transactions and efficient access	8 Technical – Facilitation of technology to support e-commerce transactions and efficient online technologies and web-based systems	
		8.1 Equipment	i) Select suitable equipment
		8.2 Technological knowledge	i) Develop core technological know-how
		8.3 Product innovation	i) Develop new system products
		8.4 Process innovation	i) Focus on processes across organisation
		8.5 Good website design	i) Promote convenient shopping
		8.6 In-house or outsourced ICT services and helpdesk functions	i) Deliver correct products ii) Faster response iii) ICT cost
		8.7 Information and customer databases	i) Manage extraction of product information ii) Provide easy access to customer information
		8.8 Maintaining system security, authentication and privacy	i) Maintain system authentication ii) Honour user privacy iii) Maintain system security

d)   Implementation level: Operational level customer behavioural factors (refer Table 5.13)

The following analysis is based on findings by Tse and Soufani (2003:315–316).

- **Functional** *–The site works well*

  Factors included are usable website, fast downloads, easy navigation, reliability, access to and from different media platforms, even to an extent to facilitate mobile devices. In addition, security issues such as credit card security and trust are also factors to be considered.

- *Intimate – Understanding customers*

  Once customers become more comfortable using a website they can start to enjoy the benefits of online trading and have meaningful e-commerce experiences. Communication is becoming a vital element and provides one-way communication (in both directions – customer to website or

website to customer) or two-way communication. Customers also need to be sure that their interaction with a website remains consistent and totally replicable over time. This communication goes hand-in-hand with customer satisfaction and their expectation levels. McGrath and Heiens (2003:25–27) suggest that Porter's propositions, threat of substitute products or services and the bargaining power of buyers are still relevant today and need to be incorporated in situations where behavioural factors are considered. The two propositions are included into the Intimate stage of the customer experience. The overall experience is often influenced by the trustworthiness of a website, which can be is very personal and intimate.

- **Internalisation** – *Becoming part of the customer*

  This becomes evident when actual contact is no longer maintained or by imagining possible future experiences. Customers become convinced that the website offers exceptional value and are not easily persuaded to move away. Users quite often have brand preferences and experiences in the offline world and therefore it should be no different in the online world. A stage is reached when customers no longer think that accessing the website is a task, but more a pleasure. A change in behaviour then occurs moving from consumption to leisure activity. This stage also tends to be less economics-driven and more pleasure-driven. Another phenomenon found in the offline world is reached by online active community membership, participating with other like-minded customers who share the same experience. Finally, customers believe that they are integral parts of the experience, to the point where pressure groups are formed, either against or defending a firm's management decisions. At this stage, customers are happy to share the intimacy of the brand, as it has become a part of who they are or have become.

- **Evangelism** – *Customers like to tell the story*

  This stage often manifests itself by selling a product or online service to friends and family, often close and special to them. The evangelism stage is referred to as the defender of the experience stage, where a customer becomes emotional about the product or service and even becomes angry if opposed.

Table 5.13 is expanded by mapping customer behaviour factors referring back to Table 5.4 and using the information discussed above assisted to create and populate Table 5.19.
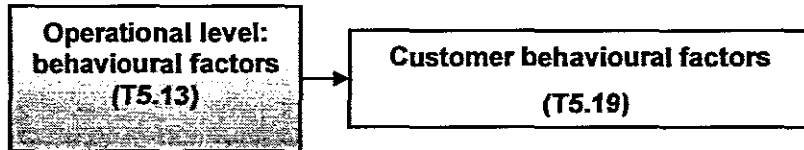
Table 5.19 defines implementation level customer behavioural factors by focusing on various stages of customer experience extending the view into customer's website use, personalisation and enjoyment of the experience. This will assist SMMEs (and their customers) using the Web for trading.

Table 5.19   Implementation level: Customer experience

	Strategic level	Operational level	Implementation level
4	Customer behaviour factors Management of over expectancy and under-delivery and building customer loyalty and confidence	9 Customer experience – A customer's expectation and interpretation of all the stimuli encountered while interacting with the business	
		9.1 Functional – The site works well This is often a developmental process in the mind of customers normally after a number of iterations with a website	i) Usable site * ii) Quick downloads * iii) Easy navigation * iv) Reliable * v) Security *
		9.2 Intimate – Understand customers Customisation is understood to be the ability of a website to either tailor (tailoring) or being tailored (personalisation) to suit customer preferences	i) Personalisation ii) Develop customer trust iii) Aim for customer consistent experience iv) Provide substitute products v) Propagate customer bargaining power

9.3 **Internalisation** – Becoming part of the customers. This is often a developmental process in the mind of customers normally after a number of iterations with a website	i) Being "in the know" ii) Provide exceptional value iii) Facilitate repeat experience iv) Be significantly better
9.4 **Evangelism** – Customers like to tell the story. This stage can only be reached if the three preceding stages have been completed, i.e. the website works, it has become an individual experience and the brand has been integrated into the lives of customers	i) Oversee customer taking message to market ii) Provide online benefit iii) Facilitate customers to defend the experience

Key: * Incorporated into technical factors in Table 5.18

e)   Considering the value proposition (refer Table 5.5 and Table 5.9)

Chesbrough and Rosenbloom (2002:529–532) highlight *value proposition* as a description of customer problems, products, and the value of products from the customer's perspective. The *value* of the product is in essence a benefit to the customer. Pires and Aisbett (2003:297) allude to the strategic, informational and operational benefits of e-commerce, depicted in Table 5.5 from an internal, customer and competitor basis. Furthermore, Damanpour (2001:21) reports on benefits with reference to competitive advantage in online business trading, presented in Table 5.9. Kuzic *et al.* (2002:1609) report that the major benefits of e-commerce adoption are business efficiency, improved image, competitive advantage and increased automation, amongst others. Dubelaar *et al.* (2005:1257) highlight the importance of customer-oriented benefits such as winning new customers and increasing use of online trading. From the above discussion, and using Table 5.9 (e-business benefits) to link to Table 5.5 (e-commerce adoption benefits), Table 5.20 has been created to include the value proposition of customers experiencing e-commerce.

e-Commerce benefits (T5.5 ;T5.9)	→	Value proposition (T5.20)

203
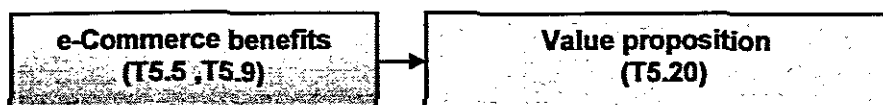
Table 5.20 defines implementation level value proposition focusing on the value to participating SMMEs. This serves as motivating aspects practised and experienced by SMMEs when using the Web to offer the correct information relating to financial, customer, market and product matters.

Table 5.20   Implementation level: Value proposition

	Strategic level	Operational level	Implementation level
4	**Value proposition** Management *of over* competitive advantage using information for increased sales, lowered costs and competitive marketing	**10 e-Commerce benefits** - The goal is to gain competitive advantage over those businesses that lag behind	
		10.1 **Increased available management information -** Sales data and reporting activities	i) Oversee access to sales information ii) Access to financial information
		10.2 **Increased integration of suppliers and vendors –** Gives better understanding of business needs	i) Be aware of business needs ii) Maintain efficient service delivery
		10.3 **Expanded channel partnerships-** Ensures right products available at the right time	i) Provide correct product delivery ii) Timing to market
		10.4 **Lower transaction costs –** Reduction of costs and increased efficiency factors over time	i) Timing short-term ii) Timing long-term
		10.5 **Better market understanding –** Ease of automated data extraction automatically	i) Extraction of information ii) Customer data iii) Fast market response
		10.6 **Expanded geographic coverage –** Facilitates transacting across world	i) Facilitate any place, anytime ii) Customer needs

Strategic level processes

1.Strategic factors

Strategic management of business objectives, resources and policies
(T5.3 , T5.6)

2.Operational factors

Management of funds, logistics and customer support and services
(T5.7)

3.Technical factors

Management of online technology services, secure transactions and efficient access
(T5.5 , Fig. 5.6)

4.Behavioural factors

Management of over expectancy and under-delivery and building customer loyalty
(T 5.4)

Operational level processes

1 **Virtualisation** - Electronic transactions processes being conducted electronically while products remain mostly physical
2 **Molecularisation** - Breaking the economy up into very small units by the access and quality of information on the Internet
3 **Disintermediation** - Traditional intermediary businesses circumvented due to emergence of networks
4 **Marketing** - Enhancing customer relationships
(T5.10)

5 **e-Commerce development** - Elements that support an e-commerce operations strategy to maintain online opportunities and challenges
6 **Resources** - ICT facilities, business systems, training and human development
7 **Tactical activities** - Operational view of tactical strategies
(T5.11)

8 **Technical** - Facilitation of technology to support e-commerce transactions and efficient online technologies and web-based systems
(T5.12)

9 **Customer experience** – A customer's expectation and interpretation of all the stimuli encountered while interacting with the firm
(T5.13)
10 **E-commerce benefits** - The goal is to gain competitive advantage over those businesses that lag behind
(T5.5 , T5.9)

Implementation level processes

Virtualisation (T5.14)
Molecularisation (T5.15)
Disintermediation Marketing (T5.16)

e-Commerce development (T5.17)

Technical (T5.18)

Customer experience (T5.19)

Value proposition (T5.20)

Figure 5.13   e-Commerce adoption model building blocks

205

5.10   Conclusion

In this chapter, an e-commerce adoption model was developed using a three-tiered framework that originated from the literature. Various e-commerce related aspects were consolidated using a scientific method of linking entities together. In the process, literature was explored pertaining to building blocks of business models, definitions of business models, web-based business models, strategies, frameworks, the development of the online business environment and e-commerce adoption models amongst others. In Chapter 6, the e-commerce adoption model is validated and refined by using evidence from local case studies to produce the final e-commerce adoption model depicted in Figure 6.9.

A foldout diagram indicating the sources of the various factors used in the model development process and discussion in this chapter, is presented in Figure 5.14. This figure also depicts the relationship between the tables and figures in the three hierarchic levels of the model. This figure can be found on the next page of this chapter.
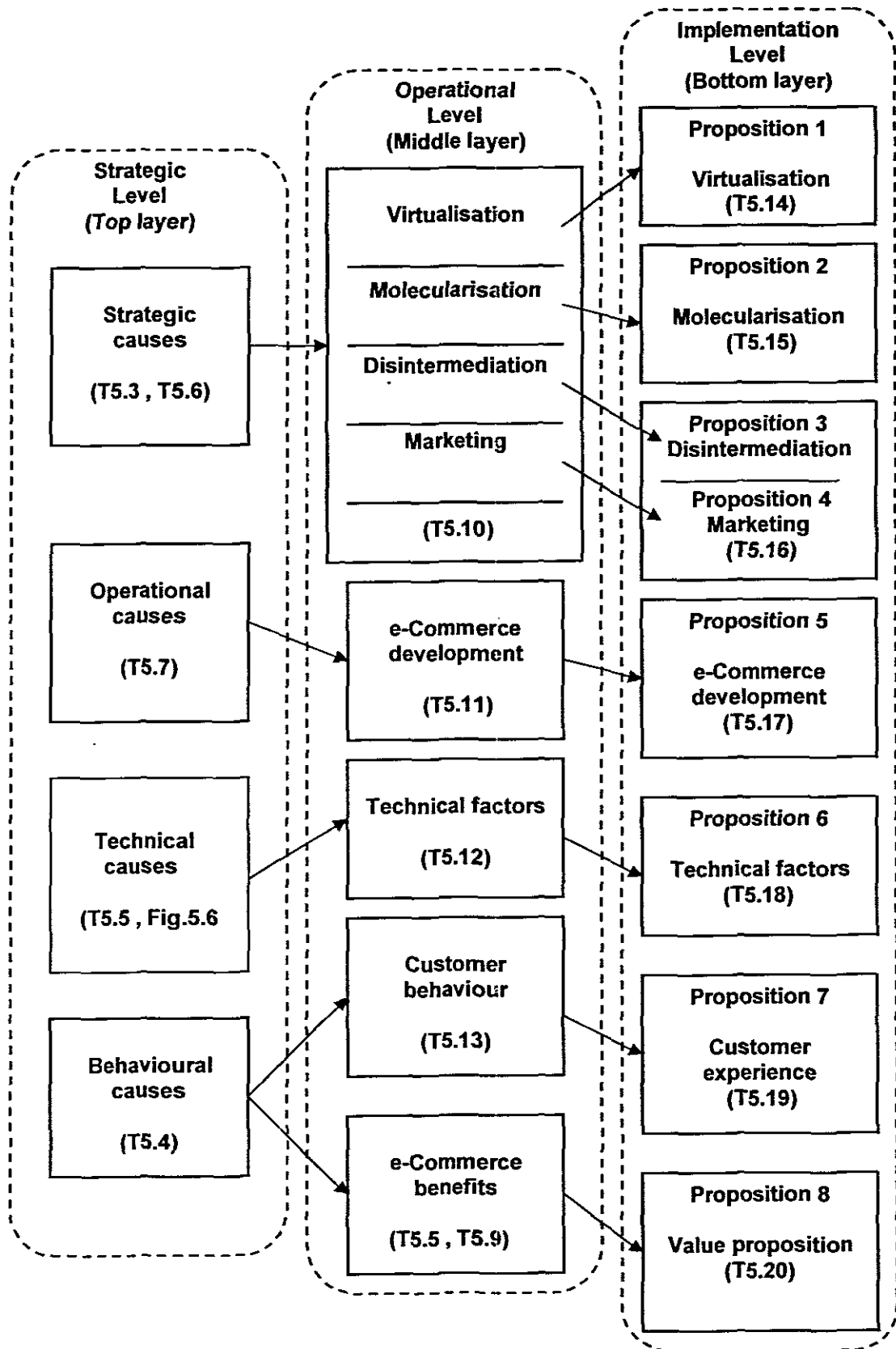
Figure 5.14 Model development: table and figure sources and relationships

CHAPTER 6

6. VALIDATION OF THE e-COMMERCE ADOPTION MODEL

6.1 INTRODUCTION

The focus of this chapter is the validation of the e-commerce adoption model developed in Chapter 5. In Chapter 2, reference was made to interviews that were conducted in two phases. In phase one, five SMME cases were interviewed and the feedback was used to answer the first three sub-questions, which in turn led to the development of a draft e-commerce adoption model. In phase two, further interviews were conducted to validate the model. The five original SMMEs were contacted for interviews but one declined to continue, and five further cases were also selected. However, of the five new cases, one had to be eliminated after repeatedly cancelling appointments, thus in the end, eight interviews were used to validate the model.

The model consisted of two distinct sections, which were validated in sections 6.2 and 6.3 respectively. In section 6.2 the validation consisted of the results of in-depth interviews and discussions with the respondents to obtain feedback and to reach consensus (and ultimately finalisation) on the overall structure of the model. The structure consists of a three-level hierarchy:

- Strategic level
- Operational level
- Implementation level.

Furthermore, the e-commerce adoption factors contained in the above-mentioned implementation level were analysed to improve and refine these e-commerce adoption factors. Thereafter, the factors were ranked and interpreted (section 6.3) to determine to what extent they were valid and applicable for incorporation into the final e-commerce adoption model. The final model is presented as Figure 6.9.

6.2 EDITING THE ELEMENTS OF THE MODEL

For the first section, interviews with the respondents began by introducing the research goal and discussing the model development process. A diagram depicting the three-level hierarchy of the model was used as a discussion point with the respondents (see Appendix B).

For the model validation and refinement, eight propositions were developed to be used for the interviews. The eight propositions contained the 105 e-commerce adoption factors within the third implementation level of the model. Propositions forms part of the hypothesis testing described in figures 2.2 and 2.3 (see Appendix C).

According to the respondents, the strength of this model was its ability to view a business's e-commerce adoption aspects not only from the three hierarchy levels, but also from a bottom-up approach. Some respondents were of the opinion that the model could be split into a number of sections, both vertically and horizontally, and one respondent suggested that the model could be depicted in a matrix format. Consensus was finally reached on the proposed hierarchical structure of the model.

Furthermore, feedback obtained from respondents ranked the applicability of each factor, based on the respondents' own experience of e-commerce adoption gained in their respective businesses. A measurement scale was used consisting of three options:
- Most applicable
- Fairly applicable
- Least applicable.

In sections 6.2.1 to 6.2.8 the original adoption factors are displayed on the left hand side and the suggested updated factors on the right hand side. Changes to wording, deletion and re-categorising of factors are shown in Tables 6.1 to 6.8, motivated by feedback obtained from the respondents.

6.2.1 Proposition 1

The Internet and web-technologies enhances dissemination and collection of information, facilitates electronic transaction processing, while products and services may remain physical and using the Internet as an additional sales distribution channel.

Rephrased factors:

- **Greater efficiency (can't hide) (#3)** changed to **Awareness that websites expose businesses (#3)**

  Most respondents indicated that they had had previous experience with websites exposing businesses to the outside world. Respondents suggested that aspirant online traders should be made aware of this aspect. The wording of the adoption factor was updated to enhance its understanding and to better reflect this aspect discussed.

- *Builds brand name* **(#6)** changed to *Promote online trading to build brand name* **(#6)**

  The majority of respondents suggested adding online trading to this factor description to make it more explicit and less ambiguous for potential online traders and SMMEs to comprehend. However, there is also a measure of responsibility that online traders must adhere to, not only to promote brands, but to protect existing brands, products, services and websites.

- *Able to move to e-commerce* **(#11)** changed to *Use upgrade path to integrated e-commerce* **(#10)**

  This factor conveys the concept that once a business starts conducting e-commerce, this would act as a starting point to upgrade to an integrated back-end e-commerce system. Most of the respondents suggested changing the factor description by including upgrade path, to be more compatible with ICT terminology.

- *Lowered distribution cost of products or services* **(#18)** changed to *Lower distribution costs* **(#17)**

  Some respondents pointed out that distribution consists of more than just products and services. They suggested changing the factor wording to

210

cater for more general scenarios, including products and services. In support, they felt that online trading generally lowered costs.

Deleted factor:

Bargaining power (#8)

Respondents stated that from their experience, bargaining power normally originates from customers and suppliers. Although any bargaining activity has some financial consequence to a business, it was agreed by respondents that this factor should not reside directly under finance. They further pointed out that there were already similar bargaining related factors represented in other propositions, therefore covering this aspect sufficiently.

Table 6.1 Proposition 1: Original and updated adoption factors

Original factors		#	Updated factors	
Original factors		**#**	**Updated factors**	
Real time access to information		1	Facilitates real time access to information	
Online transaction processing		2	Online transaction processing	
Greater efficiency (can't hide)		3	**Awareness that websites expose businesses**	
Reduced searching cost		4	Reduced searching cost	
Meeting customer needs		5	Meeting customer needs	
Builds brand name		6	**Promote online trading to build brand name**	
Finance	Provide price comparison	7	Finance	Provide price comparison
	~~Bargaining power~~	8		Manage negative working capital, #8
	Manage negative working capital	9		Manage marketing and advertising, #9
	Manage marketing and advertising	10		**Use upgrade path to integrated e-commerce, #10**
	Able to move to e-commerce	11	Sales channel	Maintain market segment, #11
Sales channel	Maintain market segment	12		Lower distribution costs, #12
	Lowered distribution cost	13		Enhance customer reach, #13
	Enhance customer reach	14		Provide complementary products, (#14)

	Provide complementary products	15		Act as information broker, #15
	Act as information broker	16		Selection of products and services, #16
	Selection of products and services	17	**Lower distribution costs, #17**	
Lowered distribution cost of products and services		18	Ease distribution of products or services, #18	
Facilitate easy distribution of products or services		19		

6.2.2 Proposition 2

The economy has been broken up into small units leading to bundled services, business flexibility and enhancing customer relationships become important factors due to improvement in access and quality of online information.

Rephrased factors:

- *Improved relationships with partners, customers and between customers (#22)* changed to *Improved stakeholder relationships (#20)*

  A number of respondents suggested a more general description, rather than one that just refers to partners and customers. Various options were discussed and stakeholders appeared to be the respondents' preferred choice.

- *Ability to join networks (#23) changed to Facilitate joining networks (#21)*

  Most respondents suggested that online trading would automatically facilitate joining networks, rather than online trading providing the ability to join networks. The suggested wording was accepted for the description of this factor.

- *Small businesses are quick to position for new opportunities (#24)* changed to *Awareness of SMMEs quick response to opportunities (#22)*

A few respondents suggested removing *new* from the description. *Furthermore, the researcher decided to use SMMEs to be more consistent* with terminology already used in this research.

- *Virtual communities for customer participation* (#31) changed to *Facilitate virtual community participation* (#29)
Some respondents suggested that customer participation was too specific and that the description should allow for wider participation. The final suggestion opted for by respondents was virtual community participation.

Deleted factor:

***Products bundled from different networks* (#20)**
Most respondents found this factor similar to *Provide access to 3rd party products* (#19) in Proposition 2, and therefore suggested its removal. On inspection, the rankings of the two factors were found to be similar and subsequently this factor was not needed.

Table 6.2 Proposition 2: Original and updated adoption factors

Original factors	#	Updated factors
~~Products bundled from different networks~~	20	
Provide access to third party products	21	Provide access to third party products, #19
Improved relationships with partners, customers and between customers	22	Improved stakeholder relationships #20
Ability to join networks	23	Facilitate joining networks, #21
Small businesses are quick to position for new opportunities	24	Awareness of SMMEs quick response to opportunities, #22
Enhance trust in partner and reputation	25	Enhance trust in partner and reputation, #23
Manage first mover danger	26	Manage first mover danger, #24
Provide superior online service	27	Provide superior online service, #25
Provide customisation	28	Provide customisation, #26
Develop personalisation	29	Develop personalisation, #27
Foster e-Loyalty	30	Foster e-Loyalty, #28

| Virtual communities for customer participation | 31 | Facilitate virtual community participation, #29 |
| Develop co-products | 32 | Develop co-products, #30 |

6.2.3 Proposition 3

Traditional intermediary businesses are being circumvented due to emergence of networks pursuing niche markets and outsourcing ICT for improved business opportunities.

Re-categorised factor (moved):

Open architecture and standards (#37) moved to Proposition 6, Table 6.6, **Utilise open architecture and standards (#75)**

During the interviews, it became evident that it would be preferable to list this factor under Proposition 6, dealing with technical factors. All respondents agreed to move this factor.

Table 6.3 Proposition 3: Original and updated adoption factors

Original factors	#	Updated factors
Explore new markets	33	Explore new markets, #31
Create new products	34	Create new products, #32
Eliminate intermediaries	35	Eliminate intermediaries, #33
Establish direct link to customers	36	Establish direct link to customers, #34
Open architecture and standards (moved to Proposition 6, Table 6.6)	37	Monitor large companies outsourcing to SMMEs, #35
Large companies often outsource to SMMEs	38	Control business network centrally, #36
Control business network centrally	39	Awareness of rivalry amongst competitors, #37
Awareness of rivalry among competitors	40	

| Virtual communities for customer participation | 31 | Facilitate virtual community participation, #29 |
| Develop co-products | 32 | Develop co-products, #30 |

6.2.3 Proposition 3

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Table 6.3 Proposition 3: Original and updated adoption factors

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Create new products	34	Create new products, #32
Eliminate intermediaries	35	Eliminate intermediaries, #33
Establish direct link to customers	36	Establish direct link to customers, #34
Open architecture and standards (moved to Proposition 6, Table 6.6)	37	Monitor large companies outsourcing to SMMEs, #35
Large companies often outsource to SMMEs	38	Control business network centrally, #36
Control business network centrally	39	Awareness of rivalry amongst competitors, #37
Awareness of rivalry among competitors	40	

6.2.4 Proposition 4

Customer relationships, dealing with competitors, branding and understanding the market in which they trade, become important business aspects, for online and bricks-and mortar businesses.

Table 6.4 Proposition 4: Original and updated adoption factors

Original factors	#	Updated factors
Develop online strategy	41	Develop online strategy, #38
Promote marketing strategy	42	Promote marketing strategy, #39
Develop business strategy	43	Develop business strategy, #40
Promote integrative marketing strategy	44	Promote integrative marketing strategy, #41
Develop marketing strategy(Offline)	45	Develop marketing strategy(Offline), #42
Develop marketing strategy (Online)	46	Develop marketing strategy (Online), #43
Product development	47	Product development, #44
Maintain competitive Pricing	48	Maintain competitive Pricing, #45
Adopt to Promotion – communication	49	Adapt to Promotion – communication, #46
Foster Community communication	50	Foster Community communication, #47
Manage Place – distribution	51	Manage Place – distribution, #48

6.2.5 Proposition 5

E-commerce opportunities and challenges need core competencies, extended capabilities and processes, resources and strategies are emanating, online resources, individual resources, tangible, intangible and human resources become part of competitive online trading.

Rephrased factor:

***Process across entire operation system* (#54)** changed to ***Promote online process across operation* #50**, and ***Process across entire organisation* (#55)** changed to ***Promote online process across organisation* (#51)**

215

In both of the above factor descriptions, most of the respondents thought it was necessary to include online in the descriptions, as both factors are directly linked to online trading activities.

Deleted factors:

- *Process based transformation activities* **(#53)**

    This factor was merely a statement and some respondents found that it made no real contribution. In support of this sentiment, the researcher pointed out that the two factors discussed above covered this aspect adequately.

- *Brands* **(#60)**

    During the interviews it became evident that this factor was already covered by *Promote online trading to build brand name* **(#6)**, Proposition 1, Table 6.1, and most respondents suggested deleting this factor in Proposition 5.

Table 6.5 Proposition 5: Original and updated adoption factors

Original factors	#	Updated factors
Provide just in time logistics	52	Provide just in time logistics, #49
Process based transformation activities	53	
Process across entire operation system	54	Promote online process across operation, #50
Process across entire organisation	55	Promote online process across organisation, #51
Manage capital equipment, skills and resources	56	Manage capital equipment, skills and resources, #52
Provide competitive advantage	57	Provide competitive advantage, #53
Maintain new communication and IS	58	Maintain new communication and IS, #54
Manage culture influences	59	Manage culture influences, #55
Brands	60	
Maintain specialised business skills and knowledge	61	Maintain specialised business skills and knowledge, #56
Foster communication and interaction	62	Foster communication and interaction, #57

Redeploy staff	63	Redeploy staff, #58
Capitalise on competitive advantage	64	
Oversee online business promotion	65	Oversee online business promotion, #59
Maintain customer support essential for survival	66	Maintain customer support essential for survival, #60
Manage customer bargaining power	67	Manage customer bargaining power, #61

6.2.6   Proposition 6

Technical support of e-commerce adoption for equipment, technological knowledge, product innovation, process innovation and good website design enhanced by in-house or outsourced ICT services and/or helpdesk activities, maintaining information and customer databases where security is a barrier to overcome.

Rephrased factors:

- ***Faster response* (#74)** changed to ***Maintain fast communication line speed* (#68)**

  During the interviews with respondents, the wording of this factor was found to be ambiguous. This factor referred to the response of communication line speed. Most respondents suggested changing the adoption factor description.

- ***ICT costs* (#75)** changed to ***Keep check on ICT costs* (#69)**

  This factor was found to be ambiguous by all respondents. The respondents suggested changing the factor description to keep check on ICT costs.

Added factor:

Manage bandwidth capping (#76)

Respondents found SMMEs were adversely affected by Telkom's policy to cap 3 Giga byte International bandwidth. Most respondents suggested adding this as a

new adoption factor to advise new online adopters to make alternative plans if required.

Table 6.6 Proposition 6: Original and updated adoption factors

Original factors	#	Updated factors
Select suitable equipment	68	Select suitable equipment, #62
Develop core technological know-how	69	Develop core technological know-how, #63
Develop new system products	70	Develop new system products, #64
Focus on processes across organisation	71	Focus on processes across organisation, #65
Promote convenient shopping	72	Promote convenient shopping, #66
Deliver correct products	73	Deliver correct products, #67
Faster response	74	**Maintain fast communication line speed, #68**
ICT costs	75	**Keep check on ICT costs, #69**
Manage extraction of product information	76	Manage extraction of product information, #70
Provide easy access to customer information	77	Provide easy access to customer information, #71
Maintain system authentication	78	Maintain system authentication, #72
Honour user privacy	79	Honour user privacy, #73
Maintain system security	80	Maintain system security, #74
		Utilise open architecture and standards, #75 (moved from Proposition 3 Table 6.3)
		Manage bandwidth capping, #76

6.2.7 Proposition 7

The extent of customisation of websites or personalisation to suit customer preferences where business/products become part of a customer's life ensuring selecting the same first choice supplier.

Re-categorised factors:

Personalisation (#81)

Most respondents requested that this factor be moved to reside under Proposition 2 in Table 6.2, where the factors deal with, and are associated with customer relationships.

Deleted factors:

- *Propagate customer bargaining power (#85)*

  This factor duplicates *Manage customer bargaining power (#61)* in Proposition 5, Table 6.5 to some extent, although the former manages whereas, the latter propagates customer bargaining power.

- **Being "in the know" (#86)**

  During the validation interviews with respondents, it became evident that this factor was duplicating *Develop core technological know-how (#64)* in Proposition 6, Table 6.6. A number of respondents suggested deleting this factor.

- *Facilitate repeat experience (#88)*

  Most respondents were of the opinion that this factor was contained within **Foster e-Loyalty (#28)** in Proposition 2, Table 6.2. They suggested deleting this factor.

Table 6.7 Proposition 7: Original and updated adoption factors

Original factors	#	Updated factors
Personalisation (Duplicated in Proposition 2, Table 6.2, #27)	81	
Develop customer trust	82	Develop customer trust, #77
Assist customers to have consistent experience	83	Assist customers to have consistent experience, #78
Provide substitute products	84	Provide substitute products, #79
~~Propagate customer bargaining power~~	85	
~~Being "in the know"~~	86	
Provide exceptional value	87	Provide exceptional value, #80
~~Facilitate repeat experience~~	88	
Be significantly better	89	Be significantly better, #81
Ensure customers take message to market	90	Ensure customers take message to market, #82
Provide online benefit	91	Provide online benefit, #83
Ensure customers defend the experience	92	Ensure customers defend the experience, #84

6.2.8 Proposition 8

Available management information, sales data and reporting activities, increased integration of suppliers and vendors leading to increased market understanding.

Rephrased factor:

Customer data (#102) changed to *Safeguard access to customer data* (#92), and *Customer needs* (#105) changed to *Maintain customer needs* (#95)

In both of the above factors relating to customers, most respondents requested changes to the descriptions to portray a more focused customer approach. This was achieved by rewording the descriptions of the two factors.

Deleted factors:

- *Timing to market* (#98)

  All respondents found this factor to be a statement and not of much use. However, the two related factors: short-term and long-term timing factors were considered to be essential, being more meaningful and useful. All respondents suggested deleting this factor but adding the prefix *Timing to market* to the two factors, *Manage timing to market: Short-term (#90)* and *Manage timing to market: Long-term (#91)*.

- *Extraction of information* (#101)

  Most respondents thought this factor was already covered by a number of adoption factors and therefore recommended deleting it.

Table 6.8 Proposition 8: Original and updated adoption factors

Original factors	#	Updated factors
Manage access to sales information	93	Manage access to sales information, #85
Access to financial information	94	Provide access to financial information, #86
Awareness of business needs	95	Awareness of business needs, #87
Maintain efficient service delivery	96	Maintain efficient service delivery, #88
Provide correct product delivery	97	Provide correct product delivery, #89
~~Timing to market~~	98	

	Short-term	99	**Manage timing to market: short-term, #90**
	Long-term	100	**Manage timing to market: long-term, #91**
~~Extraction of information~~		101	
Customer data		102	**Safeguard access to customer data, #92**
Foster fast market response		103	Foster fast market response, #93
Facilitate any place, anytime		104	*Facilitate any place, anytime, #94*
Customer needs		105	**Maintain customer needs, #95**

The above editing process culminated in 95 final adoption factors, whereupon the last and equally important validation stage was addressed, namely to prioritise each set (*propositions*) of factors. The model incorporating the top ranking factors could consequently be used for establishing adoption levels by any enterprise, SMME or even large enterprises according to their needs. For example, if time or financial constraints occur, only the most important factors could be brought into action (see the highlighted areas in Figure 6.9).

6.3   PRIORITISING FACTORS

The second phase interviews consisted of ranking the 95 e-commerce adoption factors to determine their importance within the final model. To accomplish this, a set of bar-charts were created, sorted by *Most, Fairly* and *Least applicable* adoption factors as indicated by the respondents. These are depicted in Figures 6.1–6.8. From these bar-charts, the most applicable adoption factors for SMMEs to adopt e-commerce were identified. These factors were highlighted in the final e-commerce adoption model given in Figure 6.9. The factor prioritising was accomplished as follows:

Firstly, the top ranking factors were highlighted by the researcher using the combined scores[1] of each factor, no more than one score apart (e.g. 7 and 8, or 6 and 7). Secondly, lower-ranked factors, considered by the researcher to be essential to e-commerce adoption, were also identified. Conversely, high ranking factors that were deemed not essential to e-commerce adoption were not identified.

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[1]   Combined score/s refers to the combined score of the factors rated *Most applicable* and *Fairly applicable*. Where *score/s* is used, this refers only to the *Most applicable* factors.

6.3.1 Proposition 1 – Virtualisation (refer Figure 6.1)

Top ranking factors:

1. ***Enhance customer reach* (#13) [combined score 8=7+1]**

    This is one of the highest ranking factors and it emphasises the importance of reaching customers as an essential requirement for successful online business.

2. ***Meeting customer needs* (#5) [combined score 8=3+5]**

    This score indicates that although meeting customer needs is essential to most business, in online environments, customer needs can be satisfied in different ways. For example, in a competitive online environment such as the Low Cost Airline (LCA) industry, this adoption factor is closely linked to customer's immediate needs, often based purely on price. Comparing this to online share-trading businesses, where customers are locked into a system, decisions are most often pre-meditated. In these cases, transactions are finalised without much consideration of the human aspects referred to in the previous example. However, in either of these examples, customer needs must be met.

3. ***Reduce searching cost* (#4) [combined score 7=5+2]**

    This adoption factor highlights an important characteristic of online environments, where information may already be available on websites. This reduces searching costs. Comparing this to non-online environments, to find similar information may be difficult and time-consuming if information is misplaced or unavailable. This manual action would increase searching costs.

4. ***Provide complimentary products* (#14) [combined score 7=4+3]**

    Providing complimentary products is not a new business concept, however, it is increasingly being incorporated into e-commerce websites. Many such businesses offer complimentary products in an attempt to be competitive or to satisfy their customer needs. For example, financial services websites offer a range of complimentary products spanning from investment plans to

insurance and health care. However, this factor is different to *Provide access to third party products* (#19), discussed in Proposition 2.

Additional factors:

5. *Ease distribution of products or services* (#18) [score 6]

This activity aims to enhance the delivery process of products or services. New entrants to online trading must be made aware that distribution is part of the final stages of order fulfilment. SMMEs should therefore execute this quickly and effortlessly to satisfy customer needs and fulfil their expectations.

Using the Web to disseminate and collect information, electronic transaction processing of mainly physical products, as an additional sales and disitribution channel

Enhance customer reach (#13)			
Provide online transaction processing (# 2)			
Ease distribution of products or services(#18)			
Awareness that Web sites expose businesses (# 3)			
Reduce searching cost (# 4)			
Facilitate real time access to information(# 1)			
Maintain market segment (#11)			
Provide price comparison (#7)			
Promote online trading to build brand name (#6)			
Manage negative working capital (# 8)			
Provide complementary products (#14)			
Lower distribution cost of products and services(#17)			
Selection of products and service (#16)			
Lower distribution costs (#12)			
Meeting customer needs (# 5)			
Act as information broker (# 15)			
Manage marketing and advertising (# 9)			
Manage upgrade path to integrated e-commerce (#10)			

□ Most applicable ▣ Fairly applicable ■ Least applicable

Figure 6.1 Final adoption factors: Proposition 1

6. *Awareness that websites expose businesses (#3) [score 6]*

This factor highlights the importance of online businesses to be aware that websites are constantly scrutinised by customers, collaborators, competitors and hackers. To accomplish this requires the implementation of proper and reliable online trading filtering and support mechanisms. For example, correct policies, procedures, security software and other relevant aspects must be in place for successful online trading.

Non-essential factor:

Facilitate real time access to information (#1) [combined score 7=5+2]
This factor refers to the facility of accessing information in real time systems. It is therefore not unique to e-commerce systems and is not deemed an essential adoption factor.

From the discussion above, the six most applicable e-commerce adoption factors within virtualisation have been identified. All of these factors could be easily implemented by SMMEs, except possibly to *Provide complimentary products (#14)*. This factor may require additional integration mechanisms to provide a seamless link to the regular products or services offered on a website. All these factors are highlighted in Figure 6.9.

6.3.2 Proposition 2 – Molecularisation (refer Figure 6.2)

Top ranking factors:

1. *Provide customisation (#26) [combined score 8=5+3]*

For customisation, online businesses would need to tailor their websites to satisfy their customer's personal needs and requirements. As this factor is customer driven, website contents or design is determined by knowing and understanding customers. To achieve this, extensive research or marketing initiatives need to be embarked upon, which could be both costly and time consuming.

2. ***Provide superior online service (#25) [combined score 7=5+2]***

. The high score of this factor highlights two aspects: Firstly, it indicates the level of maturity reached by the respondents themselves. This in essence, is a measure of how they currently rate themselves. Secondly, this factor serves as a challenge to aspirant SMMEs to develop their websites to compete against existing successful e-commerce websites, already in operation in South Africa. ;

Additional factors:

3. ***Develop personalisation (#27) [combined score 6=5+1]***

Potential online traders must be made aware that personalisation is a delicate and time-consuming activity. It requires some development and it is usually an interactive process that can commence with an initial online questionnaire completed by customers. This starting point would be followed by compiling information about customer trading habits and personal information is required; this stage may extend over many months. Online traders would need to decide what level of personalisation would suit themselves and their customers. Further improvements should be based on feedback from initial personalisation success, which would comprise further intense research on customer activity.

4. ***Manage first mover danger (#24) [combined score 6=3+3]***

Respondents warned that rushing into online markets could be problematic to rectify afterwards, if things do not work at first. In such cases, waiting until, for example, their proposed online activity or online requirements are understood and clearly defined, would be the preferred route to follow. Of the eight case studies, only one SMME was compelled to rush to the market due to looming competition.

5. ***Provide access to third party products (#19) [score 5]***

This factor requires SMMEs to enter into some formal agreement with one or more third party suppliers. Furthermore, such agreements would have a financial impact on their business by, for example, collecting payment for products or services, providing backup, processing warranty claims and others. Providing access to third party products is used typically in online

grocery stores or online bookstores, but more noticeably on LCA websites providing flight tickets, motor car rental and accommodation, as third party products.

Non-essential factors:

Facilitate joining networks (#21) [combined score 7=4+3]

Although online trading facilitates joining networks, possibly made easier by direct online contact between stakeholders, this is but one of a number of online trading advantages. However, it is not a crucial requirement for initial e-commerce adoption by SMMEs.

Awareness of SMMEs quick response to opportunities (#22) [combined score 7=4+3]

Literature refers to SMMEs being quick to respond to business opportunities. Such rapid response could lead to success in securing business opportunities, when compared to larger counterparts. However, according to the respondents, e-commerce trading is not only about quick SMME response, but also about providing an online environment that meets the needs and requirements of customers.

In Figure 6.9, the five most applicable e-commerce adoption factors within molecularisation are highlighted for SMMEs. The implementation of these factors would require external information, configuration and streamlining over time. As discussed above, some of the factors have associated pre-conditions to be satisfied before implementation, for example, negotiating agreements for third party products (Proposition 2). However, from a practical point of view, the implementation of factors could be staggered and each factor could be improved as the need arises or as requirements dictate.

Availability and access to online systems has broken the economy into small units leading to bundled services, business flexibility and focus on customer relationships

Provide customisation (#26) — 5 — 3 — 0
Provide superior online service (#25) — 5 — 2
Develop personalisation (#27) — 5 — 1
Provide access to 3rd party products (#19) — 5
Awareness of SMMEs quick response to opportunities (#22) — 4 — 3
Facilitate joining networks (#21) — 4 — 3
Foster e-Loyalty (#28) — 4 — 2
Enhance trust in partners and reputation (#23) — 4 — 2
Improve stakeholder relationships (#20) — 4 — 2
Manage first mover danger (#24) — 3 — 3
Facilitate virtual community participation (#29) — 3 — 2
Develop co-products (#30) — 3 — 1

0 1 2 3 4 5 6 7 8 9

□ Most applicable   ☐ Fairly applicable   ■ Least applicable

Figure 6.2 Final adoption factors: Proposition 2

Furthermore, factors such as customisation and personalisation (discussed in 1 and 3 above) need to be treated with care as they affect customers directly and in personal ways, compared to some other non-personal adoption factors.

6.3.3   Proposition 3 – Disintermediation (refer Figure 6.3)

Top ranking factors:

1.   *Establish direct link to customers* **(#34) [combined score 8=7+1]**
     This high-ranking disintermediation factor directly supports the disintermediation phenomenon (cutting out the middle man), linking suppliers directly to customers.

2.   *Control business network centrally (#36)* **[combined score 8=5+3]**
     In the context of disintermediation, most of the respondents stated that the demise of intermediaries (discussed next), exerts pressure on themselves to take control of their own business networking (not to be confused with an ICT physical network) as they for example, can no longer rely on agents to

perform such networking activities as part of sales, marketing and promotions.

3. **Eliminate intermediaries (#33) [score 7]**

    Although this factor was ranked the third-highest intermediary factor, it is considered by the respondents to be the core disintermediation requirement. However, this factor does not have to implemented at the outset of e-commerce adoption. It may be implemented at a later stage, once an online business has been established. It was interesting to observe that most of the respondents eliminated intermediaries *early-on* in their adoption process. The main reason for this was financial (i.e. saving on commissions).

4. **Explore new markets (#31) [combined score 7=6+1]**

    This factor is directly related to disintermediation. New markets must be found for businesses to stay competitive, as middlemen or agents are no longer involved to perform this task on their behalf. However, this is nothing new to business activity, but aspirant online adopters must not be misguided into thinking that online trading will automatically open new markets.
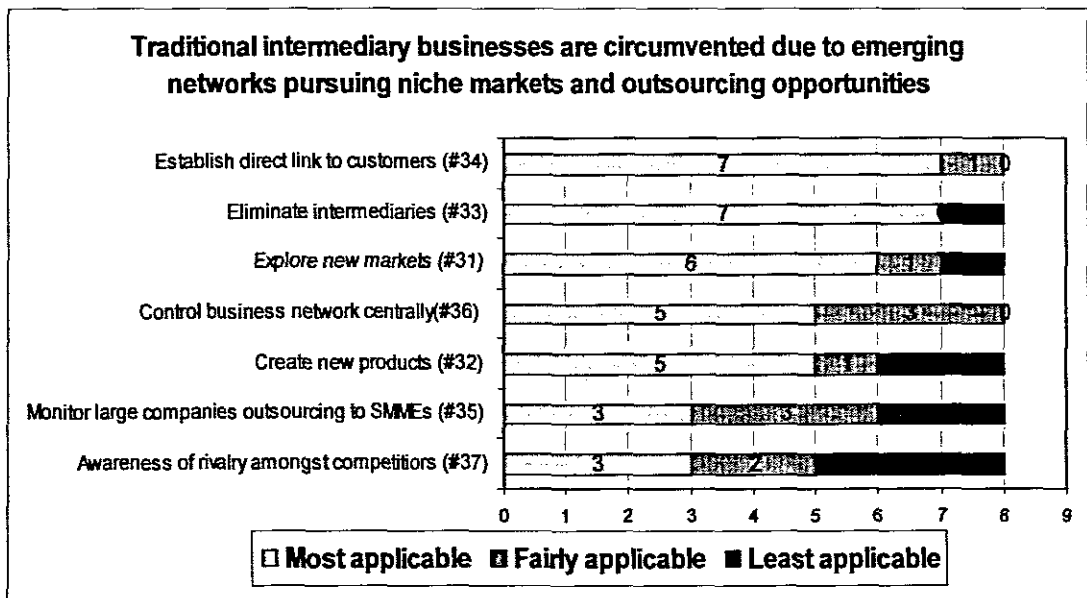
Figure 6.3 Final adoption factors: Proposition 3

Figure 6.9 highlights the four most applicable e-commerce adoption factors for SMMEs within the environment of disintermediation.

6.3.4 Proposition 4 – Marketing (refer Figure 6.4)

Top ranking factors:

The following five marketing factors are all highly ranked and they reveal an important link between offline and online trading environments. In effect, the first four factors are referred to as the marketing mix, in the traditional marketing context. The researcher considers the high scores obtained as an important contribution to understanding online trading, by using accepted marketing principles, but in an e-commerce environment.

1. *Manage Place* – distribution (#48) [score 8]

   A fundamental difference with Internet business is that online selling is not just another channel, it actually revolutionises the way businesses need to operate. This refers to the placement, or how to get to the customer base and how to deliver the products or services to them. However, SMMEs must be aware that not all customers would want to purchase and have all their purchases delivered. The challenge will be for SMMEs to maintain a good mix of online and traditional products and customers, if appropriate. Some of the cases interviewed maintain such a mix, while others have moved right away to virtual distribution only, for example online stock trading, and the airline industry moving about 80% of their business online.

2. *Maintain competitive Pricing* (#45) [combined score 8=6+2]

   Maintaining competitive pricing requires the management process of setting prices of products in a competitive environment where customers can easily click between suppliers to find the best price. To maintain a successful pricing strategy, SMMEs need to be aware of the impact of supply chains to deliver products, on time and at the right price. Such a process would for example, include discounts and pricing linked to special online promotions and loyalty systems.

3. *Adapt to Promotion* – communication (#46) [combined score 7=6+1]

   Adapting to promotion includes advertising, sales and promotion, referring to the various methods of promoting products or brands. The new approach with online shopping is that SMMEs must be aware that online selling

229

makes use of more channels than a single marketing and purchasing sales channel in traditional promotion. Concepts such as *interactivity* and *individualisation* need to be accepted and used by SMMEs.

4. *Product development* **(#44) [combined score 7=5+2]**

This factor highlights the importance of the development and marketing of new products as appropriate new-economy technologies becoming part of customer databases are integrated in SMMEs online business plans. Furthermore, developing products and services (even information) become marketing levers available to manage and assist in the total business offering, which leads to customer relationships.

5. *Develop marketing strategy (Online)* **(#43) [combined score 7=5+2]**

The researcher views this adoption factor as collectively representing the four preceding adoption factors.
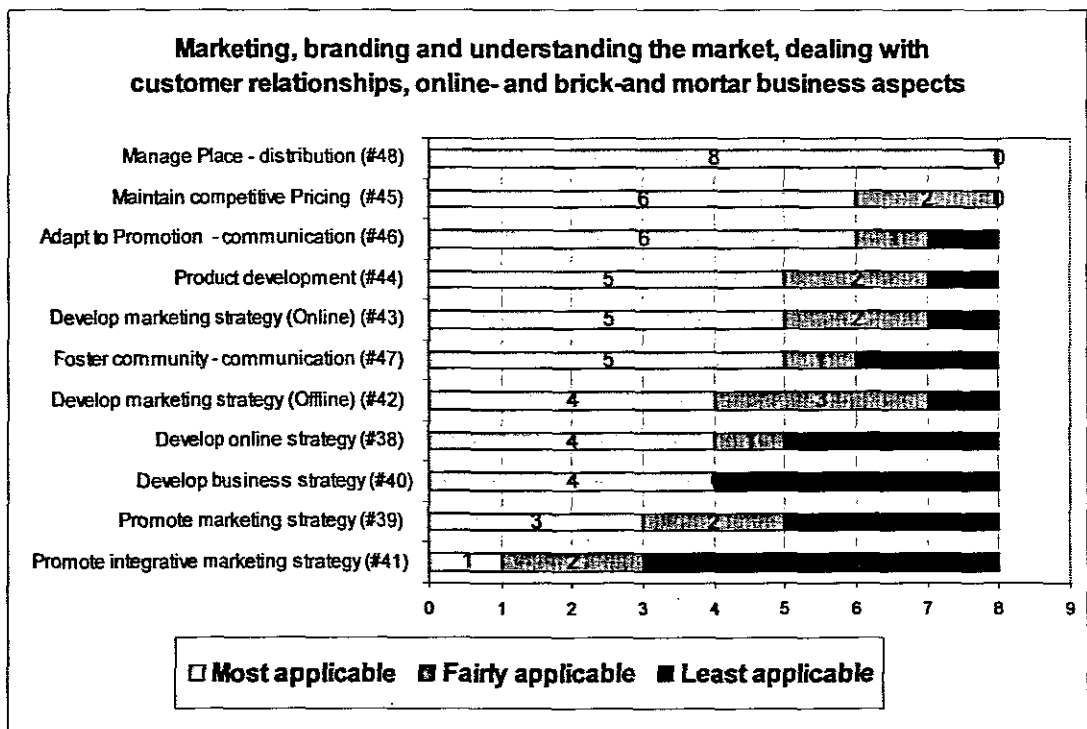
Figure 6.4 Final adoption factors: Proposition 4

As this is within an online marketing perspective, it is possible to conclude that a traditional marketing strategy is no longer valid in an online (and e-commerce) trading environment.

Note: The adoption factor, *Promote marketing strategy* (#39) **[combined score 5=3+2],** was found to be a low-ranking adoption factor and strengthened the researcher's view that a traditional marketing strategy is no longer valid for online trading. A further *low-ranked adoption factor, Develop business strategy (#40)* **[score 4]** also serves to support the researcher's view, that a free-standing or traditional business strategy is longer be applicable for online businesses.

Non-essential factor:

Develop marketing strategy (Offline) (#42) [combined score 7=4+3]

Although this adoption factor obtained a high ranking score by the respondents, there was however, some uncertainty about the offline aspect of a marketing strategy. All the respondents had developed various offline marketing strategies in the past, but they were unsure how successful those strategies were in e-commerce adoption. They all agreed that in the past, offline marketing strategies were important, but argued that they were in a transitional phase – establishing e-commerce, yet it now no longer makes sense to support and maintain separate offline and online marketing strategies. However, all respondents pointed out that offline advertising was still essential, but agreed that this did not warrant an offline marketing strategy. Considering the above, this researcher reached the conclusion that SMMES did not need to consider an offline marketing strategy for e-commerce.

In the discussion above, the five most applicable e-commerce adoption factors were identified and highlighted in Figure 6.9. The first four adoption factors can be implemented without much effort and they follow traditional marketing principles. However, an online marketing strategy, now considered essential for online trading, must be developed by SMMEs and improved over time.

6.3.5 Proposition 5 – Behavioural (refer Figure 6.5)

Top ranking factors:

1. *Provide competitive advantage* (#53) **[score 8]**

This factor obtained the highest score and most respondents agreed that online trading offers a competitive advantage to businesses. This factor

further indicates that SMMEs need to ensure that their entire e-commerce business is well managed and run, information kept up to date and that it supports many essential adoption factors in order to be competitive and ultimately successful.

2. ***Maintain customer support essential for survival*** **(#60) [combined score 8=5+3]**

    The important role of customers has already been identified in other propositions, but it remains an essential adoption factor to survive in an online environment.

3. ***Promote online process across operation*** **(#50) [combined score 7=5+2]**

    This factor is one of two similar factors (the other factor being ***Promote online process across organisation,* # 51)**. The first adoption factor (#50), states that only processes directly related to online trading need to be implemented in an organisation. According to literature, this is often found to be the case in larger organisations, where only selected aspects of the business are transformed to cater for online trading. However, in about half of the SMME cases interviewed, it was found that only sections of small businesses were transformed to cater for online e-commerce (across operations, and not across the entire organisation). This finding is extremely important as it could safeguard SMMEs from the unnecessary expense of implementing unnecessary online-processes across their entire business. Implementing across only an operation may be sufficient. Online processes across the entire business (organisation) can be implemented later, and then only if required.

4. ***Promote online process*** **across organisation (#51) [combined score 6=5+1]**

    This activity is essential for online trading and it highlights one of the main behavioural challenges that online businesses face. For example, there are examples of online businesses that initially found it difficult to become known and often had to resort to offline promotion. However, SMMEs must consider this factor with reference to online marketing strategies as discussed in Proposition 4.

Additional factors:

5. ***Maintain specialised business skills and knowledge*** **(#56) [combined score 6=4+2]**

This factor may be confusing if incorrectly interpreted. The respondents ranked this adoption factor from an *online business* perspective and not from a general (or offline) business perspective. All respondents agreed that general business acumen was required in any type of business. However, where specialised business skills and knowledge come into effect, it was revealed that other skills and knowledge such as understanding ICT, the basics of online markets, e-commerce related rules and regulations, security and others were essential for e-commerce adoption. This is an important aspect for SMMEs to understand and be aware of, and from the outset of their e-commerce initiatives.

6. ***Provide just-in-time logistics*** **(#49) [combined score 5=4+1]**

Although this is a low ranking factor, this researcher argues that this factor is important, and closely linked to ***Ease distribution of products or services*** **(#18)** (appearing in Proposition 1). When potential SMME online adopters are considering distribution aspects, both these adoption factors should be considered as important adoption factors.

7. ***Manage customer bargaining power (#61) [combined score 5=3+2]***

This factor has emerged as an important aspect in the era of e-commerce. In the Low Cost Airline (LCA) industry for example, this factor is extremely significant as the eagerness of customers to obtain cheap flights exerts constant pressure on the airlines. This bargaining power is manifested by customers shopping around for cheaper flights.

Online opportunities and challenges including core competencies, capabilities, processes, resources and tactical activities and stratgies, tangible, intangible and human resources leading to competitive online trading

Factor	Score
Provide competitive advantage (#53)	8
Promote online business promotion (#59)	6
Maintain customer support essential for survival (#60)	5
Maintain new communication and IS (#54)	5
Promote online process across operation (#50)	5
Manage capital equipment, skills and resources (#52)	5
Promote online process across organisation (#51)	5
Maintain specialised business skills and knowledge (#56)	4
Foster communication and interaction (#57)	4
Provide just-in-time logistics (#49)	4
Manage culture influences (#55)	4
Manage customer bargaining power (#61)	3
Redeploy staff (#58)	2

☐ Most applicable   ▨ Fairly applicable   ■ Least applicable

Figure 6.5 Final adoption factors: Proposition 5

Non-essential factor:

Maintain new communication and IS (#54) [combined score 7=5+2]

This factor was ranked highly by most respondents, as new communication methods and Information Systems were important to their businesses. However, this researcher is of the opinion that new communication and Information Systems are often required in different kinds of businesses. It is therefore not unique to online business. Furthermore, in Proposition 4, the factor *Maintain specialised business skills and knowledge* (#56) was identified being an important factor, and would fulfil the requirements of this factor under discussion.

These seven most applicable factors within the behavioural aspects for SMMEs are highlighted in Figure 6.9. Internal management and procedural aspects need to be closely managed, to be competitive.

6.3.6 Proposition 6 – Technical (refer Figure 6.6)

Top ranking factors:

1. *Develop core technological know-how* **(#63) [score 7]**

   This is one of the top technical factors. Most respondents indicated that they have acquired a substantial level of e-commerce related knowledge. Even in outsourcing situations, staff involved in such decision-making actions, were found to be well informed about ICT and Web related issues. This factor also serves as a challenge to online practitioners to be well informed, not only about business aspects but also about Web and ICT related issues.

2. *Maintain system authentication* **(#72) [combined score 7=6+1]**

   This factor highlights the necessity of protecting online systems against abuse and various forms of compromise. Security in general is often referred to as a serious concern in business systems. SMMEs should be vigilant about protecting their e-commerce websites.

Additional factors:

3. *Manage bandwidth capping* **(#76) [score 6]**

   This factor only became apparent when respondents explained that most SMMEs face a major bandwidth problem in South Africa. This researcher found that many SMMEs run out of bandwidth because of bandwidth capping policies impeding normal business activities. There are various alternative measures available to SMMEs, for example, Internet access using Satellite systems and cellular telephony with high speed data transmission capabilities.

4. *Maintain system security* **(#74) [score 6]**

   Security has always been an extremely important aspect. Security contains many sub-sections, for example, system authentication and system security. Well-designed websites are essential, together with the supporting security software and procedures.

5. *Honour user privacy* (#73) [score 6]

User privacy is a sensitive matter and SMMEs need to take this issue more seriously. The Electronic and Communication Transmission act, ECT ACT (2002) for example, provides guidelines to protect users and suppliers. SMMEs must become well-versed in this act.

6. *Maintain fast communication line speed* (#68) [score 6]

This has been an on-going limitation, experienced by many businesses, individuals and institutions in South Africa. It is only since 2006, that broadband has become common and more affordable. At this stage, the expansion of the Asynchronous Digital Subscriber Line (ADSL) rollout in South Africa has been rapid, but no evidence about the effect of improved line speed is yet available.

7. *Promote convenient shopping* (#66) [score 6]

This factor covers many aspects of online trading. The respondents were not all clear about what constituted convenient shopping. However, most respondents agreed that any place, anytime (discussed in Proposition 8) and online choice of products, price and delivery, were the most convenient requirements enjoyed by online shoppers.

Non-essential factors:

Provide easy access to customer information (#71) [combined score 7=5+2]
The respondents ranked this factor highly as they found the ease of access to customer information being online extremely helpful. However, this researcher is of the opinion that most online businesses have access to customer information in any event, not only on e-commerce websites. This is therefore a non-essential adoption factor. In addition, a similar adoption factor was seen as non-essential in Proposition 1.

Keep check on ICT costs (#69) [combined score 7=5+2]
This is an important consideration for any type of business, as ICT costs have escalated over many years. Some respondents reported that they had adopted Open Source software, which has resulted in sizeable ICT cost savings. Potential online SMMEs have to make well-informed choices when selecting their

equipment and service providers. It was found that it is not uncommon for SMMEs to upgrade their systems on a regular basis, as their businesses grow.

Support of e-commerce equipment, technical knowledge, product innovation, process innovation, Web site development (in-house or outsourcing including helpdesk) maintaining information and customer databases securely
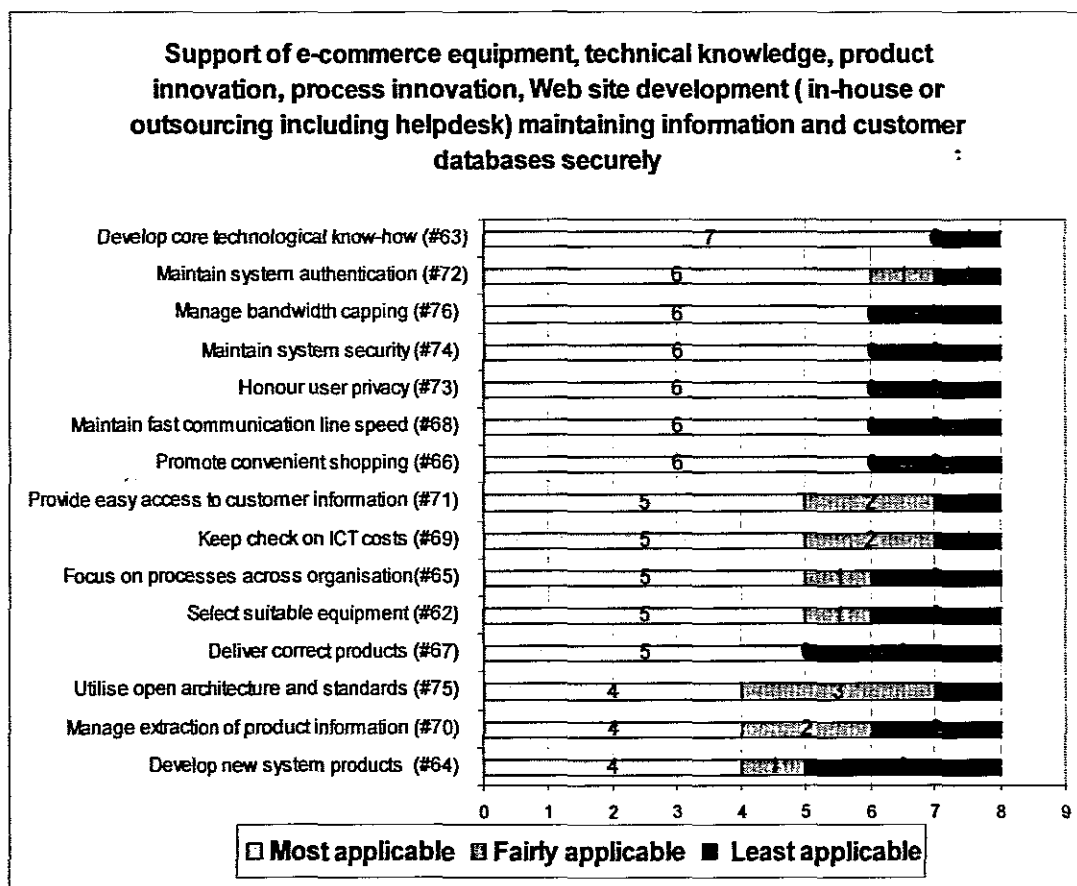
Figure 6.6 Final adoption factors: Proposition 6

Focus on processes across organisation (#65) [combined score 6=5+1]

This factor is similar to some of the factors in Proposition 5. Since this factor is not applicable to most SMMEs, it was deemed to be non-essential to e-commerce adoption.

Select suitable equipment (#62) [combined score 6=5+1]

This factor links up with the discussion above with respect to ICT costs. According to the respondents, the suitability of equipment is essential for any business, and not only to e-commerce businesses.

The seven most applicable e-commerce adoption factors within the technical arena have been identified (see Figure 6.9). These factors deal with typical technical online issues. Some factors can be dealt with at the outset, whereas others are of a more on-going nature during the course of online trading. SMMEs

are challenged to maintain secure systems. These factors are highlighted in Figure 6.9.

6.3.7 Proposition 7 – e-Commerce development (refer Figure 6.7)

Top ranking factors:

1. ***Ensure customers defend the experience* (#84) [combined score 7=6+1]**
   This is the highest ranking factor and it implies that when customers have good online shopping experiences, they become loyal and start defending products, brands or even websites.

2. ***Provide online benefit* (#83) [combined score 7=5+2]**
   This is an important factor and SMMEs should aim to make the online shopping experience as beneficial to customers as possible. Most of the respondents were experiencing an increased level of trust by customers for online payments, despite negative publicity from time to time.

3. ***Assist customers to have consistent experience* (#78) [combined score 6=5+1]**
   This links to some of the factors discussed above, where online suppliers should strive to provide customers with a *tried and tested* experience. Satisfied customers will return to websites where they feel comfortable and secure. In cases where a *consistent experience* has already been set by previous successful purchases, the experience should continue.

4. ***Develop customer trust* (#77) [combined score 6=5+1]**
   This has become an important aspect of online trading. Unfortunately, it is largely one-sided, and from a customer's point of view. Customers have to trust online traders to manage their private matters, such as customer confidentiality, purchase history, credit card information, product quality, delivery and return policies and others. Some of the respondents had had both good and bad experiences. In all, they agreed that one bad experience could violate a customer's trust for a long time, even forever.

238

5. *Provide substitute products* **(#79) [combined score 5=4+1]**

Online shopping provides many benefits to consumers. SMMEs can provide substitute products if they fit into their product mix or business activity. This adoption factor is similar to *Provide access to third party products* **(#19)**, discussed in Proposition 2. Substitute products provide a secondary stream of income to augment core business income. Many examples of substitute products are available, such as used in financial services, online bookstores and the LCA industry.

The extent to customise or personalise to suit business and customer needs where products become part of a customer's life from a first choice supplier

Ensure customers defend the experience (#84)
Provide online benefit (#83)
Provide exceptional value (#80)
Be significantly better (#81)
Assist customer to have consistent experience (#78)
Develop customer trust (#77)
Ensure customers take message to market (#82)
Provide substitute products (#79)

□ Most applicable ▣ Fairly applicable ■ Least applicable

Figure 6.7 Final adoption factors: Proposition 7

Non-essential factor:

Provide exceptional value **(#80) [combined score 7=5+2]**

This was a high-ranking factor from most respondents. However, this researcher is of the opinion that respondents actually judged themselves, thinking that they were currently providing exceptional value. At most, service providers can strive to provide exceptional value as there are normally a variety of issues to sort out during the early stages of adoption.

In Figure 6.9, five most applicable e-commerce adoption factors discussed within the e-commerce development environment, are highlighted. All these factors evolve over time. Although websites can be designed at the outset to support and

239

facilitate some of these factors, SMMEs must be flexible in their thinking, and use *these factors as guidelines to improve their e-commerce offering over time.*

6.3.8 Proposition 8 – Value proposition (refer Figure 6.8)

Top ranking factors:

1. *Maintain customer needs* **(#95) [combined score 8=7+1]**

   This factor may be a difficult requirement for SMMEs to fulfil. It is closely linked to online marketing aspects and it only comes into effect after a period of successful trading. Many respondents indicated that customer needs are difficult to ascertain as they found customers were not always willing to participate in questionnaires or even in opinion polls. A culture of being on the *lookout* for customer improvement is becoming a vital issue in online business. This involves many forms of information collection, such as electronic mail, *contact us* on websites, telephone calls and others.

2. *Awareness of business needs* **(#87) [combined score 8=6+2]**

   Many of the respondents interviewed, warned that businesses could become so busy and involved in their online trading matters, that it would be easy to lose focus. Being complacent and failing to pay sufficient attention to core business needs are problematic attitudes, as customers and stakeholders notice changes very quickly. A few respondents even suggested that a wake-up call can be a healthy push to rekindle business focus.

3. *Facilitate any place, anytime* **(#94) [combined score 8=5+3]**

   This factor was heralded by most respondents as one of the most applicable factors in e-commerce trading. It has a particular focus on access, service delivery and correct timing to the market.

4. *Provide correct product delivery* **(#89) [combined score 7=6+1]**

   Initially, this factor seemed to be of minor importance to the respondents. However, after further discussion its importance was established. This activity emerged as the final link in online order fulfilment, and many

examples of failed e-commerce activities at the *final mile*, have been recorded, which support this factor's' importance to SMMEs.

5.   ***Maintain efficient service delivery* (#88) [combined score 7=5+2]**
This factor is applicable to both online and offline businesses. Any inefficiency on websites can be observed more easily if, for example, online transactions cannot be concluded while users are logged onto e-commerce websites. This adoption factor forms part of order fulfilment, and it is therefore an important adoption factor.

Additional factors:

6.   ***Manage access to sales information* (#85) [score 6]**
Some of the respondents argued that this adoption factor is a *standard* factor, available to most business with at least an online database and this not necessarily applicable to online trading. However, this researcher made the decision to highlight this factor as essential for adoption.

Increased managemnt information, sales and reporting activities, integration of suppliers and vendors leading to increased market understanding

Maintain customer needs (#95)	7
Awareness of business needs (#87)	6
Provide correct product delivery (#89)	6
Safeguard access to customer data (#92)	6
Manage access to sales information (#85)	6
Facilitate any place, anytime (#94)	5
Maintain efficient service delivery (#88)	5
Manage timing to market long-term (#91)	5
Foster fast market response (#93)	5
Manage timing to market short-term (#90)	5
Provide access to financial information (#86)	3

□ Most applicable   ▣ Fairly applicable   ■ Least applicable

Figure 6.8 Final adoption factors: Proposition 8

7.   ***Manage timing to market: Long-term* (#91) [combined score 6=5+1]**
This adoption factor is one of a number of similar, related factors, depicted in Figure 6.8. These are long-term and short-term timing, fast market

241

response, service delivery and others. More specifically, the respondents found that short-term timing should be avoided. The reason given was that rushing to the market, in the online environment, can often have more negative consequences than waiting to provide a better, more reliable and workable solution.

In Figure 6.9 seven most applicable e-commerce adoption factors within the value proposition of a business are highlighted. These adoption factors map to the eight propositions (with some overlap), and they represent the most important factors for a typical online SMME business initiative.

6.4   CONCLUSION

For the first section of the validation process, interviews with the respondents began by introducing the research goal and discussing the development process. According to the respondents, the strength of this model is its ability to view a business's e-commerce adoption aspects not only from the three hierarchy levels, but also from a bottom-up approach. Some respondents were of the opinion that the model could be easily split into a number of sections, both vertically and horizontally. One respondent suggested that the model could be depicted in matrix format. Finally, consensus was reached on the proposed hierarchical structure of the model.

The second validation section used the proposed 105 e-commerce adoption factors to be ranked, analysed and improved using suggestions from respondents. Some factors were deleted, others were transferred to different propositions and one new factor was added. This analysis resulted in 95 final e-commerce adoption factors. Furthermore, this researcher identified the most applicable adoption factors for SMMEs, which are typically small, under-capitalised businesses, operating in niche markets and not highly skilled or experienced in ICT. The final e-commerce adoption model is depicted in Figure 6.9 in which the 46 most applicable adoption factors for SMMEs are highlighted.

Final e-Commerce adoption model

Strategic Level

Strategic — Strategic management of business objectives, resources and policies (T5.6)

Operational — Management of funds, logistics and customer support and services (T5.7)

Technical — Management of online technology services, secure transactions and efficient access (Fig. 5.4)

Behavioural — Management of over expectancy and under-delivery and building customer loyalty and confidence (T5.4)

Operational level

Virtualisation - Electronic transactions processes being conducted electronically while products remain mostly physical
Molecularisation - Breaking the economy up into very small units by the access and quality of information on the Internet
Disintermediation - Traditional intermediary businesses circumvented due to emergence of networks
Marketing - Enhancing customer relationships
(T5.10)

e-Business development - Elements that support an e-commerce operations strategy to maintain online opportunities and challenges
- **Resources** - ICT facilities, business systems, training and human development
- **Tactical activities** - Operational view of tactical strategies
(T5.11)

Technical - Facilitation of technology to support e-commerce transactions and efficient online technologies and Web-based systems
(T5.12)

Customer Behaviour – A customer's expectation and interpretation of all the stimuli encountered while interacting with the firm (T5.13)
Value proposition - The goal is to gain competitive advantage over those businesses that lag behind (T5.5 + T5.9)

Implementation level

Virtualisation	Molecularisation	Disintermediation	Marketing
1-Enhance customer reach Provide online transaction processing **5-Ease distribution of products or services** **6-Awareness that Web sites expose businesses** **3-Reduce searching cost** Facilitate real time access to information Maintain market segment Provide price comparison Promote online trading to build brand name Manage negative working capital **4-Provide complementary products** Lower distribution cost of products and services Selection of products and services Lower distribution costs **2-Meeting customer needs** Act as information broker Manage marketing and advertising Facilitate upgrade path to integrated e-commerce (T5.14)	**1-Provide customisation** **2-Provide superior online service** **3-Develop personalisation** **5-Provide access to 3rd party products** Awareness of SMMEs quick response to opportunities Facilitate joining networks Foster e-Loyalty Enhance trust in partners and reputation Improved stakeholder relationships **4-Manage first mover danger** Facilitate virtual community participation Develop co-products (T5.15)	**1-Establish direct link to customers** **3-Eliminate intermediaries** **4-Explore new markets** **2-Control business network centrally** Create new products Monitor large companies outsourcing to SMMEs Awareness of rivalry amongst competitors (T5.16)	**1-Manage Place – distribution** **2-Maintain competitive Pricing** **3-Adapt to Promotion - communication** **4-Product development** **5-Develop marketing strategy (Online)** Foster community communication Develop marketing strategy (Offline) Develop online strategy Develop business strategy Promote marketing strategy Promote integrative marketing strategy (T5.16)

e-Commerce development	Technical	Behavioural	Value proposition
1-Provide competitive advantage **3-Promote online process across operation** **2-Maintain customer support essential for survival** Maintain new communication and IS Promote online business across operation Manage capital equipment and skills resources **4-Promote online process across organisation** **5-Maintain specialised business skills and knowledge** Foster communication and interaction **6-Provide just in time logistics** Manage culture influences **7-Manage customer bargaining power** Redeploy staff (T5.17)	**1-Develop core technological know-how** **2-Maintain system authentication** **3-Manage bandwidth capping** **4-Maintain system security** **5-Honour user privacy** **6-Maintain fast communication line speed** **7-Promote convenient shopping** Provide easy to access customer information Keep check on ICT costs Focus processes across organisation Select suitable of equipment Deliver correct products Utilise open architecture and standards Manage extraction of product information Develop new system products (T5.18)	**1-Ensure customers defend the experience** **2-Provide online benefit** Provide exceptional value Be significantly better **3-Assist customers to have consistent experience** **4-Develop customer trust** Ensure customers take message to market **5-Provide substitute products** (T5.19)	**1-Maintain customer needs** **2-Awareness of business needs** **4-Provide correct product delivery** Safeguard access to customer data **6-Manage access to sales information** **3-Facilitate any place, anytime** **5-Maintain efficient service delivery** **7-Manage timing to market: Long-term** Foster fast market response Ensure timing to market: Short term Provide access to financial information (T5.20)

Figure 6.9 e-Commerce adoption model: strategic, operational an implementation levels

Note: Shaded areas indicate most applicable e-commerce adoption factors for SMMEs
Numerals (1-7) indicate respective factor ranking

CHAPTER 7

7.   SUMMARY AND CONCLUSION

In today's dynamic global business world, the new economy is fuelling the desire to increase networking, to form new relationships and enhance communication. The rising importance of the Internet and the widespread use of web-based technologies have led to developments such as e-commerce, e-learning and e-banking. Distribution channels and the ability to reach a much wider audience than when using traditional brick-and mortar models, have become fundamental attributes of online trading. Supply chains between suppliers and manufacturers have given new meaning to just-in-time supply systems, making zero inventory mechanisms extremely attractive, especially for small businesses.

The market will reward online businesses which portray evidence of an articulated sense for globalisation where the focus is on stakeholder alliances coupled with good business performance. Furthermore, businesses desiring to create increased customer loyalty must demonstrate a clear vision to manage at all levels of their business; at strategic, operational and implementation levels. This also holds true for the online environment, where customers provide revenue, partners provide products and services, employees provide human capital and the market the potential for free global trade.

Unfortunately, the fast pace of e-commerce adoption and ICT infrastructure requirements have created a gap between developed and developing countries. The gap is reported to be the largest in Africa, where only 3 percent of the population are Internet users compared to 97 percent in the rest of the world (Internet World Statistics, 2007). Most developing countries are lagging behind in building Internet infrastructure, which will have a serious hampering affect when Web applications become more readily available and more common place. The growth in the competitive online market, both internationally and locally, has increased the management role of businesses making it more demanding and challenging. The underlying value of organisations is becoming less tangible and businesses will have to develop to be more familiar at managing intangible value, and this will add even greater challenges especially to developing countries.

In light of the above, this research was embarked upon to determine how SMMEs could adopt e-commerce in the most optimum way through investigating e-commerce related factors and elements of business systems, processes and procedures. The aim was to conduct research within the context of a real-world reality, where e-commerce is not always understood or widely accepted. Although there has been a marked increase and expansion of the Internet and use of web-based technologies, commercial entities are often unsure about the maturity of the Internet and thus of providing Web related business approaches. Sometimes, out of ignorance, businesses opt for a short-term solution by commissioning static Web pages just to have a Web presence. In addition, a severe skill-shortage in the field of e-commerce is apparent which is countering the proliferation of e-commerce. Moreover, such revelations exasperate concerns about the extent that e-commerce can add value to their businesses.

Although SMMEs consider their small size of minor concern when competing with larger counterparts in the context of e-commerce, larger companies still appear to dominate the e-commerce space. In South Africa, SMMEs are significant contributors to the national economy and the importance of small businesses is regularly emphasised, as is also the case in other parts of the world. SMMEs belong to a vibrant and growing sector in most economies around the world. Often SMMEs are seen as a single group, but in effect they are heterogeneous with diverse needs and objectives. For many owners of small businesses, life style choice is the reason that they set themselves up in the first place. For others, it is the excitement of being an entrepreneur. There are also larger businesses or conglomerates that set up SMMEs wishing to compete in this space.

A multitude of factors need to be considered (and understood) pertaining to e-commerce adoption, spanning from technical, business, external factors and including cultural, political, legislative and environmental issues. In the literature, authors and others warn that business ventures could fail if business systems are not managed correctly and specifically, in the context of electronic trading. These problems faced by would-be adopters, could be mitigated by providing guidelines aimed at reducing the risk of failure at the outset of e-commerce initiatives and to provide some degree of success.

245

Putting into perspective the importance of businesses being able to react within a fast changing environment, businesses operating in highly competitive environments rely on strategies that are adaptive often leading to business success due to appropriate and timely adaptation over time. Furthermore, on a continuum of organisation with adaptation at one end, organisations can maintain an external focus, adapting to new market change but at significant cost. At the other end, organisations can focus on narrowly defined niches by focusing on internal matters. However with this internal focus, there is an accompanying risk attached of failing to adapt when market changes occur. Adaptation therefore involves changes in strategic behaviour to improve competitiveness in order to achieve a better fit between the organisation and its environment (Ganesh, Madanmohan, José & Seshadri, 2005:121). The model developed in this research, focussing on the competitive and fast changing environment of e-commerce, needs to overcome the dangers mentioned above and thus should not be static or unable to be flexible by having too rigid an approach to e-commerce adoption.

7.1 RESEARCH OBJECTIVES

For this research, the objectives posed in Chapter 1 were:

- That the theoretical contributions formulated within the ambit of this thesis have a theoretical as well as a practical application in solving real-world problems by benefiting the target SMMEs.

- That the impact of this research would culminate in a paradigm shift for SMMEs, and further that it would also have a broader application for similar organisations and thus become an accepted strategy for dynamic initiatives pertaining to socioeconomic and technology environments.

- The various formulated solution options in this thesis to be of such a nature that they not only solve the research problem, but also facilitate implementation from a practical implementation perspective.

In considering the outcomes of the research question and sub-questions, summarised below, these objectives have all been met.

7.2   THE RESEARCH PROBLEM

Referring to the background to the research problem discussed in Chapter 1 and further elaborated above, the research problem was formulated as follows:

Formalised adoption strategies are lacking to maximise
SMME adoption of e-commerce.

From this research it is evident that confusion often exists in the literature due to many authors and researchers mixing up strategies, business plans, online trading practices and a myriad of adoption factors such as Critical Success Factors (CSFs), benefits, disadvantages and others. However, very few adoption strategies could be found. In addition, discrepancies were found about the use (and definition) of terms and phrases that were often used interchangeably – the biggest problem being e-commerce and e-business.   Even during the case studies conducted with local SMMEs, it became clear that many practitioners and businesses were not sure about many of these matters and simply carried on trading as best they could.

7.3   THE RESEARCH QUESTION AND SUB-QUESTIONS

The research question formulated for this research in an attempt to cover the broad statement of the research problem, necessitated the formulation of three research sub-questions. The research question reads as follows:

What scientific approach can be utilised by SMMEs to
maximise their success of e-commerce adoption?

By reviewing the literature it was evident that various approaches to e-commerce adoption are available.   However, many existing business or IS models and strategies were adapted fulfilling specific requirements or focussed approaches to e-commerce adoption. Some models and strategies had been in existence for many years and cannot be readily applied to satisfy some of the requirements of

e-commerce today. Only a limited number, one or two models applicable to e-commerce adoption were found offering varying approaches to e-commerce adoption. Furthermore, a number of adoption paths or techniques were found but no clear-cut scientific approach to successful e-commerce adoption was evident.

Against the background of the research question, the three research sub-questions were formulated as follows:

- *What are the international and local trends in adopting e-commerce?*
- *Which mitigating factors emanated to facilitate e-commerce adoption by SMMEs?*
- *How would a scientifically based model be created to formalise an approach to e-commerce adoption?*

A summary of the results of each of these sub-questions is briefly discussed below:

- **International and local trends in adopting e-commerce**
  Firstly, due to confusion and an inconsistent way of using online related terms and phrases, working definitions for *e-commerce, e-business and e-commerce adoption* were developed from in-depth literature reviews in Chapter 3. Secondly, e-commerce adoption trends in a number of international countries, African developing countries and South Africa were investigated using causes and effects of e-commerce adoption. As expected, international trends were very different to those in Africa and South Africa. The main areas found to differ were the level of infrastructure implemented and the number of connections to the Internet with the number being much lower in Africa and South Africa. However, some encouraging results emerged, particularly the notable increases in Internet access over the period 2000 to 2005 in Africa, and still continuing. Although this research did not include the volume of online activity, the mere fact of low Internet access or infrastructure penetration may have a slowing affect of e-commerce adoption in Africa.

- **Mitigating factors facilitating e-commerce adoption by SMMEs**

  The Internet and associated web-based technologies have been characterised as disruptive technologies because they challenge business structures, technological infrastructures and management decision-making processes. Although the literature revealed many factors such as barriers, benefits, advantages and others, stakeholder networking such as customers, suppliers, mitigating factors for e-commerce adoption by SMMEs were found to be either premature or lacking. Evidence from local case studies assisted the researcher in formalising a list of ten e-commerce adoption mitigating factors, discussed in Chapter 4.

- **Developing a scientifically based model to formalise an approach to e-commerce adoption**

  Firstly, the concept of models was investigated in the literature to understand what models were, what they were used for and their importance. This exploration led to the investigation of frameworks and strategies. This revealed what frameworks were and what strategies were used for. As these three concepts were often interlinked and sometimes used interchangeably, a clear understanding emerged from this investigation. Secondly, this researcher identified a need to first create a framework, representative of the real business world before attempting to develop a model. The framework consisted of the three most appropriate business activities, the strategic, operational and implementation aspects. Finally, the e-commerce adoption model was developed using the principles flowing from the framework.

7.4   THE e-COMMERCE ADOPTION MODEL

In order to solve the research problem and provide answers to the research questions, a model was developed and later validated by soliciting feedback from respondents. A process of refinement followed that led to formulation of the final model. The model structure consists of three levels, which satisfy the broad requirements of business. The model is structured in the form of a three-tiered hierarchy, starting with the strategic level at the top. This is followed by an operational level supporting the implementation level at the bottom. Furthermore, the implementation level (as were the other two levels) was

expanded and it incorporates 95 e-commerce adoption factors. The process of validation and refinement by SMMEs, had the added benefit of highlighting the 46 most applicable adoption factors to SMMEs.

The benefit of providing a scientifically based e-commerce adoption model could be expressed in a number of ways.   :

- Firstly, the model will benefit SMMEs in their e-commerce endeavours, even assessing the adoption methods and criteria used for past and present adoption initiatives. This was accomplished by using primary and secondary data from the outset in the model development process. This required this researcher to pay attention to practical and real-world applications.

- Secondly, the literature on models influenced the development process of the final model and its incorporation of flexible and pliable attributes. As a result, this model could be used in different e-commerce related scenarios, and not only for SMMEs.

- Thirdly, this model incorporates human-related factors, interlinking them with traditional strategic, operational, technical and behavioural aspects in one tightly integrated model.

- Fourthly, available literature on e-commerce and related matters reveals many factors in isolation, from technical to marketing and customer behavioural aspects. Furthermore, electronic trading is often viewed as one thing, e-commerce another, implementation yet another and in so doing, many issues are dealt with in a haphazard way. The contribution of this model bridges the gap between business strategy issues right down to finer implementation details.

The adoption model (Figure 6.9) can be used as a complete model as presented when applied to business, but it could also be split into four parts, each dealing with the e-commerce adoption factors pertaining to the strategic, operational, technical and behavioural aspects of a business.

7.5 FURTHER RESEARCH

As this research focussed on developing an e-commerce adoption model specifically for SMMEs, there were some topics investigated, which border on falling outside of the scope of this research. Other topics were disregarded as being too far removed from the goals of this research. However, for future research, a wide range of related topics could be selected to provide valuable information to online trading. These are:

- Appropriation of e-commerce in communities
- e-Commerce adoption by SMEs and larger organisations
- Management of online business
- Intelligent online (Web) services
- Competitive Intelligence in online environments
- Impact of user interaction in online trading
- Relationship between data and business processes
- Online business process management within the ambit of e-commerce adoption.

7.6 CONCLUSION

This research satisfied the key objectives and provided solutions to the research problems. The adoption model development was based on a scientific approach considering many issues, aspects and factors found at different management levels of business. This e-commerce adoption model therefore satisfies sound business principles in managing a business at three levels; strategic, operational and implementation levels.

APPENDIX A

The five case studies (A-E) forming part of the phase-one interviews discussed in Chapter 2 are summarised in this appendix.

CASE STUDY A   :

A case study of a South African low-cost or "no frills" airline

1   INTRODUCTION

There are many situations where the Internet and Web may facilitate business processes. One of these is a Low-Cost Airline (LCA), operating as a "no-frills" airline in South Africa, where the Internet and the Web have been instrumental in expanding market potential as well as in reducing costs. In this industry the Internet and the Web have become fundamental parts of airline business strategy. Emphasis is placed on the role of Information and Communication Technology (ICT) in low-cost airlines. The objective of this case study was to investigate how a start-up SMME/SME used the Internet and Web-based facilities as part of their competitive strategy by deploying e-commerce.

LCAs operate on three basic principles. The first of these is that traditional airlines are not efficient in their use of resources and thus develop unnecessary cost profiles. This means that LCAs simplify their processes to reduce costs. The second principle is based on the positive price elasticity of demand for air travel. At low prices aircraft operations will deliver much higher load factors than at high prices. This strategy is supported by yield or revenue management systems. The third principle is that a stream of income may be made from selling complementary products ranging from hotel rooms to car hire as well as in-flight refreshments and gifts.

It should be noted that central to the success of an LCA is the concept of simplicity. LCAs view their offering as short haul point-to-point transport. Therefore, there are no interline services or arrangements. There is no reservation of specific seats and there are no free meals, although simple refreshments are sold during flights. This policy of simplification permeates the whole modus operandi of an LCA organisation.

2   BACKGROUND TO CASE STUDY

This case study is interesting for a number of reasons. Firstly, Internet and Web-based businesses have not been particularly successful in South Africa and there have been a number of failures. Secondly, South Africa does not have a good track record of successful start-up airlines. No less than three start-up airlines failed in South Africa over the past decade. Despite this, four entrepreneurs decided in 2003 to create an LCA primarily using the Internet and Web technology. As this business is still young, the directors are confident that the organisation is firmly on the path to success. As an indication of this, the directors point to the fact that the Airline reached their breakeven point within the first six months of operation. The Airline has created market awareness in South Africa and has become a well-known e-commerce business throughout the country.

3 THE RESEARCH PROCESS

This case study research required multiple sources of evidence. Unstructured interviews were conducted, web searches were carried out, trade journals and newspapers were consulted and the Airline's Website was used to purchase airline tickets. In addition, using an established website evaluation tool, the Airline's Website was compared to the websites of Easyjet, Ryanair and Kulula.com. This evaluation tool uses a possible 80 point evaluation criteria and the final assessment scores were:

Case A	63
Easyjet	63
Ryanair	54
Kulula.com	61

The Airline's Website compared favourably with other LCAs. Finally, search engines were used to find the company's website and they found the company in positions one and two respectively.

4 ORIGIN OF THE BUSINESS

The company was registered in September 2003 and consisted of three shareholders; one shareholder was an established aviation group who also owned an aircraft maintenance company holding 50 percent of the shares. The second shareholder was an IT group represented by a business trust owning 30 percent and the third shareholder was a black empowerment company who owned the remaining 20 percent of the shares.

The founding members had previously conducted market research to ascertain the size of the domestic air travel market in South Africa. The market was found to be approximately 7 million domestic passengers and it was believed that the South African Airlines (SAA) and the other operating airlines could not supply this demand in relation to low-cost seats. The inclusion of an ICT group as a major shareholder in the company is significant and reflects the importance the founding members of the Airline placed on ICT. The first on-line booking was taken on 22 January 2004 and the first flight took off on 25 February 2004.

5 BUSINESS ORGANISATION AND MANAGEMENT

According to the directors, they carefully studied several examples of other LCAs before launching the Airline. The Websites and the operational characteristics of Southwest, Ryanair and Westjet were studied. The similarities between these Web pages can easily be observed. For instance, the Web page designs were basically the same with the essential information laid out in similar ways.

When launching the business, the approach was to employ managers and directors using a flat business structure. They initially appointed three executive directors and six managers, encouraging a hands-on management approach. All these people were carefully picked and were required to have an intimate knowledge of the airline industry. The Chief Executive Officer (CEO) revealed that the Airline planned a mix of 70 percent / 30 percent for online to Call Centre business. However, the 30 percent also includes direct ticket sales at airports.

6 BUSINESS EXPERIENCE

With the proliferation of the Internet and the ease by which it facilitates e-commerce transactions, for business such as LCAs, on-line books stores, trading shares etc. , starting an e-business is often perceived to be very simple with little or no specific business knowledge being required. In the case of this Airline, this was not the case. Other than crucial timing going to market, knowledge of the aircraft industry was probably the key to this business's success, that is their being in the aircraft maintenance field and specifically concentrating on the initial type of aircraft used. The Airline's owners assumed that e-commerce should work largely as a result of high volume sales resulting from good investment in infrastructure and systems in which were already in place.

7 REASONS TO STAY UP TO DATE

The Airline operates from Johannesburg, offering low-cost air travel on a number of routes in South Africa. The choice of name for the Airline is interesting and was based on the owner's quest to select a name that would solicit interest but would not be a typical airline name. The name is a South African colloquialism or perhaps more correctly a slang word, as the management team was looking for something new or fresh. Following the theme of uniqueness, the aircraft colour scheme is also unusual and crew dress has moved away from traditional uniforms to smart casual outfits. Open-neck white shirts were selected for pilots who are also issued with leather jackets making for a distinct stylish and unique image.

8 ADVERTISING ASPECTS

By September 2004, the Airline had only spent about 15 percent of their allocated marketing budget for 2004 and with the anticipation of two additional larger aircraft between December 2004 and February 2005, more marketing was needed.

9 ICT EXPERIENCE

The founding directors of the Airline deemed ICT to be so important to the success of their business that they sought, as shareholders, an ICT group. This was done because they knew that the success of an LCA is highly dependent on its website. Therefore high quality and fully reliable ICT support was essential to their plan. The directors of the Airline also knew that in the e-commerce environment the ICT cost could easily get out of control and with an ICT group as a shareholder they felt that this was less likely to happen. The fact that founding directors sought out this ICT liaison demonstrates that ICT was a corner stone of their corporate strategy.

The design of the Airline's Website was substantially based on Ryanair who they perceived as a major leader in the LCA industry. By following this approach the Airline was attempting to ensure that they did not waste time or financial resources in creating a highly innovative website. Many e-Businesses have failed because too much emphasis was placed on being entirely new with website ideas or being highly creative and not paying due attention to the electronic business aspects of the business.

In developing countries the availability of private personal computers is not as high as it is in developed countries. The number of homes with a computer and an Internet connection is low.

There is also the issue of the number of credit card holders in South Africa which is also regarded as low. However the market penetration of mobile phones is relatively high. It is therefore suggested that 1time Airline will move to exploit this technology in the near future. 1time Airline is currently investigating ways of implementing this and also working in collaboration with the South African Post Office for possibly paying of airline tickets. There is also a suggestion of working with chain stores such as Woolworths or Pick 'n Pay for the same purpose.

10 BUSINESS ACTIVITIES, GOALS AND MARKET

By 30 September 2004, 234 689 passengers had been carried and passenger numbers started levelling off at approximately 48 000 per month. Less than a year after the first flights, the fleet of three aircraft was expanded during December 2004 and February 2005 to six, catering for the increasing volume of passengers. A year later in October 2005, the Airline celebrated their one millionth passenger. According to the Airline, the Johannesburg/Cape Town route has grown substantially and the airline claim that they have grown the market on this route.

10.1 Business success

During the first year of operation, the Airline operated with average load factors above expectation, about 12 percent higher than anticipated and well within budget. As mentioned above, the Airline's break-even point was reached after six months, which was within the first six-weeks of operation. Most of the bookings are made for weekdays and bookings taper off significantly on Saturdays and Sunday mornings. After 15:00 on Sundays, bookings start to increase again. Table A.1 indicates the times and percentages of all seat bookings.

Table A.1 Customer preferred seat booking times

Call centre open 07:00–18:00	
Time	Percentage
07:00–18:00	70
08:00–22:00	28
22:00–07:00	2

10.2 Business competition

For many years, air travel in South Africa was monopolised by SAA and their pricing structure put air travel out of reach to the average South African. SAA's only concession to low-cost travel was to offer infrequent special deals. Air travel was deregulated in South Africa during the 1990s but, as mentioned above, at least three previous attempts to establish another airline failed. The entry of this new Airline was welcomed by the public but not by the other carriers. In fact, the Airline found it difficult to acquire adequate space for counters for their representatives in the major airports.

255

10.3 Tourist market and corporate clients

An arrangement was provided to the Tourism sector and they were given a corporate rate for a six-month period in order to sell seats at a fixed rate to assist them in putting special travel packages together. International tourists use the system in the normal way unless working through a Tour operator linked to the system, or alternatively they use the Call Centre.

To cope with the request to support corporate clients, the Airline provided a customised interface to access the web system for direct bookings at agreed preferential rates. This affords corporate clients access to the airline to make it cost effective for them to fly, even more frequently.

10.4 Passenger Profile

An important factor for businesses to consider is knowledge of the customer. Analysing this Airline's passenger profiles revealed interesting categories, which are summarised below:

- Most passengers making on-line purchases are predominantly Web-enabled males.
- Passengers are predominantly women on business, or older women who are flying to visit children. The latter do not make their own on-line purchase.
- Another category is young families, often taking parents with them.
- Finally, young people and students make up the other category but not making the on-line purchase.

10.5 Business Threats

According to this Airline, there is a huge market, but it is a very difficult market to break into and it requires huge advertising due to the threat of other contenders and players. According to the Airline, it is not just a matter of advertising but an involved education process, beginning with selling the idea of flying and continuing until it becomes a natural way of life. Once this is understood and accepted, the concept of on-line purchasing has to be addressed and finally the on-line payment poses possibly the biggest challenge. The South African government owned Airports Company South Africa (ACSA), maintains ten commercial airports in South Africa. Therefore, only a few small private airports are being used by larger airlines thereby not bringing the flying concept to local communities.

10.6 Cost saving factors

The most likely direct cost-saving factors that this Airline management could consider were exploiting ICT opportunities, capitalising on their previous aircraft maintenance experience, using the CEO's experience at another airline, creating new systems and taking advantage of the availability of cheap aircraft at greatly reduced costs, stemming from the general airline slump after 9/11.

From an ICT perspective, the systems they developed provided the following direct savings (also evident at other LCAs):

- Paperless ticketing eliminates the need to account for paper, printers, ink, and maintenance costs.

- No complicated and expensive interfaces as are required for typical 1970s traditional legacy systems. (Extensive code needs to be written to interface to traditional legacy systems).

- Licensing, booking fees and linking into established systems e.g. Galileo, is extremely expensive. Only traditional airlines transporting millions of passengers annually, or government sponsored National airlines, could afford to invest in such systems.

- A third party company is contracted to do the entire web system, while the equity partner manages the networks, infrastructure, back-end systems and call centre. This results in significant cost saving.

- The use of ICT and the Web has effectively disintermediated all travel agents. This aspect plays a significant role with this Airline's distribution costs being around three to four percent compared to traditional airlines around 20 percent. .

- It is worth noting that only one or two IT personnel are employed by the Airline, which is significantly fewer than are found at other airlines where large IT departments have to be maintained incurring huge expense. This must, however, be seen in the light of the outsourcing and ICT equity partner of the Airline.

10.7   Online payment

It is has been known for some time that processing cash is expensive and there is a conscious effort by banks to reduce the handling of cash. However, a cashless society is not yet a reality, especially in developing countries where matters such as a poor economy, lack of infrastructure, social issues and literacy problems exist.

This Airline only handles small amounts of cash at kiosks at airports. As their market expands, an increasing number of cash customers without access to Internet banking or owning debit or credit cards, will have to be dealt with in a seamless manner.

Options that are being considered, for example, are outlets equipped for handling cash and also providing Internet access. Smaller outlets such as coffee shops and Internet cafés are also being considered in an effort to minimise the cash handling process, but at the same time making the air travel experience as pleasant and accessible as possible. These options would be a significant cost saving factor but more importantly, would lead to increased sales by cash customers.

11   OPERATIONAL ASPECTS

The Airline's ICT system was designed to eliminate user intervention after bookings are made online. This included automated emails sent to clients. This approach supports the points made by Daniel, Wilson & Myers (2002:253) that e-Commerce is leading to the reshaping of customer relationships. This was done in an attempt to bring costs down by reducing human intervention. Any changes to booking details carries an additional fee.

11.1 The online booking system

After online payments are processed, a booking confirmation containing flight details is available on the system. This is also automatically sent via email to the user. This approach supports the points made by Daniel et al. (200:253) that e-Commerce is leading to the reshaping of customer relationships.

11.2 Booking cost, fraud and security

Authentication is a serious problem which has been identified and it excludes clients not using credit cards. According to the CEO, payment by credit card has not kept up with user needs, although most of the technology exists. The Marketing Director reported that the Airline had experienced credit card fraud; in fact, they have created a department to deal with it. To date the Airline has had no security breaks although a few hacking attempts have been detected. A bigger issue to deal with is extremely cunning credit card fraudsters.

The ISP that hosts the Website, MTN[1], is extremely well equipped and professional. Backup procedures, emergency lines, emergency power, security and applications are all incorporated in their offering to the IT company responsible for the Website.

12   ICT SYSTEMS

The computer software system that the Airline designed comprised the following modules:
- Financial system
- Call centre system
- Public flight booking system
- Load factor system
- Passenger check-in and boarding system
- Roster system incorporating Human Resource rules.

The abovementioned modules could be classified as standard off-the-shelf application packages found in business or at other LCA airlines. However, an innovative aspect is the Public flight booking and Call centre systems that are very similar, except that the latter offers more functionality for internal use. The system offered to corporate clients also uses the same system, but in that case offers additional customised functions.

Within a few months of launching the airline, the following links to outsourced service providers were accessible from the website:
- Car Hire
- Hotel reservations

These linked systems facilitate live inventory and provide on-line sessions while users are connected to the web and have to conclude bookings in between ten and fifteen minutes. The

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[1]   Second largest Cellular Service provider in South Africa.

equity partner did not develop all software in-house, some systems were purchased and others outsourced with certain clauses attached. For example:

- Airport Operational system
- Back end payment gateway creating all the credit card transactions

The uncertainty the Airline grappled with all along was that they did not really know what the expectations and requirements of their systems would be a year or two down the line.

12.1   The LCA industry

ICT plays a major role in the operation of all airlines and especially in LCAs where it is both a low cost driver and a revenue generator. Over the last few years ICT has emerged from a relatively back office infrastructure issue to become a critical enabler of virtually the entire range of the airline business processes. As a low cost driver, ICT has been used as a major disintermediation device where it has been used to reduce if not entirely eliminate the travel agent cost layer. In the past, travel agents obtained a commission from airlines, which typically ranged, depending on the sector and type of ticket between five and eight percent. In addition, airlines incur other costs associated with servicing this sales channel. These include cost of sales representatives and travel agents' incentives, of which the latter is diminishing rapidly. By using Internet and Web-based ICT, LCAs have by-passed the travel agent and through the use of e-ticketing have eliminated the cost of the ticket coupon itself. It has been estimated that these cost reductions account for approximately 10 –15 and up to 20 percent of the total operating cost (Shoniregun, 2005:645). In addition, by servicing passengers via a Website, the LCA is able to build a database of their clients and is also able to track their destination preferences. This information is useful when planning marketing promotions.

The cost reducing aspects of ICT are, however, overshadowed by the ability to free seats on a flight and thus enhance revenue. By using the web to create a 24/7 travel shop, where flights are offered at unprecedented low fares, LCAs have enlarged the travel market and, in so doing, have increased their share of the travelling public. However, the 24/7 travel shop is only one part of the system as behind it is a yield or revenue management system. This system facilitates a strategy of differential pricing based on the demand for seats.

Besides increasing the number of tickets sold or passengers carried, ICT when used by the LCAs to sell tickets on a website, results in fewer delays in their cash receipts. This is of course beneficial to the company's cash flow. The other business dimension which ICT allows to be exploited relates to how the LCA sell complementary services and products. Ryanair, for example sells, hotel rooms, holiday packages, car hire, car parking, airport transfer, gift vouchers and insurance. They also operate a credit card business. Besides these applications, there are many more computerised activities which have been spelled out and mapped on to the value chain. (Buhalis, 2004:809); however, this greater set of applications are applicable to any airline not only to LCAs.

12.2 System reliability

As the Airline is a 24/7 online business, great emphasis is placed on system reliability. Using the quoted figure of 48 000 passengers per month equates to a throughput of about 1 500 passengers per day, making uptime crucial for sales, cash flow and customer satisfaction.

A major issue Airline management had to contend with during the development stage of the software was deciding what was "good enough" to provide a reliable system in time for the looming launch date in February 2004. The alternative of waiting for a totally reliable, well designed and tested system, which could have taken twelve months or longer, became a terrifying prospect. They simply did not have that time available. The decision of a quick solution and possibly a fix later on became the only option. It is quite remarkable to design and write such a system in three months. For example, it was estimated at the time that an actual paper trail to inspect the system could take three months – the time it took to write the entire system.

During development and implementation, rigorous testing was carried out, as a failure soon after launch would spell disaster for an already sceptical industry, watching for failure. As this was a planned decision, albeit with constant nagging thoughts at the back of everyone's mind of the danger of a quick sale and facing the possibility of fixing back office systems later. The management knew what they were getting themselves into during the crucial months leading up to the launch although this had never before been done in South Africa.

The main reasons for the rush were to capture part of the 2004 peak season and to ensure immediate cash flow. Timing was crucial, otherwise they may have had to postpone the launch by at least 6 months and possibly lose the "early adopter" (Rogers, 1995) opportunity of being the first LCA in South Africa. Therefore, some decisions had to be made, one of them being to go out with their current version or to go broke.

Looking back from the start of the Airline, the system did what it was supposed to do, albeit with close encounters and sorting out software bugs and potential failures, not obvious to the outside world. The system has been rewritten as a second version, alleviating some system/programming bugs and introduce additional functionality.

12.3 Advantage of writing customised software systems

The IT industry has gone through many cycles of having customised software written, then adopting a mix of customised software and off-the-shelf products culminating in using only off-the-shelf products. Due to changing business needs or takeovers for example, the cycle could start again. This Airline is no different and selecting a mix of customised and off-the-shelf products gave them what they required with respect to price, functionality and user requirements. Similarly to many licensed software systems and operating systems on the market, where a licence fee per user is payable, in the airline industry licence fees are payable per passenger. A problem often arises with late seat cancellations. In the case of the Airline (and other LCAs) no refunds are given and no show passengers are in effect increasing profitability rather than inflicting a loss to the airline. This is due to the online payment procedure and absence of loyalty programs.

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The Airline opted to contract a third party company for their passenger booking and checking system. The model that the Airline adopted was that they own the rights in South Africa, whereas the developers could market the product elsewhere. In this way, no licence fee per passenger needs to be paid to a third party. In addition, the Airline negotiated a special price with the software developers.

12.4   Important ICT Issues

There are a number of important ICT issues arising from this LCA case study:

- The use of the Website to sell tickets had an immediately positive effect on the Airline's cash flow. For start-up businesses, cash flow is critical. One of the main reasons that so many dotcom organisations failed in the late 1990s and early 2000s was their inability to generate cash and this critical success factor was embraced by the directors of the Airlines.

- The Airline has put in place a platform from which it can sell complementary services and products. At present, they only offer car hire and hotel rooms. Nonetheless, they are aware of the revenue generating potential of this side of their business.

12.5   Extending the Internet reach

The role of the Internet is vital for the Airline's existence, as 70 percent of all sales come via this channel. It also keeps the head count down in the company as the customer is now takes on the role of consultant. This puts the onus on the web-facilitated business to have current, efficient and simple websites available for online trading. The art of running efficient Call Centres has significantly reduced head count as well, and at the same time they often give customers better service, as Call centre agents are monitored constantly. Many agents work on a commission basis, the Airline has adopted this model and it receives very few complaints about its Call centre. Most queries deal with external factors such as credit card payments or flight changes and cancellations. The current Internet market is growing by 10 percent per year, making this mode of business even more important for future business.

12.6   Mobile technology

The uptake of cellular telephones in South Africa is extremely high and expanding well above initial expectations. It may be perceived that mobile technology will also play a role in the airline industry. At this stage, there is no promise of cost saving for the Airline to adopt mobile technology but it is carefully watching development in the field. The only option considered was employing Short Message Service (SMS) to supply information for customer convenience.

12.7   Debit/Credit Card systems

New security modules are released by banks from time to time when legislated for by the Credit Card Association. This supports the banks as they adapt their systems to accommodate online transactions. Eventually banks' customers will be forced to register with this system. The concept

behind it is that if a customer starts to make an online purchase, the bank will contact the customer to validate *who are you*. After verification, encrypted pin numbers will be exchanged and the purchase concluded. This is a similar concept to the "honest broker" concept implemented in secure Information Systems. This will secure the current 60/40 ratio of debit cards to credit cards.

13 CONCLUSION

This case study described the creation of a new business in a particularly challenging industry in South Africa. The airline transport industry has seen a number of failures in recent years, but despite this four entrepreneurs decided that they can master the LCA industry with the Airline. Early indications are that the Airline is succeeding in its endeavours.

This Airline is an interesting example of an Internet and Web-facilitated business. It is one where the successful management of ICT was critical to the survival of the business. In fact, the whole business concept relies on ICT performance. For this reason, the founding directors of the Airline ensured a close relationship with a successful ICT group. The Airline developed a relatively simple Website based on one that had achieved a high degree of success for another player in the LCA industry. The company is aware of the cost savings and the revenue generating potential of Internet and the Web. In addition, they have begun to use this technology to sell complementary services and products.

The company is very aware of the changing modus operandi in society, moving away from cash to credit and debit cards, where the latter is becoming the preferred medium endorsed by the banking fraternity. Emerging technologies such as cellular telephones and wireless networks are factors under consideration and will be integrated as part of business strategy as soon as they proved to be cost effective.

CASE STUDY B

Using ICT as a business driver for Tourism

1 INTRODUCTION

This case study found that from the business's inception, ICT was present. At first ICT was not perceived to be crucial and was tagged on and not considered to play any critical or significant role in the operation and success of the business. The business is in travel and tourism and a PC, telephone and facsimile machine were considered to be sufficient. It was only later, when the Internet became prominent, that ICT really came into its own and was able to optimise the success of this business.

2 BACKGROUND TO THE CASE STUDY

According to the owners, it was remarkable that immediately after their first Web site was established, online transactions increased to about 60 percent of their business. This figure increased steadily until it reached its current level at about 80 percent of all travel related business.

3 THE RESEARCH PROCESS

This case study research required multiple sources of evidence. Unstructured interviews were conducted with the owners and staff of this travel business. Web searches were done, trade journals and newspapers were consulted and the business' Web site was accessed. In addition, other similar Web sites were accessed and enquiries made. The case study design discussed in Chapter 2 was used for this case study.

4 ORIGIN OF THE BUSINESS

The business was started in 1990 by two partners and initially very little technology was used. A facsimile machine was acquired first, followed by electronic mail in 1995. The need for a basic Web site was identified and then created in 1996. At that stage, not much attention was given to user requirements or ease of use, let alone any of the requirements that have become standard on Web sites. An example of their lack of thought was their Web site with a black background.

5 BUSINESS ORGANISATION AND MANAGEMENT

Besides the two owner managers, twenty-two people are now employed. According to the owners, being an SMME, means everyone has to be interchangeable, except for the cleaners and gardener. They also organise their business in such a way that exchange students are used, bringing expertise and varied work experience, adding some degree of richness to this people-oriented business. Local Tertiary institutions also send their students for on-job training. However, the owners are aware that students do not have any experience and are sometimes more of a problem than an advantage in their busy office.

The owners attempted to run two similar but smaller establishments a few years before but were plagued by many problems. These were, mainly not knowing what was going on and how members of staff were interacting with customers. Another problem they faced was not being able to pin-point potential problem areas before they occurred. The owners further explained that their business is very interactive and that there is constant movement on the premises, unlike in the traditional Hotel industry where guests normally check in at a front desk and are then taken to their rooms, after which less interaction required, except for possibly the information desk. In an establishment such as theirs, everyone is everywhere virtually all the time.

Travel booklets, as well as listings on search engines, still play a major role in promoting establishments such as Backpackers and Youth hostels. All details, links and recommendations are given, however booklets come out possibly every three years and that is too long in a market that has become so competitive fuelled by the Internet.

6   BUSINESS EXPERIENCE

The business has been running for fourteen years with a combined total of thirty-five years experience in the travel industry. The owners have travelled widely and are well informed about tourism and ICT trends both locally and in other parts of the world. Due to the fact that many visitors are young and skilled in technology as well as well-versed in using the Internet, management is kept up to date by requests and ideas given freely from the many visitors on how to improve their ICT usage.

7   REASONS TO STAY UP TO DATE

According to the owners, when travelling to areas such as Vietnam and Cambodia, *in the back of beyond*, one can go into an Internet Café with full ADSL in an air-conditioned venue, and have poverty on the streets just outside. This gives a glimpse of what is happening in this industry. An interesting comment by an owner is that it is a *near fairytale experience* to download digital camera photographs in such places and store them directly onto Web sites instead of carrying laptops around for this purpose when travelling, although Memory sticks are now in common use all over the world.

8   ADVERTISING ASPECTS

Due to the need to advertise more aggressively, the business embarked on a significant Web site upgrade in 2003 and again in 2004 after detecting changes in the market where virtual tours had to be provided to view an establishment. Not only must accommodation booking be accessible, but the whole package is needed for online booking and choosing rooms by viewing graphics, for example, and the payment of rooms must also all be online. They now have about twelve virtual tours of each section of the business. Questioning the owners as to whether this was all really necessary, the comment was an emphatic *yes* and further that it was clearly the way forward. They gave the example that five-star hotels view every facility on the Web site via a virtual tour and gave the five star Cape Grace Hotel at the Victoria and Alfred (V&A) Waterfront in Cape Town as

examples. In the travel business market, guests have become extremely fussy and demanding to see what is on offer, including recreational and fun areas, games, ICT, Internet, bathrooms, surrounding areas over and above bedroom details.

9   ICT EXPERTISE

The business has decided not to employ an IT person and so an outsource agreement is in place to maintain all ICT systems. The annual ICT budget varies between R60 000 and R70 000, excluding the Web site or telecommunication lines.

The owners view on permanent ICT personnel is that they will not be occupied fully and would generally incur more cost to the business once all additional benefits are included, than to agree on an outsourced model with fixed costs upfront, which then becomes part of the business expense and is also easier to budget. The question of after hours support is a major problem in relation to overtime and working on systems unattended with tourists in and out especially over weekends. The kind of technical people they use are young graduates who are keen, knowledgeable and prefer to come in and out as quickly as possible to have the least disruptive effect on the system as possible. In this way, the owners are kept up to date with the performance level of their systems, which they rate as a very important tourist service factor.

10   BUSINESS ACTIVITIES, GOALS AND MARKET

The two owner managers run the business on a day-to day basis and they also maintain the information on their Web site. Being a South African business, they often have to find solutions that are not aimed at local conditions, but have to satisfy International conditions, as most of their customers are International.

10.1 Business success

The owners state that their business is successful due to their hands-on approach, because they cater predominantly for the international backpackers market, as South Africans are reluctant to use local travel facilities and because of their adoption of e-commerce. They give examples of local stores that offer online purchases and their guests are able to use the Internet to purchase items and get them delivered right to their rooms. Edgars Stores is an example of such a store. Deliveries to overseas destinations are also possible but these are mainly done by businesses specifically aiming at the tourist export commodity market, for example, curio shops and wine outlets.

The biggest achievement for the owners has been to grow the business starting out with very little technology and only fourteen beds in 1990. They have expanded over the years to currently offer seventy five beds. ICT has also played a major role in their business and has become an inseparable pillar of their business. Although they are governed by many rules, regulations and compliance laws, the business has been remained successful over the years. They have created

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a landmark and people and tourists have got to know the building and can also relate to it on the Web site. This is an example of creating a strong brand.

10.2 Business competition

The owners are aware of the fact that their Web site is exposing their business to the outside world, even showing details of rooms and what other facilities they offer. According to the owners, it goes further than this to the extent that pages of their Web site have been copied and used on other sites. They have even found that exact page colours have been used and attempts to copy them as closely as possible.

However, they view this as more positive than negative. It keeps them on their toes and forces them to change and update their Web site regularly. Although this constant action incurs some expense to the business, it serves as a valuable guide to measure the relevance and competitiveness of their business. For them, as long as their business is being taken seriously, it strengthens their business case by being counted amongst the leaders and it increases the likelihood that they will remain in business. They see their innovative methods to keep their business relevant and advertising via their Web site as their key competitive advantage.

10.3 Tourist market

According to the owner's Web site statistics, most international tourists transact online normally from work when accessing Web sites and making bookings. In addition, access speed is not a problem for them as most of their systems utilise fast broadband access. The owners are considering moving their Web site to an international (foreign) server as most of their business originates abroad and they could make better use of the faster broadband speed. The owners feel that it is becoming unacceptable to host a Web site locally as it forces users from overseas to access their Web site in South Africa at very low bandwidth.

The business is an example of early adopters of ICT and their goal is to be leaders in this business, at least in South Africa. To satisfy tourist needs and to provide required service, the owners have been travelling regularly to keep up to date with practices found elsewhere. They also observe how other hostels operate, as they are dealing with a sophisticated market which is very professional and well-informed.

Most guest bedrooms now have access to the Internet as well as communal areas such as lounges, dining and recreation areas. There is still a need to provide access points for laptops in open areas.

10. 4 Tourist profile

The owners have a good idea of their tourist profile and decided to create a tourist profile database, introduced during 2004, which also maintains tourist details. This is an improvement over their

previous manual database that had to be updated separately. The value of such a database is largely to assist with arranging future packages and special deals.

They do get repeat business and now by making use of tourist profiles, a much more personalised service can be provided. According to the owners, South Africa is currently a popular destination and not much promotion is needed, but a database is a well worth investment for future use.

10. 5 Business threats

Although there are a number of competitors in the same region and at least two use the same booking system, the owners are not sure why they are so competitive, and they ascribe this mainly to their combined experience in the travel business and the fact that they are always striving to give good tourist service. In this way, they put a brave foot forward and deal with external business threats. They are aware that ICT (or the application thereof) may in future be their biggest business threat.

11   OPERATIONAL ASPECTS

The general comment from tourists is that this business utilises ICT effectively and that they are satisfying most user requirements. Furthermore, the owners identified a number of their Critical Success Factors (CSFs).

CSF 1 – Online booking before coming to Cape Town
Large tour operators attempt to book travellers on inclusive packages thereby cutting out many local tourist related businesses.

CSF 2 – Tourist service
In all areas of the business, whether providing and using technology, room service, staff, atmosphere is all part of the success story. The owners have found tourism to be very personal and no matter how successful they have been marketing on the Internet, it's when tourists walk through the door that matters. One owner states, "... that's when the dynamics start to work". Furthermore, "... if tourists are greeted cheerfully, smiled upon, receive fantastic service including good Internet facilities – it all starts from the first minute". Although not necessarily a CSF, it is interesting to note that tourists like to see a face behind a Web site and guests actually look forward meeting the staff. The owners are considering putting photographs of staff onto the Web site, but are still contemplating security risks associated with this.

CSF 3 – Using Technology as a driver for staff development
The owners of the business give an account of an eighty-year-old lady who has been with the business for ten years running their car-rental division. They sent her on a computer course to learn how to use a PC, email and the Internet. After two weeks, she was able to do all car rentals online and is now also updating their tariffs on their Web site. They jokingly said that this was the best thing they could have done by training an eighty-year old and firing the Webmaster who came in to change a few prices and charged them every time. Most of the permanent staff nave been trained at least to be computer literate.

CSF 4. Positive cash flow due to e-commerce

This type of pre-paid business environment makes good business sense, as they do not have a cash flow problem, as everything is pre-paid before a tourist arrives. Furthermore, it reduces bad debts because bookings are made (and paid) well in advance of the arrival date. It does happen that credit card transactions are rejected, but when the tourist arrives they normally make alternative arrangements using cash, traveller's cheques or loaning from their friends or often resubmit the credit card. This all happens before the tourist checks-in, and not the day they leave.

11. 1 The online booking system

Hostelworld.com is an Irish company that supplied a free online bed booking system and acts as a booking portal handling all travel and accommodation transactions and payments for the business. The system facilitates direct online maintenance on the local server when required. Links are provided between the Hostelworld.com and their Web site in South Africa. All bookings are made by Hostelworld.com and tourists accessing the Web site are automatically routed to Ireland when the booking phase is in process.

The owners see this as a great advantage (closely linked to their CSFs) for a number of reasons. Firstly, the transaction is processed overseas, where most tourists reside. This alleviates the need to have a secure Web site for payments in South Africa. Secondly, tourists are not too concerned where booking and payments are made, as long as it is safe, fast and seamless. The owners seem to think that International tourists actually prefer working through Hostelworld. com than accessing a Web site in Africa giving credit card details. Thirdly, being an online Web-based system, the owners can access the system from anywhere in the world to gain real time information about transactions, booking capacity and financial status as well as statistical reports needed for management decisions.

11. 2 Booking costs

According to the owners, Hostelworld.com processes up to 4 500 beds per day making their transaction costs lower than credit card costs in South Africa, e.g. 2.5 percent versus 2.75 percent. Bank transfers are even more expensive and do not work as conveniently as credit cards. The added complexity of foreign bank transfers makes credit card transactions far more attractive, safer and easier for the tourist.

South African tourists are processed locally as there are legal aspects to be considered for local tourists to book and pay via the International gateway. This type of transaction is done manually using email or phone and a facsimile sent as confirmation after payment is verified, either by credit card or by direct bank payment. As far as cancellations are concerned, they do refund booking fees but not the deposit, nor the first night's fee if tourists do not arrive. They argue that a fair cancellation policy will encourage return business.

12 · ICT SYSTEMS

In the early stages of the business, they made use of large Web-hosting companies as an ISP where they were hosted, and this often made them feel vulnerable and not in total control. However, they moved all this to a very small business and it has since become a two-way partnership where the one needs the other. The travel business now feels that their best interests are now considered and catered for more efficiently. They have also agreed that the outsourced business is not allowed to do work for anyone else in their industry, without permission, to minimise the risk of competition.

12.1 ICT equipment

The major problem the travel business experienced is that the Web site or network goes down from time to time and that it is generally too slow. PCs need to be replaced every 2 to 3 years due to the rapid development of technology. It is no longer acceptable to have new PCs mixed together with older models, as compatibility, performance and maintenance become a headache even with an on-site technician. The cost of maintaining such systems the owners find is a major factor, as external people have to service and maintain such systems.

Unfortunately, the travel business paid about R40 000 three years ago to install network cables, and most of it now has become redundant as wireless has become an alternative. This was a large investment for an SMME and expenses such as these simply eat away into profits. The owners are aware that although these types of expenses could be deducted from income tax, the amounts have to be paid out first, long before such a benefit can be realised.

The travel business has been purchasing their PCs but due to rapid changing technology and the constant drive to upgrade equipment, rental options have now been investigated. The owners also want to inquire if there is a tax advantage to lease compared to purchasing which offers 33 percent depreciation per year. They stated that the problem with outright purchase is the draining effect on a small business' cash flow.

An interesting observation was that all office PCs are windows based to allow seamless integration into desktop packages, whereas PCs used for Internet access are all Linux based using shareware programs. The main reason according to the owners is that Linux is less prone to common viruses and spam, whereas the office PC has be compatible with Microsoft Windows Operating System (Windows) to deal with aspects such anti-virus and anti-spam packages and general office administrative tasks currently all on Windows based systems.

The office regularly receives more than a hundred emails per day, which has become a vital aspect of their business. According to the staff, this is already quite exhausting and time consuming. Adding spam to this cuts a working day by a few hours across all the PCs in the business. An additional benefit of using Linux PCs is that visitors are less likely to fiddle with them unless they are Linux boffins, which does happen from time to time.

The owners purchased a Voice over Internet Protocol (VoIP) telephone to use Skype software and they use this for all their International calls. One owner was amazed "... at how easy it was to acquire technology that offered such real benefits to users quite effortlessly". Guests immediately indicated that they would use these technologies to communicate with their friends and family back home.

12. 2 Internet access

One of the travel business' significant breakthroughs, according to the owners, was installing an ADSL line in 2004 instead of being confined to dialup lines. Cost reduction, reliability and the possibility of new services were instantly available and started transforming ICT related aspects of their business. They use a manual time based Internet access system, as they have not yet acquired a typical Internet Café system whereby tourists could purchase Internet access vouchers. The current system relies primarily on honesty whereby Internet bills have to be paid when checking out. The current rate is R30 per hour, which carries a small direct profit margin of 5 percent. When the Web site goes down especially over a weekend, it could be out for up to 4 hours and is a point of concern to he owners. The cost of the Internet is about R1 500 per month using ADSL.

There have been requests from tourists that the business should consider providing free Internet service to its tourists as this is starting to happen at some International establishments. The business owners are of the opinion that with the current Telkom price structures, this will not be a possibility and will find this difficult to convey to tourists how this pricing works. With more graphic pictures appearing on Web sites, the owners try to adhere, where possible, to a navigation policy of three clicks. One of the owners stated that "... tourists often remark on the fact that they adhere to the benchmark of three clicks for navigation". ADSL has brought audio and video streaming into the business replacing hundreds of CDs and saving thousands of Rands. This not only has an impact on the cost of CDs, but also to the loss of CDs. The business now easily compiles play lists that can be changed by the click of a mouse button. This is a real benefit to the business.

12.3 Website presence

The owners believe that there is great unfairness in the way search engines list Web sites. They have had their Web sites checked and they have even paid to have their Web site listed higher up on major search engines, but it did not materialise. They rate their Web site as not successful if they are not listed within at the first page of a search engine. Initially, a Web-hosting company hosted their Web site and the practice in the early nineties was to host a business' Universal Resource Locator (URL) as an offshoot from the main domain name. Although the domain name was registered, in fact co-owned with somebody else, it was only after a German tourist asked why the business name and URL was not the same that was changed to a ".co.za" URL. The owners are aware of the problems and anguish business owner's experience not being able to secure a URL the same as their business name. They had to go through this, and have to pay royalties to a "sleeping partner somewhere in Gauteng". Learning from these experiences, they have registered a number of domains to cater for any likely future expansion.

12. 4 Role of the Internet

The Internet has in a way damaged travel business by forcing them into becoming a travel agency on the Internet with all its problems and complexities. Previously, they had many more walk-in tourists typically up to 10 people waiting to buy tours, but now many of them have pre-bought tickets on the Internet, and disintermediation has set in, and the people that were treated as agents are now out there advertising and selling travel directly catching the tourists before they can respond.

From a management point of view, albeit a bit futuristic, technology could enable the owners to start managing their business remotely if Web cameras are installed and the infrastructure works seamlessly. The owners do find it frustrating when they are travelling and the only way to communicate with their office is via cellular telephone or email.

The next technology is wireless, and that will simplify the entire business making network cables and wiring redundant. It will also improve the general reliability of Internet access, as there have been cases where cleaning staff or visitors have damaged cables causing interruption of services. Cellular telephones will also be able to interact with the Internet opening a new way of utilising technology in communication.

12. 5 Online payments

All the business banking is done via the Internet. They pay approximately two hundred and fifty suppliers via Internet banking. They also use the Easypay.co.za facility to pay some accounts, mainly to utility companies for example, rates and electricity. With all of this, only about 20 percent of payments are done manually by cheque for non-account suppliers, petty cash and wages. There are some aspects of the business that are almost completely electronic, for example, the travel tours section and car rental.

The travel business' international accommodation payments are made to Hostelworld.com's secure site and the fees are then transferred to their South African bank account. Local tourists pay directly either with cash, by bank transfer or using Internet banking.

12. 6 Mobile technology

Most visitors own cellular telephone or are able to rent them while in South Africa. No need currently exists for mobile-commerce (m-commerce) for booking or purchasing of services. The relaxation of the Telecommunication act regarding Voice Over Internet Protocol (VoIP), allowing products such as Skype and other products, is emerging as an important technology path for them for the future. It is also an ideal technology for visitors, as the quality of service is not currently an important factor, as long as affordable communication can take place.

13 CONCLUSION

This travel business is a sound and well-established business, especially if their business growth is tracked over the last fourteen years where technology played a significant role from day-one. What is even more remarkable is that the two owners are not ICT graduates but social science graduates. However they are quick to remark that they are not very computer literate, yet were able to take advice, make decisions and implement ICT solutions. This mode of operation has given them competitive advantages on a regular basis.

CASE STUDY C

Electricity dispensing: a Case study of successful e-Commerce implementation

1   INTRODUCTION

The objective of this case study was to investigate how a successful bricks-and mortar business transformed part of their business operation into an e-commerce business utilising the Internet and mobile technology to sell prepaid electricity. The business adopted e-commerce and implemented two traditional business channels, one a B2B and the second a B2C. The adoption process for both sales channels was investigated, however, emphasis was placed on the B2C aspect which is more in line with the focus of this research.

2   BACKGROUND TO THE CASE STUDY

This business was chosen as a suitable case utilising the Internet and Web for selling prepaid electricity to domestic users in South Africa. This case study is of interest for a number of reasons: Firstly, Internet and Web-based businesses have not been particularly successful in South Africa, for example; Veer.com, the failed e-commerce travel venture of South African Airways, Old Mutual's Fundsnet and Liberty Group's Mylife. Secondly, the merits of creating an entirely new online business or transforming an existing bricks-and mortar business into an e-business has been debated in the literature with advantages and possible disadvantages affecting both large companies and small business, but especially SMMEs. Thirdly, both B2B and B2C sales channels were established and how they were established is of particular interest, as the literature often refers to these as separate issues and not always in synchronisation which each other.

3   THE RESEARCH PROCESS

Using a case study methodology, multiple sources of evidence were acquired and semi-structured interviews were conducted with the business executive management. Management organograms, business reports, advertising material and articles on the website were scrutinised. All interviews were tape recorded for analysis afterwards. The Chief Executive Officer (CEO) was the first contact made with the business and he supplied further information and assisted with arranging subsequent interviews with other personnel. The website was regularly accessed and online prepaid electricity was purchased from the website as well as by using the cellular telephone SMS option to purchase prepaid electricity. An online newsletter distributed by the business to customers and interested parties was regularly monitored to track the company's development and activities.

Since the City Council of Cape Town (CCC) is the main client of the business, this researcher deemed it necessary to interview relevant people at CCC in an attempt to understand how the prepaid system was incorporated into their existing Information System (IS). Furthermore, finding the motivation for why such a system was considered and implemented in the first place led to many interesting facts. The manager of prepaid services at CCC was interviewed and subsequent contact maintained for additional information.

4   ORIGIN OF THE BUSINESS

The business was formed in 2003 when five employees bought the business from an established telecommunication and network holding company in Cape Town, South Africa. The management buyout was concluded towards the end of 2003 and the company started trading on 19 January 2004. The management team consists of the Group Managing Director and Chief Executive Officer (CEO), a Financial Director, a Marketing Director and a Technical Director.

5   BUSINESS ORGANISATION AND MANAGEMENT

Although the business consisted of three businesses within a newly established group, the prepaid electricity business was positioned in one of the three businesses. Although it contributes a small part of that particular business' revenue and activity, it is viewed by management as a growth area. The directors reported that the business reached its budget breakeven point within the first five months of operation in 2004, as new contracts were concluded with two major municipalities in South Africa within two months of the management buyout. However, the new contracts were also a result of the long standing business operations of the former company who owned the electricity supply operation prior to the management buyout.

6   BUSINESS EXPERIENCE

The management team had many years collective business experience as they were all involved with the day-to-day running of the operation whilst it was a division of the holding company, but new experience and product knowledge was also required. According to the CEO, and later verified by the Technical Director, prepaid systems were in use many years ago and examples of prepaid Gas Meters in London as well as electricity coupon systems for lighting were cited. In a more simplistic form, squash courts use prepaid electricity meters and a plethora of vending machines are also examples of prepaid systems, albeit offline and standalone systems. These varied examples illustrate the type of business knowledge required to design and implement such a system adhering to many standards and regulations. The problems that had to be overcome with the older generation of mechanical electricity metering devices ranged from reliability, theft and fraud to maintenance and accuracy. Due to the required physical robustness to prevent tampering and physical abuse, the devices were very expensive to manufacture.

With the advent of microelectronics a "new generation" of prepaid systems changed the old systems into sophisticated, secure and reliable ICT systems. Tampering does occur but not for the same reasons as before, as there is no money or reusable cards or tokens in these devices that can be re-used. The entire system is based on digital electronics using encrypted digital information packets that are stored digitally.

7   REASONS WHY TO STAY UP TO DATE

Prepaid electricity online businesses operate on four basic principles. The first of these is that the product must be simple to distribute – electronically. The second principle is that there must be a supply chain from one supplier, in this case, the Electricity Supply Commission of South Africa (ESCOM). The third principle is that the income stream must be guaranteed as the customer is locked into a "closed group" with no alternative supplier. The fourth principle is that sales patterns can be predicted by consulting historic sales information available in a database. With this knowledge, a business should be able to predict future sales, to plan future revenue streams and be able to operate more cost effectively.

8   ADVERTISING ASPECTS

Two advertising aspects were investigated, from the business perspective and from the CCC perspective:

The business

An extensive marketing campaign was launched using the local press, municipal accounts, direct approaches to existing clients offering incentives for referrals, property developers, architects and others. Street fliers and school incentive schemes offered prizes for the most conversions from the traditional electricity supply method to prepaid systems. A move was also launched to get the local authority to make prepaid systems compulsory for new developments. It was found that this online product needed far reaching social issues to be dealt with before there would be large scale acceptance of using prepaid electricity. The biggest issue reported by the management was that of a prepaid stigma that emerged linking prepaid systems to poverty alleviation and even discrimination between rich and poor.

CCC

A marketing team from CCC was created to operate over a three-year period to demonstrate and train users in how the new system works and to answer any queries. This was done by converting a city bus into a fully-equipped mobile demonstration vehicle fitted with a prepaid meter and standard household electrical appliances. This bus travelled to the areas that were targeted to be fitted with prepaid meters.

Although the demonstration system worked well and was greeted with enthusiasm, the prepaid concept was not accepted at first and there was initially great resistance to change. According to the CCC prepaid manager, the reason was that most of the residents living in the targeted areas had large electricity arrears on their accounts and many residents were in fact disconnected from the electrical grid due to non-payment over the years. The concept was explained to residents that a token of any monetary value could be purchased to obtain electricity, and that each token would consist of a small fixed percentage to go towards reducing their arrear account, whilst the rest would be used for current electricity usage. This was accepted and a large-scale implementation of free prepaid electricity units commenced in many areas.

9 ICT EXPERTISE

The holding company, being an ICT company from the outset, already had in-house most of the ICT experience and skill needed for development of this system. However, the technical details of mobile technology were new and had to be researched, but they did not pose any problems as they already had high calibre electronic and software engineers employed. A help desk facility had already been developed which was able to cope with the new prepaid system and mobile access. At the time of the management buyout, most systems were developed. Some departments were transferred whilst others were outsourced to the new business.

10 BUSINESS ACTIVITIES, GOALS AND MARKET

Prepaid meters for domestic use were legislated for and published in the Government Gazette of South Africa and the first prepaid meters were installed in 1993. The targeted area for installing the first domestic prepaid meters was the Cape Flats as it was identified as having the largest amount of electricity debt. Other arrears were serviced soon afterwards, to the extent that users in the greater Cape Town area started requesting this facility. Later this service was extended to all domestic users in all the regions in the greater Cape Town area; Cape Town Central, Tygerberg, Blauwberg and Helderberg. Domestic users could apply for free prepaid meters and only had to pay for the installation. This resulted in a nine-month waiting period for prepaid meters by 2000. From 2001, domestic prepaid meters were not free any longer for both, voluntary requests as well as compulsory new domestic installations. Table C.1 summarises installed pre paid meters in the four main areas of Cape Town.

Table C.1 Installed domestic prepaid meters by 2005.

Area	Subscribers
Cape Town	287 107
Tygerberg	56 616
Blaauwberg	13 000
Helderberg	51 000
Total	407 723

Since 1993, cash flow improved steadily and the mechanism used to reduce outstanding amounts was the splitting of each electricity purchase into an energy supply component and an arrears repayment component. In this way, users could continue using electricity whilst paying a small amount towards their outstanding account. Initially a split was used per transaction which resulted in 14 percent going towards arrears. From 2004 when new electricity tariffs were introduced, a decision was made to increase the arrears repayment rate to 20 percent.

10.1 Business success

Since the formation of the business in October 2002, the business has grown steadily doubling in sales to approximately R82 million per annum. Since the management buyout in January 2004,

business improvements are evident from the prepaid electricity sales market-share in Cape Town increasing by 3 percent to 33 percent. Prepaid electricity sales are currently exceeding R15 million per month of the total electricity sales which are in excess of R30 million per month.

The business success from the business' aspect and from the CCC's point of view is summarised below:

The following advantages have been identified:
- Ability to manage electricity budget
- General awareness of electricity consumption
- New installed prepaid meters were loaded with a credit of one hundred electricity units which would be paid for when the next payment is made

The following advantages for CCC have been identified:
- Reduction of the electricity accounts in arrears
- Reduction of cost of credit billing
- New electricity collection model
- Increased user responsibility

10.2 Business competition

Currently, there is very little competition, as such a system requires a large investment in expertise, infrastructure and the customer base. Electricity is not an "off the shelf" product and it is governed by legislative hurdles and many stakeholders involved. Furthermore, many municipalities and cities work on five-year contracts for supply of essential services.

10.3 Customer profile

The customer profile is not what was anticipated. Although the majority of clients are previously poor electricity account payers, only a small section of the affluent population adopted prepaid electricity willingly. Many apartments are fitted with prepaid meters making it ideal for tenants and holidaymakers. Until there is wide scale adoption of prepaid systems, the future growth is limited and the expansion of mobile technology would also be limited.

11 OPERATIONAL ASPECTS

The CEO identified three Critical Success Factors (CSFs) adopting the philosophy that all the employees of the business are responsible for achieving the CSFs now that they find themselves primarily in a customer-driven business. The management team, however, takes the ultimate responsibility for maintaining and attempting to achieve the CSFs summarised in Table C.2.

Table C.2 Critical Success Factors

The Business Critical Success Factors	
Direct customer contact	Engaging in an on-going dialogue and working relationship with customers allows for new ideas and requirements posed by customers to be implemented
Good service delivery	By monitoring customer satisfaction in real time – not selling a product and six to twelve months down the line enquiring if they are satisfied with the product.
Long-term contracts	These are typically for 5 years with the possibility of a further 5 year extension.

11.1 Online payment systems

As far as prepaid electricity is concerned, the business provides credit card payment terminals at supermarkets, general stores and garages. This facilitates the sale of electricity over the counter to consumers in more than 100 municipalities in South Africa. Cellular telephony is also used as an additional purchasing channel via an SMS prepaid service. Although this business is still in its early stages, the directors are confident that the online aspect of the business will be successful in the long term.

According to Michalak and Jones (2003:5) moving to e-Commerce can disrupt existing business models and frameworks and "rewrite" business rules. They further state that companies that adopt technologies and procedures and invent new business models will benefit significantly from the "first mover" advantages in areas such as transaction costs, increased role of information, rearranging of production and distribution networks, and taking advantage of the latest hardware and software. The business progressed through most of these stages.

11.2 Benefits of online transactions

As the system has moved from a standalone and offline system, to an online system, the main benefits of online transactions are:

- Simpler client software and hardware
- No data synchronisation issues
- Real-time integration with billing systems
- Centralised database and security modules

The main benefits to local authorities are:

- More vending points at a lower cost of ownership
- Easier system management
- More efficient arrears collection
- Increased database and encryption security
- Advantage of an automated arrears collection system

278

An example of the arrears collection issue mentioned above, the town clerk of Ladysmith, reported that they have no outstanding accounts for their new housing development projects since installing these systems. Furthermore, existing residents with newly installed prepaid meters applaud the fact that they can manage their electricity use and real time budget management.

11.3   CCC prepaid system adoption

It was deemed necessary to interview the CCC to ascertain if the adoption of prepaid electricity had been worth it, and what the benefits were. According to the Manager of prepaid electricity, the arrear electricity accounts increased to an unacceptable level. Collections of these outstanding amounts was difficult and expensive to recover from users using traditional means, i.e. postage, debt collectors, prosecution etc. The cost of maintaining a debtor system of sending out accounts and providing the mechanisms for collecting the moneys, either using existing cashiers at civic centres or using debt collecting agencies, was becoming exhortative. A more efficient way had to be found and prepaid electricity promised to be the most likely route to follow.

12   ICT SYSTEM

The prepaid electricity system the business implemented was kept as simple as possible. They also knew their product had to be geared both for the expanding domestic market and to establish a direct supply chain link to a single supplier electricity supplier in South Africa (ESKOM). Furthermore, they serviced one main customer, a local authority or Municipality. However, the implementation was quite complicated, as the supply of the prepaid equipment was initially supplied at no cost, but they also started acting as an "outsourced agent" for local authority to sell prepaid electricity to end users, while local authorities also sold prepaid vouchers to end users.

This business model is fundamentally different to most e-commerce models where product choice, variety, order fulfilment and delivery are the distinguishing factors. The electricity pre-payment vending system began as a separate two-part system; Management and the prepaid vending system that was managed and operated by a skilled team of twelve staff. The IT systems used were written in Progress and supplied by ICL. The vending system consists of 117 off-line systems distributed to various outlets where customers have to be physically there. Theses are being upgraded to on-line systems to offer remote payment.

The IT System within CCC is totally independent and the prepaid vending department has a good working relationship as far as all ICT matters are concerned. Guidance as well as recommendations and advice are given by the central IT department. Normally, all new decisions are taken well in advance.. Recently, the system was taken over by the Electricity Department and it now consists of the Central, Tygerberg, Oostenberg and Blauwberg areas.
As far as could be established, only 2 percent of CCC dispensing units have been tampered with. Two types of tampering were identified. The first is an ongoing problem but the second was corrected soon after its discovery:

- **Electricity by-pass**: this involves illegally connecting the incoming electricity supply lines to the output of the prepaid meter. It is extremely dangerous and needs on-going checking.
- **Internal prepaid meter problem**: this was identified when units were opened, an anti-tamper mechanism disabling the main circuit breaker could be physically reconnected. This was corrected to make an opened unit dysfunctional after being opened.

The business provides an SMS facility, from which the revenue less commission is paid over to the CCC; in fact, the full amount is transferred to the CCC and commission is paid back at the end of each month. This takes two days to reconcile.

12.1 ICT equipment

The credit card mini terminals use General Packet Radio Service (GPRS) technology and employ built-in encryption. The advantage of GPRS is that it is efficient because it sends a very short data packet paid for by the client. In the case of these transactions, only a few bytes are transferred, making it typically

10 times less expensive than radio or any other type of transmission protocol. The total speed of transmission for credit card verification makes the waiting time very short.

12.2 Mobile technology

The uptake of prepaid Internet and Web facilitated online products and services in South Africa has gained momentum with cellular telephony becoming an important player in this field and it is mainly due to the rapid expansion of cellular telephony in South Africa, also evident in other parts of the world. This phenomenon of rapid expansion of mobile technology is also noticeable in some developing countries where previously disadvantaged citizens are now able to acquire and use cellular telephones. Although a small percentage of South Africans have access to the Internet, citizens are nevertheless becoming increasingly aware of the possibilities and benefits of Web-facilitated services, where the mobile aspect of cellular telephony opens up an attractive alternative for doing business

The number of new fixed telephone connections in South Africa is diminishing in relation to the number of new cellular telephone connections, which is increasing. The ramifications of this are not specifically covered in this research. However, the increased number of cellular telephones will play an important role in the prepaid industry in South Africa.

Examples of current mobile prepaid products in South Africa:

Cellular telephone air-time

- Cellular SMS (Short Messaging Service) vouchers
- Prepaid electricity vouchers

There is an off-line and on-line system where the on-line systems goes directly to the CCC. With a new SAP system at CCC, customers that are in arrears are put onto the new billing system, in order to credit the arrears account when payments are made.

12.3 Future developments

Visa International (visa,com) has been researching a payroll card system for the past few years and employees and banks may accept this form of money transfer, but it is restricted to some extent. A more promising optical card development to replace current credit and debit card systems is being researched according to the CEO. BSI2000.com launched a pilot project in South Africa, using an optical card that offers a large memory capability to store high resolution digital colour photographs, fingerprint images, biographical information as well as bank account balances, security, authorisation and audit trials. This in effect is an offline system, although it forms a wireless banking system.

13 CONCLUSION

This case study investigated the background issues surrounding the creation of a new online business venture in Cape Town. It was part of an existing brick-and mortar business and it was created as the result of a management buyout in the niche market of electricity metering and supply in South Africa. This is an interesting example of an Internet and Web-facilitated business where ICT played a critical and integrated role in the business. The entire business concept relies on ICT performance. The business is aware of the cost savings and the revenue generating potential of Internet and the Web.

The business identified the changing role of debt collecting from society and the movement away from using cash to pay electricity accounts. However, it required quite sophisticated systems. The involvement of the CCC and ESKOM was a great step in reducing the backlog of unpaid electricity accounts. Using cellular telephones is seen as a great opportunity to sell prepaid electricity to users. With many smart card type technology developments underway, the move to fully electronic payment for electricity is a real opportunity.

Case Study D
A mail order business transformed to e-commerce

1   INTRODUCTION

This owner managed SMME, was selected as an example of a transformed e-commerce business from a bricks-and-mortar business having its origins in mail order. There have been indications that mail order users have shown a higher level of interest in e-commerce and have easily adopted online shopping.

2   BACKGROUND TO THE CASE STUDY

According to the owner manager of the business, the main reason why mail order businesses have been popular in the United Kingdom (UK) is primarily due to its business drivers.   Firstly, there is a convenience factor (ease of use).   Secondly, a trust is built up between customers and mail order businesses, and the third driver is the assurance that ordered goods would be correctly delivered and on time.   In cases of delivery or product problems, customers are confident that they would obtain good service from whoever was going to follow up and solve their particular problems. Many of these drivers are essential for successful e-commerce and further serve as motivation why this case study would assist in this research.

3   ORIGIN OF THE BUSINESS

The business originated from Maplin South Africa (Pty) Ltd., a subsidiary of Maplin, UK that commenced trading in Somerset West, South Africa in 1992 as a mail order business. One of the contributing factors to start the business was that the local manager, who came from the UK, had a number of years experience in mail order businesses. According to him, mail order has been widely used for many years in the UK. and people knew it was a good alternative to visiting a store. He further stated:

> "...it was the norm – everybody uses it and you have got some very successful
> business that have been around for many years."

In 1999 Maplin, UK was sold and the new owners took over all the branches, doubled prices without warning and did not want to consider subsidising the Rand/Pound exchange rate. This had a devastating affect on the South African operation as the higher landed cost of goods would be fatal for future survival. Maplin's local manager and partner then severed ties with Maplin UK in 2000 and created this local business operating from a small industrial park in Bellville, a Northern suburb of Cape Town. After some time, the owner and partner of the business parted ways and the owner manager continued with the business and is now categorised as an SMME (South Africa, 2003).

Due to the extremely hard times the owner has had to endure in establishing this business, he doubts if he would start another non e-commerce business and attempt to grow or change part of it into an e-commerce business.

4   BUSINESS ORGANISATION AND MANAGEMENT

On the positive side, the manager is of the opinion that being a successful SMME concentrating on a few products or specialist services, is not nearly as complicated and demanding as doing business with a large stock inventory. Furthermore, the role of employing experienced staff in a situation where the profit margin is very small is quite daunting. The only way he could succeed in this business was to make use of ICT to reduce costs, increase productivity and automate as many functions as possible.

According to the owner, the major challenge he faces on the e-commerce side of his business, is that of transforming the approximately 22 000 Web site hits per month, into orders to grow the average of 20–30 orders processed per week. In contrast, he compares this to the airline industry where businesses such as 1time Airline and Kulula.com effectively sell one product and he argues that if these businesses each get the same number of hits per month, each could potentially convert those hits into many thousands of orders per week. This he based on Web site information and articles he read. Another concern he wrestles with is how often to change the appearance of their Web site and how often to introduce new features. Furthermore, the question of a brand versus the many products he sells is also a difficult issue and he has no answer to this. Although he is aware of literature covering many of these issues, he argues that he is a business person and not an academic. Another worrying aspect to this online business is the many emails the business receives. These are typically queries pertaining to:

- Product
- Application matters
- Product specifications
- Payment issues
- General enquiries.

These queries are important but this business simply does not have the resources to offer a quick response offering correct advice. He is aware that if most of the technical queries are turned away or left unanswered, the situation could be reached where customers become irate and may not return to their website in future. According to the owner, they simply cannot employ or contract scientists, engineers or consultants but are doing the best they can.

5   BUSINESS EXPERIENCE

The owner manager of the business has 25 years experience in electronic sales and marketing. According to him, a person starting a similar type of business would require at least five years general management experience. For this particular business, one would also need specialised electronic product knowledge.

6   REASON FOR CREATING A SHOP FRONT

Due to the low level of mail order business in South Africa, a decision had to be taken to sustain the business and to encourage local customers to shop more frequently. The business offered many more interesting items compared to what consumers were used to in the past, providing sufficient

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reason to create a shop front. Furthermore, the decision to accommodate previously geographically scattered mail order clients when coming to Cape Town, from time to time, was also important. They would find it more advantageous to visit a shop to meet the staff, view products and discuss business in general.

Moving from a mail order business to a shop front business with associated stock holding was a great challenge as it was found there was not sufficient disposable income in South Africa for the type of products sold by the business. For example, a small number of two-way radios at R600 are sold in South Africa, whereas thousands are sold in the UK. Other examples mentioned also highlight the lack of general expenditure keeping sales volumes low.

The owner often contemplated various ways to expand the business. Sometimes the product range expansion seemed to be the obvious choice or changing the shop's physical layout to make the shopping experience more interesting. However, the choice of products poses a major headache as the market is changing continuously. The product range has increased regularly to become an extensive range of products and accessories that enthusiasts, consumers and sub-contractors find useful. As an additional outlet, a branch was established in Gauteng a few years ago.

7 ADVERTISING ASPECTS

A problem the business is facing is how it should go about extending the marketing of the online aspect of the business. The owner indicated that although casual customers off the street may come into the shop out of curiosity and invariably end up purchasing something, increasing sales via the Internet is his current burning issue. From the evidence and understanding the operation of this business, it would mean converting the 22 000 hits per month into possibly a few hundred orders per week.

In 2000, an in-house catalogue was produced at great expense; they employed a writer and a technical person for a month to create this and finally printed a thousand catalogues consisting of four hundred double pages. Later on, CDs were created to augment the catalogue. Four years later, in 2004, the business sold three to four times as many CD catalogues and at a much reduced cost. The manager thinks the reason for the increased digital uptake was both the popularisation of digital audio and that more users have access to PCs at work and at home. The business has now stopped producing printed catalogues and has moved totally to digital media.

8 BUSINESS ACTIVITIES, GOALS AND MARKET

The business does participate in market research from time to time, and they have found that small companies trading online are not doing as well as is perceived and successful trading depends very much on disposable income and the desirability of the particular products or services. According to the owner, a mere website presence is insufficient to attract high volume sales. He is aware of many companies that have come a long way, especially in the UK and USA, that have become totally dependent on the Internet for their survival. He gives examples of online book websites and cheap airlines websites in the UK. Both these types of businesses are Web-based and completely

reliant on the Internet. Even in South Africa, strong and successful Web-based companies have emerged, for example the local airline industry. He is therefore aware of the potential benefits of online trading, but he currently has a problem doing it successfully for his own business.

The mail order business was quite novel in South Africa during the eighties and nineties and there were a few successful mail order businesses, for example, businesses selling encyclopaedias and household wares. When Maplin first started nearly twenty years ago in the UK, there were many sceptics, but it gradually became a more accepted form of business. At that time, power transistors and microchips were making inroads into the electronics industry, and Maplin provided an important channel for designers and enthusiasts to obtain cost effective products. However, experience has shown that the successful business drivers for this type of business found in the UK, do not apply to South Africa, largely due to poor service delivery and a lack of trust in catalogue purchasing. Initially, 95% of their South African orders came from mail orders, and they received weekly shipments of about 120 imported parcels from the UK. The main mail order advertising channels they used was four to five postal promotions per year, as well as newspaper and trade magazines adverts. However, the volume of imported parcels declined over the years as more stock was carried locally, to the point where other suppliers were also sourcing their products.

8.1   Decline of mail order

The mail order component of the business is still going but it has reduced dramatically. According to the owner, at first they did not have any answers to explain the decline in mail order as customers from all over South Africa purchased from them and they currently have 20 000 entries on their database. The owner alludes to the fact that a few years ago, there were many pamphlets distributed that advertised mail order companies and many of these leaflets landed in post boxes, but this has just about all disappeared. For example a recent mail-shot targeting about 5 000 customers, resulted in very little response. Over the years, the owner made contact with other mail order vendors in various towns in South Africa and they all agree that mail order has virtually vanished from the market in a very short space of time. A few years ago there were one or two prominent mail order magazines advertising their goods, but these are also no longer in existence. The reasons for this decline is not fully understood by this owner, but the realisation that Internet and Web services have most probably done the most damage.

8. 2   Customer profile

The majority of the business' online customers have credit cards or have access to the use of credit cards and no approach for any other form of payment has been considered. A limited number of online accounts are maintained for unique regular customers where payment happens monthly and is guaranteed.

8. 3   Competition

In terms of the electronics business, there are several competitors, which makes this market fiercely competitive, but not many are e-commerce businesses. Most of the competitors take online

orders and provide product details, but could not be classified as e-commerce businesses. The case-study business has diversified into a few other market sectors in an attempt to have a competitive advantage over their rivals.

8.4   Business threats (CSFs)

According to the owner, the biggest threat to the business is market change. There are two main problems he has experienced during the time he has been running this business. The first is being able to trust staff; for example, a considerable amount of money has been lost due to theft, mainly in the Johannesburg branch, where R30 000–R40 000 was lost due as a result of theft and trusting staff. This is complicated by the law not always being fair and often protecting employees more than employers. The second problem is the Rand's poor exchange rate compared to other currencies; all imported products are paid for in Pounds Sterling, US Dollars or Euros. Both of these problems have had some effect on the business' cash flow, and probably its profitability as well.

9   OPERATIONAL ASPECTS

When this researcher posed a question about how to keep building the business' image, the owner's response indicated uncertainty about how it should be managed. There are many factors to consider, ranging from products and websites to service options. Although many users are complimentary about the website and the services offered, there have been suggestions that a second shop in Cape Town would be desirable, as the Bellville shop is about 20Km from Cape Town. The owner would thinks he would have to consider factors such as rental, parking, stock holding, population density and traffic flows before making such a decision.

According to the owner, "... there is nothing much I think we can do which is going to dramatically increase our Web sales". From his experience, in order to increase online sales a number of other factors have to be considered. He identified these as:

- Amount of disposable income
- Users' access speed
- Website response
- The need for CDs in addition to the website
- Content of such CDs and an update policy.

All these factors have to be evaluated in terms of expanding the e-commerce channel which remains a burning issue to consider.

9.1   Online order process

The business system has been cleverly designed and it works extremely efficiently; the system processes counter sales and online sales in exactly the same way. A Web (online) sale is flagged on the screens of the counter sales staff, indicating that an online order has entered the system and must be processed. The entire process is tracked and completed in exactly the same way as a counter sale or a telephonic order by the existing sales team.

To complete an online order, a picking list is produced and the order is completed in the stores, much in the same way as the manual orders. Instead of bringing the order to the counter to the client, a parcel is made up, labelled and despatched by post or courier. A tracking number is then entered into the system and made available to the online customer.

The electronics industry is similar to the dispensing industry in that it often makes use of a component data sheet, similar to the familiar medicine data sheet wrapper found in medicine boxes. The electronic data sheets are produced by the manufacturers and they are used to guide purchasers, designers and enthusiasts how to use the components and they also give various product specifications. In more cases than not, once an electronic component is purchased over the counter, the customers request a data sheet. If they are readily available, it is no problem to simply hand one over, but normally the sales staff must find a particular data sheet in a thick catalogue and have to then make an awkward photo copy. This is not a cost effective system and the best response would be either to print the data sheet, to copy it to a customer's memory stick or to email it to the customer's email address. The business has simplified this by supporting a database of data sheets available on the website for easy download or printing by customers. No additional intervention or costs are incurred by the business and users have an option to save it locally to view it whenever it is needed. This concept can easily be used by other e-commerce or online businesses.

Customers in remote areas in South Africa have actually been brought closer to the business. The business does not view customer responses, comments or criticisms as problems but rather use them as an opportunity to reach out to customers in an attempt to improve business.

10   ICT SYSTEMS

The business has outsourced their website, including all software, database and hosting. However, the website is accessed directly by the business to facilitate the direct updates that are done remotely whenever required, using Progress software. The owner is pleased at their achievement over the years, as some ISPs cannot provide the same facility. Although the ICT running expenditure is reasonably high, there are a number of expenses that have to be considered.

Firstly, there is an on-going monthly maintenance agreement where they have a fixed rate for to charge when they come out to do any work that needs to be done on the system. This includes a visit once per month. Secondly, there's a maintenance charge for the website for maintaining it. Finally, there are the telecommunication costs of two Telkom Diginet lines, one to the ISP and the other to the Johannesburg outlet. The monthly line costs are approximately R8 000 which is deemed to be excessive for 64Kbs.

The database that serves the website has grown from the original business in Somerset West. It moved to the first Bellville shop where it was expanded considerably when breaking ties with Maplin UK to become totally independent. The last move to the current premises in Bellville in 2004 also had to take into consideration bringing the Johannesburg branch online. The issues relating to

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increased stock holding, the reduction of mail order and increased turnover, are posing challenges to the outsourced vendor to keep the database up to date.

10. 1 Web presence

Even from the early days, a static website was used as a marketing mechanism to advertise the business. At the time. they found it to be the quickest and cheapest way to replace the few thousand page extensive catalogue which is now obsolete. The business has expanded to the point where the website has become an essential component of the business' entire operation. From a catalogue point of view, the website allows customers to view products and also to view alternative products and options.

From an internal staff point of view, the website serves as the primary source for searching for products, even in the shop behind the counter. In the past, counter staff used a catalogue to find products for their customers, but now the website has taken over that role. According to the owner, from a business perspective, the real-time and up-to-date aspects of the website (database in the background) can be singled out as the most important benefit of having a website. Furthermore, they find customers view the website even in the store. They also find many customers walking into the shop with a printout from the website of products or information obtained beforehand.

The volume and value of online orders are very small (20–30 orders per week) from about 22 000 hits per month. Volumes are growing steadily but the business is nowhere near ready to rely on online sales. It is interesting to note that this is similar to the cycle that happened when the mail order business was started in 1992 and had to be patiently grown.

10. 2 Role of the Internet

The Internet has facilitated the business' ability to serve their clients not only by finding products quickly, but also by being able to find alternatives or competitor's products to solve a particular customer need. The business does not purchase anything online from other websites, nor do they have a B2B link to partners or other stakeholders. However, the owner and individual staff members do search the Internet for products and once they have been sourced, manual purchase orders are processed.

From an e-commerce business model perspective, the business is at the e-commerce level mainly operating in a B2C environment. The concept of Viral marketing is applied as each month a newsletter is sent out to about 5 000 email addresses (Klopper, 2002). The business decided not to propagate SPAM mail, so they only send emails to customers who appear on their database, or who have accessed their website requesting monthly promotional emails or who are regular online shoppers.

When checking the statistics provided by the ISP, the effect of this can immediately be monitored as they get between 1 100 and 1 300 hits on the 2 or 3 days after they have sent a promotional email. Typically, the 22 000 hits per month come from about 1 000 unique visitors. These statistics

are encouraging to the business and they are hopeful that they will eventually turn more of the hits into online orders. According to them, the website serves as useful tool. Firstly, it serves as a tool to access a resource centre for products, required both by staff and by customers. Secondly, it serves as an online catalogue that facilitates real-time and up-to-date information on products and prices. Thirdly, it serves as a search tool, where new products and accessories are displayed for easy viewing using search criteria. Finally, as a management and business tool, online orders can be merged into their back-end accounting systems, making purchase reconciliation, stock taking and reporting extremely easy. The power of ICT is utilised and becomes a cost effective mechanism to run the business.

10. 3 Online problems

The Internet is found to be too slow in South Africa and it is considered to be a major factor holding back e-commerce. The business compares access to their website to the speed of access to international websites and they conclude that cheap broadband in the UK is an e-commerce enabling factor. Even with Telkom's reduced ADSL cost offering, it is still not cost effective for some of their transactions. Telkom discounts telecommunication lines to private homes, yet expects businesses to pay full fees. According to them it is unfair to consider all business to be the same as far as tariffs are concerned.

The owner manager is fairly confident that faster bandwidth will increase sales, as they can see from statistics that many customers abort half way through an e-commerce transaction. He does concede that it may also be due to a number of other reasons, for example, no credit card, credit card limit extended, security issues or even simply "buyer's remorse". Slow access and timeout is also extremely frustrating and is also considered an inhibiting factor.

10. 4 Online fraud

Some bad debts have been incurred due to fraudulent use of credit cards. The owner was surprised to find that credit card payment on websites was introduced into South Africa quite along time before it was introduced in the UK. The main problem with this was that adequate banking tools were not in place and were not designed to cope with fraud. In spite of cases of reported fraud, credit cards are still currently one of the safest and convenient ways of doing business. Handling cash poses other problems for example, bank charges for cash deposits and the safety aspect of handling cash. Bank certified cheques may be safe but they are not a practical option due to the time it takes and the information that is needed before they can be issued. According to the owner, paying online is extremely worrisome to many clients, who are concerned about how secure such transactions are. Many customers ask him about how secure their transaction is, and he can only refer them to the Banks who issue the credit cards.

10. 5 Mobile commerce

The owner has investigated the use of mobile devices such as cellular telephones and PDAs in an online environment. He thinks SMS may offer some value. For this, the most promising way of

using SMS would be for order confirmation, order despatch notification and sending tracking numbers.

11   CONCLUSION

It is not often that a business offers such an interesting expanse of three areas of business, starting with mail orders, then shop front and finally a combination of mail order (diminishing), shop front and e e-commerce. It is clear from this case-study that although the mail order aspect is perceived as "old fashioned" and out of date, it did have an impact in the electronics industry and caused other to follow. The transition from mail order to a shop with stock holding was a significant change and further changes occurred when adopting e-commerce.

From this case, it is evident that e-commerce businesses all have different factors to be considered in terms of how they affect the profitability and growth of the business. The lack of bandwidth in South Africa has a retarding effect on e-commerce adoption. It is further evident that some entrepreneurs face many challenges and they are often left to fend for themselves in an extremely challenging ICT and competitive environment.

Case Study E

Slow e-commerce adoption in the luggage industry

1   INTRODUCTION

This business is an example of an established bricks-and-mortar business that adopted e-commerce for a specific financial reason. The first interview was conducted exactly one week after the website went live. At the time of the interview, no electronic transactions had taken place, however, by the time of subsequent interaction with the owner of the business, electronic transactions had commenced. The scope of this research investigated the criteria needed at the outset for successful e-commerce adoption.

2   BACKGROUND TO THE CASE STUDY

This researcher endeavoured to find a new e-commerce business as a case for this research. Local newspaper adverts and editorials were consulted, the Cape Chamber of Commerce's Web site was accessed and informal talks were conducted with a number of small business networks in an effort to find such a business. However, it was a bold, new advert on a building in Cape Town advertising the business's URL and website that proved to be the route to finding the desired case.

3   ORIGIN OF THE BUSINESS

The business was started in 1993 and within five years had two outlets. The first, is a shop at the Victoria and Alfred (V&A) shopping centre at the Cape Town Waterfront which has been selling luggage and leather goods to the tourist market since 1994. The second outlet is a factory shop in Access Park in Kenilworth, Cape Town that opened in 1999.

4   BUSINESS ORGANISATION AND MANAGEMENT

The two business outlets cater for different markets. The shop at the V&A sells luxury goods and targets international tourists and visitors from other parts of South Africa, whereas the factory shop caters for lower priced high volume products and it is frequented by regular locals. Factory shops where food, furniture, clothing, art, fabric and other goods are sold have become very popular in South Africa over the past decade, especially in the Western Cape. These shops operate in the older parts of town (often refurbished) or in specially built factory units. These shops provide extended shopping hours during the week as well as on Saturdays and Sundays. Free parking and food stalls are usually available and children's entertainment is often provided, all of which act as additional attractions for shoppers. These factory shops are different to the traditional "flea markets" found in most parts of the world as they generally offer higher quality products with warranties. The business's financial models for the two outlets are different due to differences in clientele, products, monthly rental and customer accessibility.

5   ONLINE STORE VERSUS A NEW OUTLET

The owner of the business considered opening a third outlet, possibly somewhere in the Northern Suburbs of Cape Town. After extensive investigation and discussions with agents and customers, it was finally decided that Canal Walk, a new modern shopping centre just outside Cape Town would be the most suitable location. The advantage of this shopping centre would be that it was easily accessible from the N1 (National North/South freeway) for local and international customers. It provides ample parking as well as offering a wide variety of shops and entertainment for the entire family, especially for local customers living up to 25km away.

After further investigation, it was estimated that this move would cost a few hundred thousand Rand, excluding stock. It would also mean being locked into a long and expensive contract. There was also a measure of risk involved, as many smaller businesses have opened and closed in quick succession at Canal Walk. After considering the above-mentioned factors, the decision was finally made by the owner to create a virtual shop meaning a move to e-commerce.

According to the owner manager this was an extremely difficult decision to make in the light of the well-established factory shop industry known to be a successful sales channel. This view was also shared by other factory shop owners that he consulted, in addition to his own experience since 1999.

6   BUSINESS ACTIVITIES, GOALS AND MARKET

The original business has been trading for ten years and judging by the number of employees and stock holding at both outlets, it can be assumed that the business was doing well. According to owner, the goal of the business is to provide cost effective, quality travel and luggage products catering for both the upmarket and the local lower cost high volume market. The increase in tourism, especially since 1994, has seen many backpackers use Cape Town as their first destination in South Africa and they often need to equip themselves with travel bags and accessories before leaving on overland tours and hikes to other destinations in South Africa and Africa. The business owner decided to target clients who would need affordable yet suitable luggage, most of whom were likely to be frequent Internet users and therefore already exposed to online shopping.

7   ADVERTISING ASPECTS

The business advertises regularly in local newspapers, travel magazines and as mentioned before, a large advertising sign was erected on a building in Cape Town in an area where many backpackers and tourists stay. A number of adventure and overland tour operators have offices in the vicinity and are in view of the advertisement on the building. The website URL has also been included on all advertisements since going online.

The e-commerce adoption advertising campaign in November 2004 included flyers handed out at travel agents, tour operators and road intersections, as well advertisements in local newspapers

and travel magazines. The cost of the campaign was close to R30 000, plus an additional R5 000 for promotional gifts and prizes and some miscellaneous additional expenses as well.

Over the last ten years, the business has spent on average, 10 percent per year on advertising; however, in relation to this campaign, no details were made available.

8   OPERATIONAL ASPECTS

During the first in-depth interview with the owner manager, it was encouraging to learn that a few enquiries had been received during the first week of the website going live. According to the owner, he was aware that the biggest problems with online shopping in South Africa were likely to be that:

- customers were afraid
- customers were not used to online shopping
- customers were unable to purchase online.

In addition, customers have been used to purchasing luggage and bags from specialist outlets or departmental stores, rather than from a website.

8.1   e-Commerce strategy

The strategy used by this business for their e-commerce offering was to have a free delivery service to online customers within the Cape Peninsula area, probably within a 25km radius from Cape Town centre. Their return policy is published on the website and it basically states that if a client does not like a product for any specific reason, the product will be collected within 24 hours and the transaction immediately reversed or credited. This was done in an effort to encourage customers to conclude online purchases with a built-in "backdoor". According to the owner, this policy is to encourage customers to complete the online transaction and not to back-track, just before finalising the online payment.

8.2   Online payments

When a customer concludes an online purchase, all documentation is processed and is ready to be submitted to the bank. However, due to this particular return policy, the business does all payments manually after the customer signs the docket prepared by the online system once the goods are finally accepted. In cases where the purchase is cancelled, the docket is destroyed.

8.3   Business adaptation to facilitate e-commerce

The factory shop in Access Park is a proper store and both their physical outlets are supplied from this store as well as the new e-commerce venture. An office has been created to accommodate an additional desk, filing cabinets, PC printer and telephone connection.

In addition, a new delivery vehicle for online deliveries and collections was acquired. This vehicle is also used for other business activities and delivery to the V&A outlet.

8.4   Stock holding

To establish a third outlet would have required a major investment carrying stock and maintaining the minimum stock levels required in a shop. The advantage of opting for a virtual shop was that the physical and infrastructure expenditure would not be needed and the additional stock could be shared between the two existing shops. Later, the stock levels could be expanded as required. Furthermore, some of the products sourced from local distributors can be picked up and delivered to customers in one operation. The only aspect to manage more carefully is the products that the business imports directly. Managing all of the above scenarios depends very much on supply and demand. The owner decided to keep a close check on the stock situation and as soon as patterns start to crystallise and the situation stabilises, appropriate adjustments will be made.

8.5   Worst-case scenario of a failed venture

The owner considered what to do in the event of a total e-commerce failure. He determined that the business would still be able to operate as before if even if e-commerce ceases. The delivery vehicle could either be sold or most probably kept in the business. The office expansion was an improvement and the PC and Internet access would be kept for online banking.

The direct loss would be the advertising costs, consulting fees and staff training. This was estimated not to exceed R60 000. Although this expenditure is high, the South African Revenue Services (SARS) would consider it as normal business expense. In the event of a totally failed venture, the detrimental effect on the business would be minimal and trading would continue. The owner decided that once all expenses were paid and if positive feedback was forthcoming, future plans and expansion of the business would be considered.

8.6   Benefits of the e-commerce adoption initiative

According to the owner and staff at the business, the benefit of accessing an online brochure displaying all the products on the website has been a great improvement. In the past, various sections of catalogues were used and it was also difficult to keep track of new prices as well as promotions and specials. Another benefit of deploying a website is that prices need only be updated at one point, making it automatically available to customers and staff. A further benefit is that all the products are listed on the website and customers will be able to view them to obtain the latest prices, and at the same time be made aware of specials and have access to general information.

9   ICT SYSTEMS

The ICT system at the business consists of a PC and a telecommunication dial-up line to the Internet via an ISP. A consultant contracted to oversee this suggested that a dial-up line be used initially until ADSL becomes available and in the area; this could take up to a year. A staff member was trained to operate the PC and to use the software and a computer consultant/dealer provided

specialised online software. Various systems were put in place, including a backup facility, anti-spam and anti-virus software and reporting.

10   INTERNET DEPLOYMENT

A website developer was contracted to develop their website, which included the website itself, infrastructure, personal computer configuration and a content database, and it was estimated to take about ten weeks to develop and implement. The system went live in November 2004 at an estimated cost of about R50 000.

11   CONCLUSION

It is apparent from evidence collected that the business attempted to do everything correctly, from conception to implementation to adopt e-commerce successfully. The owner had no clear guidelines or model to follow, nor any experience in e-commerce, but had to rely on advice and follow sound business principles and business logic.

What is also apparent is that the owner actually shifted e-commerce adoption from a concept to a business process to augment his established manual sales channel. It is also evident that the e-commerce adoption costs were kept to a minimum and throughout the design stages, it is clear that the e-commerce adoption initiative could have been halted at any stage without significantly affecting the existing running of the business.

This business is a typical example where a business moved from a brick-and-mortar operation to e-commerce by way of sound business and strategic decisions. The e-commerce implementation of the business has now been operational for over two years and although it has not grown as expected, it is still worth pursuing and utilising the added benefits it offers the business.

APPENDIX B

Interview discussion document (Model feedback)

Discussion document presented to respondents to obtain feedback on the structure of the model layout and questionnaire on the proposed e-commerce adoption factors. The questionnaire results are summarised in Appendix C.

1   BACKGROUND

Businesses often ponder over the maturity of the Internet and Web-technologies, and may even become confused or unsure about the viability of online businesses. Some online businesses have been successful whilst others not. It is claimed that the use of e-commerce is a source of competitive advantage, opportunity and expanded business. In this confused state, businesses often opt for a short-term solution to embark on a Web-presence. However, businesses not being homogeneous and differing by attributes such as size, market sector, turnover and others, find it difficult to adopt e-commerce as there appears to be no fixed rules directing e-commerce adoption. To create a theoretical model as a "one-size fits all" approach is challenging, as many internal and external factors, opportunities and barriers come into contention.

The following definition of a model is one of many definitions and illustrates its simplicity, yet far reaching consequences:

> A model is an overall framework for how we look at reality (Silverman, 2005:97-100).
> A conceptual model design in this instance, should ideally support small niche businesses in practice, yet be adaptable to a wider spectrum of businesses, both small and large.

2   RESEARCH GOAL

This research set out to create a conceptual e-commerce adoption model to provide guidelines or a tool to assist SMMEs. Furthermore, the goal was to assist such businesses to make informed decisions before embarking on an e-commerce adoption strategy. It is further hoped hat this model would assist business with e-commerce adoption issues even after they had adopted e-commerce. Although this model has a strong theoretical undertone, it is also essential to provide practical application aspects to users. Once a conceptual model is developed, it would then need to be validated and refined by respondents from industry. The development of an e-commerce adoption model proposed should incorporate Strategic, Application and Implementation level activities. This would best support business processes and procedures.

Figures B.1 depicts the initial conceptual model structure pertaining to the main business processes found in literature.

From literature, four types of business activities are used in most businesses. These are strategic, operational, technical and behavioural issues. This approach was considered appropriate for such a model. Figure B.2 depicts the outline of such a model. It is therefore required that feedback is obtained from industry to check the validity and suitability of such an approach.
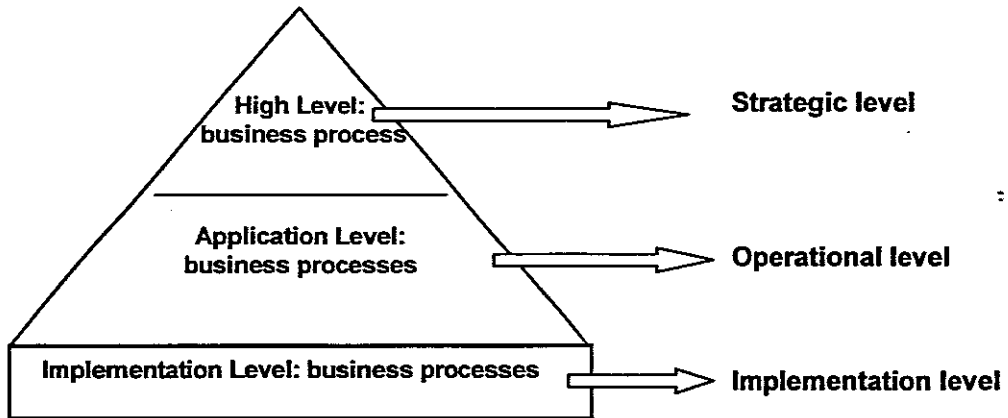
Figure B.1 Conceptual e-commerce adoption model structure
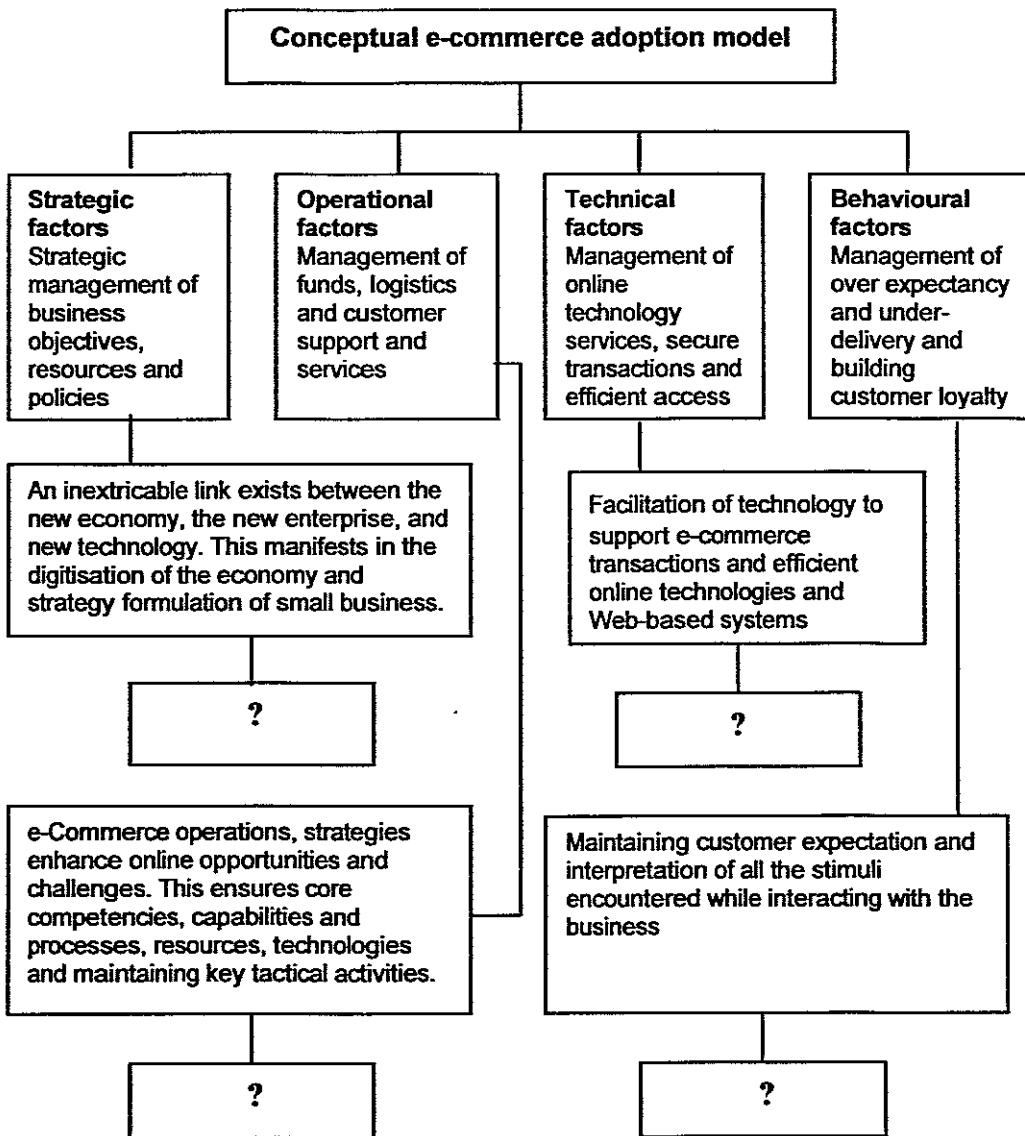
Figure B.2 Conceptual e-commerce adoption model outline

These early research findings led to the model being structured in a hierachical way, providing high level, middle level and low level issues. Each of the High level causes (strategic, operational, behavioural and technical) were further mapped to the middle or Application level. The conceptual model may appear as a structure / flow diagram depicted in Figure B.3 or similar.
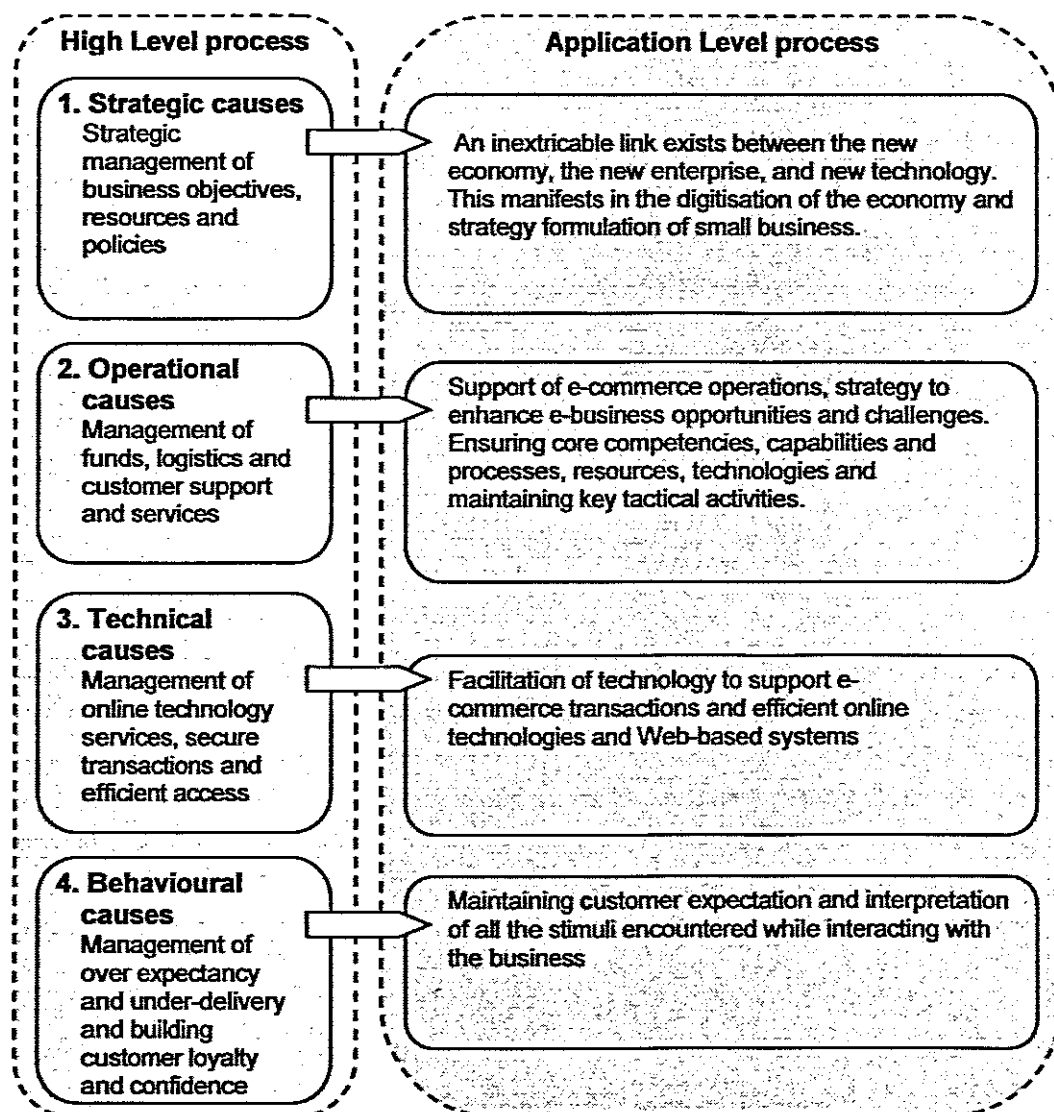
Figure B.3 Conceptual e-commerce adoption model: high and application level processes

Furthermore, at the Implementation level business processes need to be transformed into a useable SMME tools and not be too theoretically based.

3   e-COMMERCE ADOPTION QUESTIONNAIRE

A questionnaire was used to solicit feedback on the proposed e-commerce adoption factors to be used at the Implementation level. The questionnaire consisted of two parts. In part one, demographic details were required and part two consisted of eight tables each representing a research proposition. During the process of recording feedback from respondents, all the factors were discussed and at times more explanation was required by respondents. A total of conceptual 105 factors were used, which were analysed and ranked. Factors not applicable were removed, others reworded or moved to other propositions and one factor added.

Part 1: Demographics

DEMOGRAPHIC INFORMATION		
Name and position of respondent:		
Years of experience	Business & field	
	SME / SMME	
	Online environment	
Other		

Part 2: e-Commerce adoption factors

4   e-COMMERCE ADOPTION FACTORS

In today's digital economy, use of electronic technologies are becoming a way of life, users transact, communicate, collaborate and share information using the Internet, Web-technologies and applications for business and personal reasons. Invariably, these online activities have some influence on user behavior. Businesses may take advantage of modern technology to disseminate, collect, store and transact products or services. Due to these activities, conflict of interests may even arise between consumers and businesses, or between consumers themselves. Research is therefore needed to clarify some of these issues, develop and test theories and validate research models.

Eight propositions were developed (each with a number of factors) from intensive literature study and from initial interviews with five case studies. The aim was to validate and refine these factors by obtaining feedback form respondents.

PROPOSITION 1 - Virtualisation

The Internet and Web-technologies provide dissemination and collection of information, facilitates electronic transaction processing, while products and services may remain physical This includes using the Internet as an additional sales distribution channel.

PROPOSITION 2 - Molecularisation

Due to improvement in access and quality of online information, the economy has been broken up into small units leading to bundled services, business flexibility and enhancing customer relationships become important factors.

PROPOSITION 3 - Disintermediation

Traditional intermediary businesses are being circumvented due to emergence of networks pursuing niche markets and outsourcing ICT and business opportunities.

PROPOSITION 4 - Marketing

Customer relationships and dealing with competitors, branding and understanding the market in which they trade, become important business aspects, including online and bricks and mortar businesses.

PROPOSITION 5 - e-Commerce/business development

e-Commerce opportunities and challenges including core competencies, capabilities and processes, resources and tactical activities of strategies are emanating - online resources including individual resources, tangible, intangible and human resources become part of competitive online trading.

PROPOSITION 6 - Technical

Technical aspects need to support e-commerce adoption including equipment, technological knowledge, product innovation, process innovation and good web site design - aspects such as in-house or outsourced ICT services and/or helpdesk activities need be considered – where information and customer databases need to be maintained and security being a major barrier to overcome.

PROPOSITION 7 - Behavioural

Awareness of the extent of customisation to either tailor (tailoring) or being tailored (personalisation) needed to suit customer preferences - business/products become part of a customer's life as first choice online supplier.

PROPOSITION 8 - Value proposition

Increased available management information - sales data and reporting activities, increased integration of suppliers and vendors leading to better market understanding and competitiveness.

APPENDIX C

Validation interview feedback (Proposition feedback result tables)

1.   PROPOSITION 1 - Virtualisation

The Internet and Web-technologies enhances dissemination and collection of information, facilitates electronic transaction processing, while products and services may remain physical and using the Internet as an additional sales distribution channel.

Response Keys: L- Least applicable, F- Fairly applicable, M- Most applicable, O- Outstanding

PROPOSITION 1 – Virtualisation feedback										
Factors	**Applicability (L,F,M)**									
	#	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**
Facilitates real time access to information	1	F	M	O	M	M	M	F	L	M	
Provide online transaction processing	2	M	M	O	M	M	M	L	F	M	
Awareness that Web sites expose businesses	3	M	M	O	M	M	M	L	L	M	
Reduce searching cost	4	M	M	O	F	M	M	L	F	M	
Meeting customer needs	5	F	M	O	F	F	M	M	F	F	
Promote online trading to build brand name	6	F	M	O	M	M	M	L	L	M	
Provide price comparison	7	F	M	O	M	M	M	L	L	M	
Manage negative working capital	8	L	M	O	M	M	M	L	L	M	
Manage marketing and advertising	9	F	M	O	L	F	M	L	L	M	
Use upgrade path to integrated e-commerce	10	M	L	O	L	M	M	L	L	L	
Maintain market segment	11	M	M	O	M	M	M	L	L	F	
Lower distribution costs	12	M	F	O	M	M	M	L	L	L	
Enhance customer reach	13	F	M	O	M	M	M	M	M	M	
Provide complementary products	14	F	M	O	F	M	M	F	L	M	
Act as information broker	15	F	M	O	F	F	M	L	L	M	
Selection of products and services	16	M	M	O	L	M	M	L	L	F	O
Lower distribution costs of products and services	17	M	M	O	L	M	M	F	L	F	
Ease distribution of products or services	18	M	M	O	L	M	M	M	M	L	

PROPOSITION 1 - Virtualisation totals				
Factors	**Totals**			
	#	**L**	**F**	**M**
Facilitates real time access to information	1	1	2	5
Provide online transaction processing	2	1	1	6
Awareness that Web sites expose businesses	3	2	0	6
Reduce searching cost	4	1	2	5
Meeting customer needs	5	0	5	3
Promote online trading to build brand name	6	2	1	5
Provide price comparison	7	2	1	5
Manage negative working capital	8	3	0	5
Manage marketing and advertising	9	3	2	3
Use upgrade path to integrated e-commerce	10	5	0	3
Maintain market segment	11	2	1	5
Lower distribution costs	12	3	1	4
Enhance customer reach	13	0	1	7
Provide complementary products	14	1	3	4
Act as information broker	15	2	3	3
Selection of products and services	16	3	1	4
Lower distribution cost of products and services	17	2	2	4
Ease distribution of products or services	18	2	0	6

2. PROPOSITION 2 - Molecularisation

The economy has been broken up into small units leading to bundled services, business flexibility and enhancing customer relationships become important factors due to improvement in access and quality of online information.

PROPOSITION 2 - Molecularisation feedback										
Factors	Applicability (L,F,M)									
	#	A	B	C	D	E	F	G	H	I
Provide access to 3rd party products	19	L	M	0	L	L	M	M	M	M
Improve stakeholder relationships	20	L	M	0	F	M	M	F	L	M
Facilitate joining networks	21	F	M	0	M	F	M	M	L	F
Awareness of SMMEs quick response to opportunities	22	F	M	0	L	M	M	F	F	M
Enhance trust in partners and reputation	23	F	M	0	F	M	M	L	L	M
Manage first mover danger	24	F	F	0	M	M	M	F	L	L
Provide superior online service	25	M	M	0	F	M	M	F	L	M
Provide customisation	26	F	M	0	M	M	M	F	F	M
Develop personalisation	27	F	M	0	M	M	M	L	L	M
Foster e-Loyalty	28	F	M	0	M	M	M	F	L	L
Facilitate virtual community participation	29	F	M	0	L	F	M	L	L	M
Develop co-products	30	L	F	0	L	M	M	L	L	M

PROPOSITION 2 - Molecularisation totals				
Factors	Totals			
	#	L	F	M
Provide access to 3rd party products	19	3	0	5
Improve stakeholder relationships	20	2	2	4
Facilitate joining networks	21	1	3	4
Awareness of SMMEs quick response to opportunities	22	1	3	4
Enhance trust in partners and reputation	23	2	2	4
Manage first mover danger	24	2	3	3
Provide superior online service	25	1	2	5
Provide customisation	26	0	3	5
Develop personalisation	27	2	1	5
Foster e-Loyalty	28	2	2	4
Facilitate virtual community participation	29	3	2	3
Develop co-products	30	4	1	3

3. PROPOSITION 3 - Disintermediation

Traditional intermediary businesses are being circumvented due to emergence of networks pursuing niche markets and outsourcing ICT for improved business opportunities.

PROPOSITION 3 - Disintermediation feedback										
Factors	Applicability (L,F,M)									
	#	A	B	C	D	E	F	G	H	I
Explore new markets	31	F	M	0	M	M	M	M	L	M
Create new products	32	L	M	0	M	M	M	F	L	M
Eliminate intermediaries	33	M	M	0	M	M	M	M	M	L
Establish direct link to customers	34	M	M	0	M	M	M	F	M	M
Monitor large companies outsourcing to SMMEs	35	L	M	0	F	M	M	F	F	L
Control business network centrally	36	F	M	0	M	M	M	F	F	M
Awareness of rivalry amongst competitors	37	M	F	0	L	L	M	L	F	M

PROPOSITION 3 - Disintermediation totals				
Factors	**Totals**			
	#	**L**	**F**	**M**
Explore new markets	31	1	1	6
Create new products	32	2	1	5
Eliminate intermediaries	33	1	0	7
Establish direct link to customers	34	0	1	7
Monitor large companies outsourcing to SMMEs	35	2	3	3
Control business network centrally	36	0	3	5
Awareness of rivalry amongst competitors	37	3	2	3

4. PROPOSITION 4 - Marketing

Customer relationships, dealing with competitors, branding and understanding the market in which they trade, become important business aspects, for online and bricks-and mortar businesses.

PROPOSITION 4 - Marketing feedback										
Factors	**Applicability (L,F,M)**									
	#	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**
Develop online strategy	38	M	M	0	M	L	M	F	L	L
Promote marketing strategy	39	F	L	0	L	M	M	F	L	M
Develop business strategy	40	M	L	0	L	M	M	M	L	L
Promote integrative marketing strategy	41	F	L	0	L	L	M	F	L	L
Develop marketing strategy (Offline)	42	F	L	0	M	M	M	F	F	M
Develop marketing strategy (Online)	43	F	M	0	M	M	M	F	L	M
Product development	44	F	M	0	M	L	M	M	F	M
Maintain competitive Pricing	45	M	M	0	F	M	M	M	F	M
Adapt to Promotion – communication	46	F	M	0	M	M	M	M	L	M
Foster Community – communication	47	L	M	0	F	M	M	M	L	M
Manage Place – distribution	48	M	M	0	M	M	M	M	M	M

PROPOSITION 4 - Marketing totals				
Factors	**Totals**			
	#	**L**	**F**	**M**
Develop online strategy	38	3	1	4
Promote marketing strategy	39	3	2	3
Develop business strategy	40	4	0	4
Promote integrative marketing strategy	41	5	2	1
Develop marketing strategy (Offline)	42	1	3	4
Develop marketing strategy (Online)	43	1	2	5
Product development	44	1	2	5
Maintain competitive Pricing	45	0	2	6
Adapt to Promotion – communication	46	1	1	6
Foster Community – communication	47	2	1	5
Manage Place – distribution	48	0	0	8

5. PROPOSITION 5 - e-Commerce/business development

e-Commerce opportunities and challenges need core competencies, extended capabilities and processes, resources and strategies are emanating, online resources, individual resources, tangible, intangible and human resources become part of competitive online trading.

PROPOSITION 5 - e-Commerce/business development feedback										
Factors	**Applicability (L,F,M)**									
	#	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**
Provide just in time logistics	49	L	M	0	M	F	M	L	L	M
Promote online process across operation	50	F	M	0	M	M	M	F	L	M
Promote online process across organisation	51	F	M	0	M	M	M	L	L	M
Manage capital equipment, skills and resources	52	F	M	0	M	M	M	L	L	M
Provide competitive advantage	53	M	M	0	M	M	M	M	M	M
Maintain new communication and IS	54	F	M	0	F	M	M	M	L	M
Manage culture influences	55	L	M	0	L	M	M	L	L	M
Maintain specialised business skills and knowledge	56	F	M	0	L	M	M	F	L	M
Foster communication and interaction	57	L	M	0	L	M	M	F	L	M
Redeploy staff	58	M	F	0	L	L	M	F	L	L
Oversee online business promotion	59	M	M	0	M	M	M	F	F	M
Maintain customer support essential for survival	60	F	M	0	M	M	M	F	F	M
Manage customer bargaining power	61	M	F	0	L	F	M	L	L	M

PROPOSITION 5 - e-Commerce/business development totals				
Factors	**Totals**			
	#	**L**	**F**	**M**
Provide just in time logistics	49	3	1	4
Promote online process across operation	50	1	2	5
Promote online process across organisation	51	2	1	5
Manage capital equipment, skills and resources	52	2	1	5
Provide competitive advantage	53	0	0	8
Maintain new communication and IS	54	1	2	5
Manage culture influences	55	4	0	4
Maintain specialised business skills and knowledge	56	2	2	4
Foster communication and interaction	57	3	1	4
Redeploy staff	58	4	2	2
Oversee online business promotion	59	0	2	6
Maintain customer support essential for survival	60	0	3	5
Manage customer bargaining power	61	3	2	3

6.   PROPOSITION 6 - Technical

Technical support of e-commerce adoption for equipment, technological knowledge, product innovation, process innovation and good web site design enhanced by in-house or outsourced ICT services and/or helpdesk activities, maintaining information and customer databases where security is a barrier to overcome.

PROPOSITION 6 - Technical feedback										
Factors	**Applicability (L,F,M)**									
	#	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**
Select suitable equipment	62	M	M	0	M	F	M	L	L	M
Develop core technological know-how	63	M	M	0	M	M	M	M	L	M
Develop new system products	64	F	M	0	L	M	M	L	L	M
Focus on processes across organisation	65	F	M	0	M	M	M	L	L	M
Promote convenient shopping	66	M	M	0	M	M	M	L	L	M
Deliver correct products	67	L	M	0	M	M	M	L	L	M
Maintain fast communication line speed	68	M	M	0	M	M	M	L	L	M

	#	A	B	C	D	E	F	G	H	I	
Keep check on ICT costs	69	M	F	0	M	F	M	L	M	M	
Manage extraction of product information	70	F	M	0	M	M	M	L	L	F	
Provide easy access to customer information	71	F	M	0	M	M	M	L	F	M	
Maintain system authentication	72	M	M	0	M	M	M	L	F	M	
Honour user privacy	73	M	M	0	M	M	M	L	L	M	
Maintain system security	74	M	M	0	M	M	M	L	L	M	:
Utilise open architecture and standards	75	F	M	0	M	F	M	F	L	M	
Manage bandwidth capping	76	M	M	0	M	M	M	L	L	M	

PROPOSITION 6 - Technical totals				
Factors	**Totals**			
	#	L	F	M
Select suitable equipment	62	2	1	5
Develop core technological know-how	63	1	0	7
Develop new system products	64	3	1	4
Focus on processes across organisation	65	2	1	5
Promote convenient shopping	66	2	0	6
Deliver correct products	67	3	0	5
Maintain fast communication line speed	68	2	0	6
Keep check on ICT costs	69	1	2	5
Manage extraction of product information	70	2	2	4
Provide easy access to customer information	71	1	2	5
Maintain system authentication	72	1	1	6
Honour user privacy	73	2	0	6
Maintain system security	74	2	0	6
Utilise open architecture and standards	75	1	3	4
Manage bandwidth capping	76	2	0	6

7.   PROPOSITION 7 - Behavioural

The extent of customisation of Web sites or personalisation to suit customer preferences where business/products become part of a customer's life ensuring selecting the same first choice supplier.

PROPOSITION 7 - Behavioural feedback										
Factors	**Applicability (L,F,M)**									
	#	A	B	C	D	E	F	G	H	I
Develop customer trust	77	M	M	0	M	M	M	L	F	L
Assist customers to have consistent experience	78	F	M	0	M	M	M	L	L	M
Provide substitute products	79	F	L	0	M	M	M	L	L	M
Provide exceptional value	80	F	M	0	F	M	M	M	L	M
Be significantly better	81	L	M	0	F	M	M	M	L	M
Ensure customers take message to market	82	L	M	0	M	M	M	F	L	F
Provide online benefit	83	F	M	0	M	M	M	F	L	M
Ensure customers defend the experience	84	L	M	0	M	M	M	F	M	M

PROPOSITION 7 - Behavioural totals				
Factors	**Totals**			
	#	L	F	M
Develop customer trust	77	2	1	5
Assist customers to have consistent experience	78	2	1	5
Provide substitute products	79	3	1	4

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